

Ravalli County Curriculum
Consortium

SCIENCE

Proficiencies and Rubrics

Oct. 2011

GRADE LEVEL: KINDERGARTEN Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
1	Nature Of Science	Scientific Investigations	Safely do a scientific investigation using step by step directions.	observe, scientist, same/different, color, size, sort, record, question, experiment, color, exp
1	Nature Of Science	Scientific Investigations	Ask questions based on observations.	
1	Nature Of Science	Scientific Investigations	Make observations using the five senses	sight, sound, touch, taste, smell
1	Nature Of Science	Scientific Investigations	Identify measurement tools and choose the appropriate tool to measure time, temperature, mass, length, and/or liquid volume	beaker, clock, magnifying glass, ruler, scale, thermometer
2	Physical Science	Structures and Properties of Matter	Sort an object by its color, shape, and size.	color, group, motion, shape, size
2	Physical Science	Interaction of Matter and Energy	Tell day vs. night in a variety of contexts.	shadow, day, night, light, dark
2	Physical Science	Forces and Motion	Show different ways objects can move (zig zag, round and round, back and forth, fast and slow).	
2	Physical Science	Forces and Motion	Use a magnet to repel and attract objects.	magnet, magnetism
2	Physical Science	Sources and Properties of Energy	Describe characteristics of light	
2	Physical Science	Sources and Properties of Energy	Describe characteristics magnetism	
2	Physical Science	Sources and Properties of Energy	Describe characteristics motion.	
2	Physical Science	Structures and Properties of Matter	Identify solids, liquids, and gases	solid, liquid, gas
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	List what makes a living thing.	plant, animal, living, life cycle, food, energy, change, make new ones (reproduce), make waste (respire, excrete), respond
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	List what makes a non-living thing.	Non-living

GRADE LEVEL:

KINDERGARTEN

Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
3	Life Sciences	Biological Evolution and Diversity of Life	Identify and classify living and non-living things using similarities and differences.	similar, different
4	Earth and Space Sciences	Composition and Structure of the Universe and the Earth's Place in it	Define and/or show that Earth is a planet.	planet, earth
4	Earth and Space Sciences	Composition and Structure of the Earth	List Earth's features (mountain, oceans, volcano, valley, ect.).	mountain, lake, hill, valley, volcano, ocean, land, water, river
4	Earth and Space Sciences	Composition and Structure of the Earth	Create a model of a earth feature.	
4	Earth and Space Sciences	Composition and Structure of the Universe and the Earth's Place in it	Explain and draw different objects in space (stars, moon, planets)	
4	Nature of Science	Historical Development and Technology	Name examples of technology	technology
5	Nature of Science	Historical Development and Technology	Show how to use technology	
5	Nature of Science	Impact of Scientific Development on communities, cultures, and societies	Describe/draw tools that Montana American Indians have made in the past and present.	tool
5	Nature of Science	Impact of Scientific Development on communities, cultures, and societies	Identify examples of how Montana American Indians use(d) natural resources.	nature, environment
5	Nature of Science	Historical Development and Technology	Make observation and ask questions	knowledge, natural world, observe, question
6	Nature of Science	Historical Development and Technology	Identifying that people have used their senses to learn about the natural world throughout history.	history, past

GRADE LEVEL: FIRST

Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
1	Nature of Science	Scientific investigations	Using the five senses to record observations.	experiment, investigation, testable observations, procedure
1	Nature of Science	Scientific investigations	Helping to write a question for an experiment (hypothesis).	testable observation
1	Nature of Science	Scientific investigations	Following step by step directions in simple guided investigations.	investigation, procedure
1	Nature of Science	Scientific investigations	Explaining the purpose of the experiment.	purpose
1	Nature of Science	Scientific investigations	Following the appropriate safety rules.	
2	Physical Sciences	Structures and properties of matter	Identifying objects according to color, size, shape, weight and texture	texture, weight
2	Physical Sciences	Structures and properties of matter	Sorting objects according to color, size, shape, weight and texture	
2	Physical Sciences	Structures and properties of matter	Observing behaviors of light while drawing light bending and bouncing	reflection, refraction, mirror, prism, bend, bounce
2	Physical Sciences	Structures and properties of matter	Conducting simple experiments of light bending	
2	Physical Sciences	Structures and properties of matter	Exploring shadows as they change throughout the day	shadow
2	Physical Sciences	Structures and properties of matter	Conducting simple experiments with light & shadows	
2	Physical Sciences	Structures and properties of matter	Selecting and using appropriate tools for measurement of matter	balance, beaker, magnifying lens, measuring tape, ruler, scale, thermometer, weight
3	Life Sciences	Relationships among organisms and their physical properties	Listing the 5 needs of every living things.(energy, habitat, water, nutrients, air).	
3	Life Sciences	Relationships among organisms and their physical properties	Identifying herbivores and carnivores.	herbivore, carnivore, food chain
3	Life Sciences	Relationships among organisms and their physical properties	Comparing and classifying herbivores and carnivores.	
3	Life Sciences	Relationships among organisms and their physical properties	describing a food chain	

GRADE LEVEL: FIRST

Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
3	Life Sciences	Relationships among organisms and their physical properties	Illustrating a food chain	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Identifying land features	earth, desert , land, mountain, volcano, valley
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Identifying water features	water, lake, ocean, pond, river
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Identifying objects in space, including: stars, moon, and planets	star, sun, moon, planets
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Classifying objects in space, including: recognizing the Sun as a star, the difference between stars and planets,	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Recognizing constellations as a group of stars in a pattern, and identifying common constellations	Big Dipper, North Star, constellations
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Identifying the differences of Day and Night	reflection
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Showing and describing what causes Day and Night	light, dark, day, night, sky
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Recognizing that the moon seems to change over time.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Identifying different kinds of weather	weather, temperature, wind, rain, snow, clouds
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Identifying different features of weather	temperature
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Observing and clarifying the daily weather conditions	observation, degrees, Fahrenheit
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	identifying different types of clouds	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Listing tools and technology used to observe objects in space.	satellite, space shuttle, star charts, telescope
5	Nature of Science	Impact of scientific development on communities, cultures, and societies	Telling how technology helps us solve problems and make life easier.	problem, process, technology

GRADE LEVEL: FIRST

Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
5	Nature of Science	Impact of scientific development on communities, cultures, and societies	Identifying technology in schools and explaining how it is used.	technology, process
5	Nature of Science	Impact of scientific development on communities, cultures, and societies	Identifying environmental problems.	environment, issue, impact
5	Nature of Science	Impact of scientific development on communities, cultures, and societies	Identifying how Montana American Indians use natural resources	natural resources
5	Nature of Science	Impact of scientific development on communities, cultures, and societies	Discussing how the Montana American Indians explain the natural world	natural world
5	Nature of Science	Impact of scientific development on communities, cultures, and societies	Identifying objects and or tools that Montana American Indians have made in the past and present	
6	Nature of Science	Historical development and technology	Recognizing that knowledge is gained through questioning and observations.	knowledge, observe, question
6	Nature of Science	Historical development and technology	Recognizing that everyone can use science to learn about the world.	
6	Nature of Science	Historical development and technology	Recognizing that people have used their senses to learn about the natural world throughout history.	history, past, natural world
6	Nature of Science	Historical development and technology	Recognizing that everyone can use science to learn about the world.	
6	Nature of Science	Historical development and technology	Recognizing that people have used their senses to learn about the natural world throughout history.	history, past, natural world

GRADE LEVEL: SECOND

Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
1	Nature of Science	Scientific Investigations	Safely do a scientific investigation using step-by-step directions	
1	Nature of Science	Scientific Investigations	identify what is being measured in the investigation	observe, scientist, same/different, color, size, sort, record, question, experiment
1	Nature of Science	Scientific Investigations	demonstrate the steps of the scientific process of an investigation	investigation, question, procedure, observe, constant, conclusion
1	Nature of Science	Scientific Investigations	select and demonstrate proper use of tools during an investigation	ruler, scale, thermometer,
1	Nature of Science		I can record data, graph measurements, and explain results of the investigation	mass, metric temperature, time, volume, bar graphs, data, length, line graphs
1	Nature of Science	Scientific Investigations	defines and displays the data of an investigation	
2	Physical Sciences	Structure and Properties of Matter	create and separate mixtures ; compare the similarities and differences of mixtures	measure, mixture, separate, size, texture, filtering
2	Physical Sciences	Structure and Properties of Matter	list physical properties and measure the dimensions of objects; compare the similarities and differences of objects	compare, differences, physical properties, similarities, measuring, inches, feet, graph
2	Physical Sciences	Structure and Properties of Matter	describe the three states of matter (solid, liquid, gas); describe the physical changes of matter (melting, freezing, evaporation, and boiling) and record the process of changing states of matter	solid, liquid, freezing, gas, matter, melting, thermometer, degrees
3	Life Sciences	Biological Evolution and Diversity of Life	describe the life cycles of plants and animals (birth, growth, reproduction, death)	adult, animal, change, development, egg, grow, life cycle, plant, reproduce, seed, species
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	group plants and animals according to their characteristics	characteristics, classify

GRADE LEVEL: SECOND

Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
4	Earth and Space Sciences	Composition, Structure, and Processes of the Earth	describe, give examples, and create a model of Earth's natural features; compare and contrast the characteristics of Earth's natural features	desert, Earth, land, lake, mountain, ocean, pond, river, soil, valley, volcano, water, plain, plateau, stream, hill
4	Earth and Space Sciences	Composition, Structure, and Processes of the Earth	compare and classify rocks based on color and texture and understand that soil is made up of rocks	classify, rock, texture, color
4	Earth and Space Sciences	Composition, Structure, and Processes of the Earth	list and record observations of a variety of fossils; discuss how fossils are evidence of past life	fossil, extinction, plant, animal, evidence
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	know the parts of the water cycle and that it is a never-ending cycle	precipitation, evaporation, condensation, water
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	Identifies and compares characteristics of different types of weather conditions	Rain, snow, sleet, hail, sun, hot, cold, warm, thunder, lightening
4	Earth and Space Sciences	Composition, Structure, and Processes of the Universe and the Earth's Place in it	know that the Sun is a star, Earth is a planet, there are other planets in our solar system, and that Earth has one moon	Earth, moon, stars, planet, Sun
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	compare and contrast the four seasons; contrast the weather conditions of each season and the role of water in each season	weather, precipitation, winter, spring, summer, fall, autumn, rain, snow, sleet, hail, temperature, season
5	Nature of Science	Historical Development and Technology	describe technology in the community and how it is used in the community; describe how technology solves problems and makes life easier	community, problem, technology
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	identify and discuss environmental problems	environment, issue, problem
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	identify examples of tools and how they were developed and used by Montana American Indians; describe how tools make work easier	process, tool, work

GRADE LEVEL: SECOND

Students will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiencies	Vocabulary
6	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	ask questions about observations and identify tools that improve observations	knowledge, observe, natural world, question
6	Nature of Science	Historical Development and Technology	describe how people have used their five senses to learn about the natural world throughout history	hearing, senses, sight, smell, taste, touch, history, natural world

GRADE LEVEL:

THIRD

Student will be able to...

MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
4	Earth and Space Science	Composition, Structure and Processes of the Earth	Analyzing different types of soils and the differences in their makeup (grain size, moisture content)	weathered rock, humus, water, sand, loam, clay
4	Earth and Space Science	Composition, Structure and Processes of the Earth	Describing the five different types of weathering that occur in rocks	erosion, weathering, water, wind, gravity, plant roots
4	Earth and Space Science	Composition, Structure and Processes of the Earth	Comparing and contrasting the causes of erosion	erosion, water, wind, gravity, glacier
4	Earth and Space Science	Composition, Structure and Processes of the Earth	Differentiating between melting, freezing, evaporation, condensation, precipitation	melting, evaporation, condensation, freezing, precipitation, water cycle, water vapor
4	Earth and Space Science	Atmospheric Processes and the Water Cycle	Recording local temperature and precipitation	temperature, rain gauge, local weather, Celsius, Fahrenheit
4	Earth and Space Science	Atmospheric Processes and the Water Cycle	Distinguishing between local weather and climate for each season	weather, climate, seasons, fall, autumn, winter, spring, summer
4	Earth and Space Science	Composition, Structure and Processes of the Universe and the Earth's Place in It	Graphing the relative location of planets and the sun	sun, planet, moon, solar system
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Summarizing the five needs of every living thing	energy, shelter, water, nutrients, air, living, plant, habitat, energy
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Explaining the functions of basic plant and animal structures	root, stem, leaf, flower, seed, cone, flowering, nonflowering, petal, pollinate, bulb, structure, living, vertebrate, invertebrate
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Explaining that solar energy is the primary source of energy for plants	energy, solar energy, primary source
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Comparing the life cycles of two different animal species (mammal, amphibian, invertebrate, etc.)	life cycle, species, organism, animal kingdom, plant kingdom, vertebrate, invertebrate, egg, larva, pupa, adult, nymph, offspring
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Defining inherited and learned behaviors	inherited behavior, learned behavior

GRADE LEVEL:

THIRD

Student will be able to...

MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Comparing life cycles of two different plant species (flowering plants, conifers, ferns, etc.)	root, stem, leaf, flower, seed, petal, flowering, nonflowering, life cycle
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Identifying adaptations, in a variety of organisms, that are specific to survival in their environment	adaptation, survival, environment, organism
3	Life Sciences	Relationships Among Organism and Their Physical Environment	Demonstrating examples of predator/prey relationships and competition	predator, prey, competition, herbivore, carnivore, omnivore
2	Physical Sciences	Structure and Properties of Matter	Classifying and comparing objects according to physical properties	classify, physical properties, mass, texture, volume, solid, liquid, gas, matter
2	Physical Sciences	Structure and Properties of Matter	Investigating physical properties in matter in which size, shape, and state of matter change	physical property, physical change, matter
2	Physical Sciences	Structure and Properties of Matter	Investigating matter in which one or more new kinds of matter are formed	solid, liquid, gas
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Society	Explaining how technological knowledge, processes, and products are used to solve problems	chemical properties, rust, explode, burn, matter
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Society	Comparing and contrasting the uses of tools over time	tool, culture
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Society	Summarizing how the changes in tools over time have influenced Montana American Indian cultures	tool, culture
6	Nature of Science	Historical Development and Technology	Relating examples where scientific inquiry is used to gain understanding of the natural world through discussion of environmental concerns and solutions	scientific inquiry, natural world, environment
1	Nature of Science	Scientific Investigations	Formulating questions through the use of observations	observation, five senses

GRADE LEVEL: THIRD

Student will be able to...

MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
1	Nature of Science	Scientific Investigations	Recognizing testable questions	procedure, investigation, testable question, measure, observation
1	Nature of Science	Scientific Investigations	Choosing appropriate metric measurements and correctly displaying data using simple tables and graphs	tables, metric system, volume, liter, length, distance, millimeter, centimeter, meter, meter stick, mass, gram, kilogram, time, seconds, graph, graduated cylinder, thermometer, Celsius
1	Nature of Science	Scientific Investigations	Comparing results to testable questions	data, results
1	Nature of Science	Scientific Investigations	Following appropriate safety rules	procedure, investigation, measure, observation
1	Nature of Science	Scientific Investigations	Using models to demonstrate understanding	model
1	Nature of Science	Scientific Investigations	Summarizing ways that some American Indians used observation for survival	natural phenomenon, insect and other animal behaviors, weather changes

GRADE LEVEL: FOURTH

Student will be able to...

MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
1	Nature of Science	Scientific investigations	Student writes a question that can be investigated through experimentation and or observation.	procedure, materials, investigation, testable question, measure, observation
1	Nature of Science	Scientific investigations	Student identifies at least two safety procedures in a simple investigation	procedure, materials, investigation, testable question, measure, observation
1	Nature of Science	Scientific investigations	Student records data, in metric units, using tables, graphs, and/or diagrams	tables, metric system, volume (milliliter, liter), mass (gram, kilogram), distance (centimeter, meter), time (seconds), graph, graduated cylinder, meter stick, thermometer (celsius)
1	Nature of Science	Scientific investigations	Students prepare and present created graphs, charts, and diagrams in written and oral format.	graphs, charts, diagrams, increase, decrease, data, results
1	Nature of Science	Scientific investigations	Student relates similarities and differences between models and the actual phenomenon.	scale, compare, contrast, phenomenon, legend/key
1	Nature of Science	Scientific investigations	Student identifies that a valid test consists of a change in one variable and a control group, through an investigation	
1	Nature of Science	Scientific investigations	Student identifies examples of Montana American Indians using observation in nature and in historical context.	
2	Physical Sciences	Interaction of matter and energy	Student describes the effect of distance on the magnetic field after investigating attraction and repulsion with magnets.	attract, repel, magnet, magnetic field
2	Physical Sciences	Sources and properties of energy	Student defines the terms reflect, refract, and absorb after investigating the visible spectrum.	reflect, refract, absorb, visible spectrum, prism
2	Physical Sciences	Sources and properties of energy	Student classifies materials as those that can reflect, refract or absorb after investigating the visible spectrum.	reflect, refract, absorb, visible spectrum, prism

GRADE LEVEL:

FOURTH

Student will be able to...

MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
2	Physical Sciences	Sources and properties of energy	Student models wave motion using up and down, back and forth, speed.	wave, vibration, sound, motion, speed, frequency, volume, pitch, wavelength, amplitude
2	Physical Sciences	Sources and properties of energy	Student describes and lists examples of a wave and describes the relationships between a vibration and a sound wave.	wave, vibration, sound, motion, speed, frequency, volume, pitch, wavelength, amplitude
2	Physical Sciences	Interaction of matter and energy	Student identifies, through investigation, that energy is the ability to cause change.	energy, light, heat, motion, magnetism, electricity, sound
2	Physical Sciences	Sources and properties of energy	~Student identifies electricity as a flow of energy and compares/contrasts current electricity and static electricity	electricity, energy, current, static, closed and open circuits, switch, parallel, series, battery (dry-cell vs. wet-cell), positive charge, negative charge
2	Physical Sciences	Interaction of matter and energy	Student demonstrates safe uses of electricity while constructing an example of parallel and series circuits	electricity, energy, current, static, closed and open circuits, switch, parallel, series, battery (dry-cell vs. wet-cell), positive charge, negative charge
2	Physical Sciences	Interaction of matter and energy	Student after investigating describes how speed, direction and forces affect the motion of an object.	speed, direction, force, motion, push, pull
2	Physical Sciences	Forces and motion	Student builds simple machines and explains how they make work easier using real life examples	simple machine, work, levers, inclined plane, wheel and axle, pulley, wedge, screw
2	Physical Sciences	Sources and properties of energy	Student explains how sound is produced, transmitted, and received; and how it can be changed	frequency, amplitude, pitch, wavelength, vibration, tension, medium, transmit, instrument
2	Physical Sciences	Sources and properties of energy	Student designs and constructs instruments that produce sound	frequency, amplitude, pitch, wavelength, vibration, tension, medium, transmit, instrument
4	Earth and Space Sciences	Composition, structure, and processes of the earth	Student defines body and trace fossils and explains how each is formed.	fossil, body fossil, trace fossil, environment, impression

GRADE LEVEL:

FOURTH

Student will be able to...

MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
4	Earth and Space Sciences	Composition, structure, and processes of the earth	Student describes how fossil's age can be determined by their position in sedimentary rock.	sedimentary rock
4	Earth and Space Sciences	Composition, structure, and processes of the earth	Student illustrates erosion, weathering, volcanoes, and earthquakes and their effects on the earth's surface.	erosion, weathering, earthquakes, and volcanoes
4	Earth and Space Sciences	Composition, structure, and processes of the earth	Student compares and contrasts the formation and characteristics of the three basic types of rocks: sedimentary, metamorphic, and igneous.	classification, igneous, metamorphic, sedimentary, pressure, deposition
4	Earth and Space Sciences	Composition, structure, and processes of the earth	Student classifies rock samples by type and identifies everyday uses for each type.	classification, igneous, metamorphic, sedimentary, pressure, deposition
5	Nature of science	Impact of scientific development on communities, cultures, and society	Student identifies and discusses uses of technology in science and gives examples of scientific or technological discoveries that impact a community, culture, and a society.	technology, society, environment, community, culture
5	Nature of science	Impact of scientific development on communities, cultures, and society	Student researches and summarizes environmental problems and proposes solutions to these problems, using scientific knowledge.	technology, society, environment, community, culture
6	Nature of science	Impact of scientific development on communities, cultures, and society	Student states and discusses historical examples of scientific knowledge influencing the development of Montana American Indian cultures.	technology, society, environment, community, culture
6	Nature of science	Impact of scientific development on communities, cultures, and society	Student researches and presents examples of scientific inquiry used to gain understanding of the natural world by multiple scientists or individuals.	scientific inquiry, natural world, collaborate
6	Nature of science	Impact of scientific development on communities, cultures, and society	Student will produce from memory occupations that use science.	scientific inquiry, natural world, collaborate

GRADE LEVEL		FIFTH	The Student will be able to...	
MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
1	Nature of Science	Scientific investigations	Explain the relationship between a testable question and a hypothesis	control, prediction, hypothesis, variable, testable question, independent variable, dependent variable
1	Nature of Science	Scientific investigations	Plan and conduct an investigation and identify and explain purpose for the following: independent/ dependent variables, and control group	control, prediction, hypothesis, variable, testable question, independent variable, dependent variable
1	Nature of Science	Scientific investigations	Collect and record data through observation, tools, tables and graphs	graduated cylinder, scales, Celsius thermometers, beaker, digital probes, stop watch, balances, metric units, data tables, graphs
1	Nature of Science	Scientific investigations	accept or reject hypothesis by comparing data and communicate findings in written or oral format	hypothesis, supported, not supported, prediction
1	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Society	Identify and give examples of how Indians have used observations of their surroundings to explain processes of nature	
1	Nature of Science	Historical Development and Technology	Explain the purpose of a model after following step-by-step directions	2-D, 3-D, computer simulations, legend/key
2	Physical Science	Structure and Properties of Matter	Define physical properties as properties that do not change the chemical nature of matter	mass, volume, chemical change, physical change, physical property, chemical property
2	Physical Science	Structure and Properties of Matter	Define and identify chemical properties as properties that do not change the chemical nature of matter	mass, volume, chemical change, physical change, physical property, chemical property
2	Physical Science	Interaction of Matter and Energy	Identify that most matter can exist as a solid, liquid, or gas depending on temperature and give examples	sublimation, evaporation, condensation, freezing point, melting point, energy, boiling point, solid, liquid, gas, matter

GRADE LEVEL		FIFTH	The Student will be able to...	
MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
2	Physical Science	Interaction of Matter and Energy	Describe the processes of sublimation, condensation, and evaporation.	sublimation, evaporation, condensation, freezing point, melting point, energy, boiling point, solid, liquid, gas, matter
3	Life Science	Structure and Function of Cells and Organisms	Observe cells using a microscope and describe the basic structure and function of a cell, and finally illustrate/model the structures of plant and/or animal cells.	cell membrane, cell wall, nucleus, vacuoles, cytoplasm, mitochondria, chloroplast
3	Life Science	Relationships Among Organisms and Their Physical Environment	Identify plant structures and compounds involved in photosynthesis and transpiration, and explain the relationship between photosynthesis and transpiration.	chlorophyll, photosynthesis, oxygen, carbon dioxide, sugar, water, light energy, transpiration, water vapor, roots, leaves
3	Life Science	Biological Evolution and Diversity of Life	Employ a dichotomous key to separate a collection of basic objects.	dichotomous key
3	Life Science	Biological Evolution and Diversity of Life	Identify the 5 Kingdoms, and explain the characteristics of kingdom (warm/cold blooded, vertebrate /invertebrate), phylum, and class.	kingdom, phylum, class, vertebrate, invertebrate, cold-blooded, warm-blooded
3	Life Science	Biological Evolution and Diversity of Life	Identify the parts of a flower and explain their function.	stamen, sepal, petal, pistil, pollen, ovule, reproduction
3	Life Science	Biological Evolution and Diversity of Life	Classify plants by: flowering, non-flowering, mosses, and ferns.	mosses, ferns, flowering, nonflowering
4	Earth and Space Science	Atmospheric Processes and the Water Cycle	Describe Earth's physical features and explain how glaciations and weather affects them.	glaciations, erosion, deposition, plate tectonics, mountain, earthquake, volcano
4	Earth and Space Science	Composition, Structure, and Processes of the Earth	Identify different types of clouds and how they can be used to predict weather and how the water cycle plays a role in cloud development.	water cycle, condensation, evaporation, precipitation, forecast, meteorologist
4	Earth and Space Science	Atmospheric Processes and the Water Cycle	Describe properties of air masses moving across the earth's surface and how they can be used to forecast weather.	air mass, front, air pressure, warm front, cold front, precipitation, air currents

GRADE LEVEL		FIFTH	The Student will be able to...	
MT Content Standards	Discipline	Measurement Topics	3.0 Proficiencies	Vocabulary
4	Earth and Space Science	Atmospheric Processes and the Water Cycle	Interpret a weather map using correct symbols.	air mass, front, air pressure, warm front, cold front, precipitation, air currents
4	Earth and Space Science	Composition, Structure, and Processes of the Universe and the earth's Place in it	Explain how the Earth's rotation causes day and night.	Earth, planet, sun, moon, relative, phases of the moon, light, orbit
4	Earth and Space Science	Composition, Structure, and Processes of the Universe and the earth's Place in it	Identify relationships and model the relative movements between the Earth, moon, and sun.	Earth, planet, sun, moon, relative, phases of the moon, light, orbit
4	Earth and Space Science	Composition, Structure, and Processes of the Universe and the earth's Place in it	Identify the phases of the moon by how much of the lighted part of the moon can be seen from Earth.	Earth, planet, sun, moon, relative, phases of the moon, light, orbit
4	Earth and Space Science	Composition, Structure, and Processes of the Universe and the earth's Place in it	Identify and discuss characteristics and movements of meteors, comets, and asteroids.	meteor, comet, asteroid, solar system
4	Earth and Space Science	Composition, Structure, and Processes of the Universe and the earth's Place in it	Identify specific fields, occupations, and technologies within each field of science.	life science, earth science, physical science, engineering, technology, occupations, science
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Society	Identify, research, and summarize the scientific issues relevant to local current event or problems involving science.	current event, issue, problem, environmental impact
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Society	Investigate and explain how science and technology have had an impact on Native Indians.	technology, scientific discoveries, advances
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Society	Identify specific fields, occupations, and technologies within each field of science.	milestones, occupation
6	Nature of Science	Historical Development and Technology	Identify and discuss historical scientific discoveries through technological advances scientific theory and understanding, including Montana American Indian examples.	milestones, occupation

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
1	Nature of Science	Scientific Investigations	Student observes a problem, makes a testable question, and performs the scientific method.	hypothesis, control, variable, data
1	Nature of Science	Scientific Investigations	Student selects and uses appropriate tools including technology to make measurements (in metric units), gather, process, and analyze data from scientific investigations.	Gram, liter, meter, Celsius, mean, median, mode, range
1	Nature of Science	Scientific Investigations	Student reviews, communicates, and defends results of investigations, including considering alternative explanations.	Supported, refute, hypothesis
1	Nature of Science	Scientific Investigations	Student creates models to illustrate scientific concepts and uses the model to predict change. (e.g., computer simulation, stream table, graphic representation)	Working models, representative models
1	Nature of Science	Scientific Investigations	Student identifies strengths and weakness in an investigation design.	Inquiry, investigation, sample size, control, repeated trials
1	Nature of Science	Scientific Investigations	Student compares how observations of nature form an essential base of knowledge among the Montana American Indians.	Montana American Indian tribes: Blackfeet, Crow, Salish, Kootenai, Assiniboine Sioux, Little Shell, Northern Cheyenne, Chippewa Cree, Pend d'Oreille, and Gros Ventre
2	Physical Sciences	Structure and Properties of Matter	Identify common elements and compounds by their symbol and chemical formula. Create and manipulate simple models of common elements and compounds.	atom, element, compound, pure substance, mixture, molecule
2	Physical Sciences	Structure and Properties of Matter	Classify matter as atoms, molecules, elements, compounds, pure substances, or mixtures and identify the relationship between atoms, molecules, elements, compounds, pure substances, and mixtures.	

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
2	Physical Sciences	Structure and Properties of Matter	Distinguish between chemical and physical properties of matter.	
2	Physical Sciences	Structure and Properties of Matter	Compare objects and substances based on their physical properties and simple chemical properties and classify objects and substances based on common physical properties and simple chemical properties.	chemical property, physical property, chemical change, physical change
2	Physical Sciences	Sources and Properties of Energy	Describe, identify, and compare/contrast various forms of energy.	energy, potential energy, kinetic energy, thermal energy, mechanical energy, radiant energy, chemical energy, nuclear energy, electric energy, Law of Conservation of Energy
2	Physical Sciences	Sources and Properties of Energy	Explain the Law of Conservation of Energy using various forms of energy transformation.	energy transformation, energy conservation
2	Physical Sciences	Sources and Properties of Energy	Describe various types of light (visible and invisible) and Identify characteristics of the electromagnetic spectrum.	visible spectrum, ultraviolet, infrared, reflection, refraction, electromagnetic spectrum
2	Physical Sciences	Sources and Properties of Energy	Describe the behavior of light (e.g. refraction, reflection, diffraction) and explain the behavior of light (particle vs. wave, reflection, diffraction, speed).	
2	Physical Sciences	Sources and Properties of Energy	Compare and contrast the three types of heat transfer.	radiant heat, conduction, convection
2	Physical Sciences	Sources and Properties of Energy	Describe properties of magnetic materials.	electromagnet, magnet, electricity, current, voltage
2	Physical Sciences	Sources and Properties of Energy	Describe and identify the properties of electricity and how it is produced.	
2	Physical Sciences	Sources and Properties of Energy	Describe the relationship between electricity and magnetism.	

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
2	Physical Sciences	Sources and Properties of Energy	Identify the parts of waves; Compare and contrast longitudinal and transverse waves.	crest, trough, resting position, wavelength, amplitude, intensity, frequency, pitch, resonance
2	Physical Sciences	Sources and Properties of Energy	Describe the basic properties of sound.	
2	Physical Sciences	Sources and Properties of Energy	Discuss the variables that affect the speed of sound (e.g., temperature, density).	
2	Physical Sciences	Interaction of Matter and Energy	Explain the three states of matter. Explain the relationship between changes in thermal energy and states of matter (e.g. increase/decrease of thermal energy = change in state).	thermal energy, melting point, boiling point, solid, liquid, gas, sublimation, evaporation, condensation
2	Physical Sciences	Interaction of Matter and Energy	Recognize that temperature measures the average kinetic energy of particles in a substance.	
2	Physical Sciences	Interaction of Matter and Energy	Describe what will change and what will remain unchanged at the particulate level when matter experiences an external force or energy change.	
2	Physical Sciences	Forces and Motion	Describe the basic characteristics of motion (position, direction, speed, reference point and identify variables that affect the motion of an object.	gravity, balanced force, unbalanced force, friction, net force, air resistance, speed, velocity, acceleration, mass, inertia, momentum, air pressure, lift, drag, Newton's laws of motion
2	Physical Sciences	Forces and Motion	Explain, the relationship between speed, velocity, acceleration, force, mass, and momentum.	
2	Physical Sciences	Forces and Motion	Explain Newton's laws of motion.	
2	Physical Sciences	Forces and Motion	Compare and contrast simple, complex compound machines.	simple machine, compound machine, work, force, lever, pulley, inclined plane, wedge,

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
				screw, wheel and axle, fulcrum, pivot, mechanical advantage
2	Physical Sciences	Forces and Motion	Recognize that a machine makes work easier by changing the amount or direction of the force ; Identify that simple and compound machines transfer energy by doing work.	
2	Physical Sciences	Forces and Motion	Measure and calculate efficiency, ideal and actual mechanical advantage for simple machines using the appropriate formulas (e.g., work $w=f \times d$).	
2	Physical Sciences	Forces and Motion	Create simple and complex compound machines to examine and measure the related forces.	
3	Life Sciences	Principles of Heredity and Related Concepts	Student explains the function of a chromosome.	chromosome, body cell, sex cell
3	Life Sciences	Principles of Heredity and Related Concepts	Student identifies organisms with different numbers of chromosomes.	
3	Life Sciences	Principles of Heredity and Related Concepts	Student identifies the number of chromosomes in human body cells and human sex cells.	
3	Life Sciences	Principles of Heredity and Related Concepts	Student defines and identifies gene, inheritance, phenotype, and genotype.	phenotype, genotype, dominant, recessive
3	Life Sciences	Principles of Heredity and Related Concepts	Student defines and identifies dominant and recessive traits.	gene, inheritance, traits
3	Life Sciences	Principles of Heredity and Related Concepts	Student identifies examples of inherited characteristics and explains the dependence of genes	
3	Life Sciences	Principles of Heredity and Related Concepts	Student defines, use and interpret Punnett squares to predict simple genetic crosses.	Punnett square, genetic cross, genotype, phenotype
3	Life Sciences	Structure and Function of Cells and Organisms	Student is able to identify and observe single-celled and multicellular organisms.	
3	Life Sciences	Structure and Function of Cells and Organisms	Student identifies, describes, and illustrates the structure and function of organelles in meeting the needs of cells.	eukaryotic, prokaryotic, nucleus, bacteria

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
3	Life Sciences	Structure and Function of Cells and Organisms	Student differentiates cells as either prokaryotic or eukaryotic.	
3	Life Sciences	Structure and Function of Cells and Organisms	Student can explain and illustrate the different levels of organization within the organism.	
3	Life Sciences	Structure and Function of Cells and Organisms	Student identifies the purposes of cell division.	
3	Life Sciences	Structure and Function of Cells and Organisms	Student describes the key events in each phase of mitosis and identifies the differences in mitosis and meiosis.	mitosis, meiosis, asexual, sexual reproduction, phase
3	Life Sciences	Structure and Function of Cells and Organisms	Student differentiates between sexual reproduction and asexual reproduction	
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	Student describes respiration and investigates it as a process by which organisms (plants and animals) use the energy from sugars to carry out life functions.	photosynthesis, respiration
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	Student explains the process by which organisms obtain energy from the sun. Student diagrams the flow of energy through photosynthesis and its decomposition through respiration.	
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	Student recognizes different biomes and analyzes energy movement in biomes (food webs and pyramids).	biomes, food web, food pyramid, producer
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	Student classifies organisms in food webs based upon characteristics (e.g., physical and behavior).	primary and secondary consumers, food chain, decomposer
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	Student distinguishes between a population and a community.	
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	Student identifies living and non-living factors that affect populations and communities and explain how populations are impacted by changes in living and non-living factors in the environment.	population, community, symbiosis, mutualism

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
3	Life Sciences	Relationships Among Organisms and Their Physical Environment	Student identifies different types of symbiosis and their positive and negative effects.	commensalism, parasitism, predator, prey, competition
3	Life Sciences	Biological Evolution and Diversity of Life	Student explains the relationship between kingdom, phylum, class, order, family, genus, and species.	
3	Life Sciences	Biological Evolution and Diversity of Life	Student identifies and describes similarities and differences among organisms of different, but closely related taxa (i.e., pine trees, big cats, rodents, ungulates).	
3	Life Sciences	Biological Evolution and Diversity of Life	Student creates and uses a basic classification scheme to identify plants and animals.	dichotomous key, kingdom, taxonomy, phylum, genus, species, scientific name, scheme
3	Life Sciences	Biological Evolution and Diversity of Life	Student explains and provides examples of adaptations.	
3	Life Sciences	Biological Evolution and Diversity of Life	Student defines natural selection and explains the relationship between natural selection and adaptations.	adaptation, natural selection, evolution, fossil, extinction
3	Life Sciences	Biological Evolution and Diversity of Life	Student identifies natural selection as a mechanism of evolution, identifies lines of evidence that support evolution, and explains how the fossil record provides evidence of life forms' appearance, diversification, and extinction.	
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	Student identifies, diagrams, and labels the composition and structure of the atmosphere.	atmosphere, troposphere
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	Student identifies, diagrams, and labels the components of the water cycle.	precipitation, evaporation, condensation, water vapor
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	Student describes properties of air masses moving across the earth's surface and how they can be used to forecast weather.	air mass, front, air pressure, warm front, cold front, precipitation, air currents
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	Student describes convection currents.	convection currents

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
4	Earth and Space Sciences	Atmospheric Processes and the Water Cycle	Student explains how ocean currents are caused by convection currents and explains the impact of ocean currents on large-scale weather patterns.	ocean currents, jet stream, el Niño, gulf stream
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student identifies, models, or diagrams internal structures of the earth and their characteristics.	mantle, inner core, outer core, crust, lithosphere
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student diagrams convection currents inside of the earth.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student explains the movement of plates over time.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student explains or models the differences between oceanic and continental plates.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student models and explains constructive forces on the earth.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student compares and contrasts types of rocks formed from different earth processes.	rock cycle, metamorphic, sedimentary, igneous
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student models and explains the appearance of the earth caused by destructive forces (i.e., weathering and erosion).	constructive, weathering , erosion
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student makes use of common rock and mineral identification tests to identify rocks and minerals, including common Montana rocks and minerals.	mineral, rock, hardness, streak, luster
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student lists how rocks and minerals are used in daily life.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student explains the importance of the mining industry [in Montana] and the uses of rocks and minerals.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student diagrams the interaction between igneous, sedimentary, and metamorphic rocks through the rock cycle.	

GRADE LEVEL		SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student identifies major geologic divisions of time.	Cenozoic Era, Mesozoic Era, Paleozoic Era, Precambrian
4	Earth and Space Sciences	Composition, Structure and Processes of the Earth	Student categorizes the predominant organisms that appear within each major division of geologic time.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student explains, using a model, how the Earth rotates and revolves around the sun.	rotation, revolution, orbit, axis, solstice, climate zone, Northern/Southern Hemisphere, latitude, elevation, equator
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student identifies Earth's climate zones and their key characteristics and how Earth's tilt and revolution affects climate zones.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student explains how Montana's location on Earth influences Montana's climate.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student predicts how a change in planetary movement would change Earth's days, seasons, years and climate.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student describes the earth, moon, planets, and other objects in space in terms of relative size and structure.	planet, moon, orbit, period of rotation, year, day, gravity, force
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student identifies that planets in our solar system have different lengths of orbits and periods of rotation.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student discusses how length of orbit and period of rotation affects length of years and days, and compares and contrasts the length of days and years on different planets.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student can describe the role of gravity in the orbit of moons around planets and planets around the sun.	

	GRADE LEVEL	SIXTH-EIGHTH	Student will be able to...	
MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student defines scientific theory as an explanation supported by rigorous testing and multiple lines of evidence.	scientific theory, evidence, solar system, gas, dust, accretion
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student explains that the sun and planets formed from the accretion of dust and gases.	
4	Earth and Space Sciences	Composition, Structure and Processes of the Universe and the Earth's Place In It	Student identifies how planets, such as the Earth, changed after their formation.	
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student researches a variety of science and technological fields and will identifies and describes a variety of occupations within the field of science and the field of technology.	occupations, science, technology, science fields (life science, earth science, engineering, physical science)
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student identifies and describes uses of technology unique to specific occupations within each field of science.	
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student identifies a local current event or problem involving science.	
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student researches and summarizes the scientific issues relevant to that local current event or problem. Student presents and discusses the research on local scientific issue.	
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student identifies and describes methods scientists use to collaborate and share scientific findings with other scientists.	current event, problem, issue, research, summarize, collaborate, relevant
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student identifies and describes methods scientists use to share scientific findings with the public.	
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student explains environmental impacts of a local current event or problem.	environmental impact, proposed solutions

GRADE LEVEL

SIXTH-EIGHTH

Student will be able to...

MT Content Standard	Discipline	Measurement Topic	3.0 Proficiency	Vocabulary
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student proposes solutions to a local current event or problem.	
5	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student investigates how science and technology have an impact on Montana American Indians.	
6	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student identifies and describes examples of technological advances throughout history, including Montana American Indian examples.	
6	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student explains how technology advances science understanding. Student identifies and explains scientific discoveries influenced by these technologies.	
6	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student identifies and describes the importance of various physical, life, and earth scientists and their discoveries.	
6	Nature of Science	Impact of Scientific Development on Communities, Cultures, and Societies	Student explains the impact of science changing human understanding of the natural world on past and present societies.	

HIGH SCHOOL PROFICIENCIES BY COURSE

9th GRADE INTEGRATED SCIENCE

Students will be able to...

MT Content Standard	Measurement Topic	3.0 Proficiency	Vocab
1	scientific method	Students will explain and demonstrate the steps in the scientific method.	Testable question, independent variable, dependent variable, hypothesis, experiment, investigation, qualitative, quantitative, error analysis, evidence, model, valid
1	Experimental Design	Students will model and design an experiment using proper variables and controls by generating a valid hypothesis and a testable question.	
1	Scientific Theory	Students explain the concept of scientific theory.	
4	Plate Tectonics Movement	Students describe the independent movement of Earth's crustal plates.	Continental drift, plate tectonics, subduction, convergent, divergent, transform, lithosphere, asthenosphere, sea floor spreading, convection
4	Plate Tectonic Theory	Student describes the observations and evidence that led to the formation of the theory of plate tectonics	
4	Plate Tectonics Convection	Student models the interaction of heat-driven convection and the movement of the plates.	
4	Plate Tectonics Plate Boundaries	Student identifies the types of plate boundaries.	
4	Plate Tectonics Interaction and Product	Student models ways plates interact at plate boundaries and the outcome of that interaction.	
4	Plate Tectonics and relation to geologic settings	Student relates earthquakes and volcanic activity to plate boundaries and other geologic settings.	magma, viscosity, lava, seismic waves, stress, strain, fault
4	Rocks and Minerals	Student defines minerals.	
4	Rock and Mineral Identification	Students will classify minerals according to their chemical and physical properties using proper lab techniques.	hardness, streak, luster
4	Rocks and Minerals/Environments and Processes	Student describes environments and processes that lead to the formation of various minerals.	
4	Rocks and Minerals/Rock Cycle	Student describes the rock cycle and its processes.	deposition, erosion, weathering, igneous, sedimentary, metamorphic

9th GRADE INTEGRATED SCIENCE

Students will be able to...

MT Content Standard	Measurement Topic	3.0 Proficiency	Vocab
4	Rocks and Minerals/Rock Identification	Students will classify rocks according to their chemical and physical properties using proper lab techniques.	
4	Rocks and Minerals as Resources	Students will identify various rock and mineral resources, how they are obtained and their value to modern society and Native American culture.	ore, vein, mining
4	Fossils as evidence of change over time	Student explains how various fossils show evidence of past life.	index fossils, fossil record, extinct, geologic time
4	Fossils/geologic time	Student models the scale of geologic time.	
4	Fossils/Relative and Absolute Dating	Student interprets rock layers using principles of relative and absolute age dating.	
4	Forecasting	Student identifies measurable weather related variables and technology commonly used in forecasting.	temperature, relative humidity, barometric pressure, dew point, wind, precipitation
4	Fronts, Air masses and Pressure Systems	Student describes fronts, air masses, and pressure systems and how they relate to cloud formation and precipitation.	Air mass, wind, Jet Stream, front, pressure system, weather, convection, water cycle, tornado, hurricane
4	Energy transfer and local geography	Discuss and analyze how local geography effect energy transfer and weather patterns.	Ccoriolis effect, wind belts, ocean currents, latitude, elevation, climate, heat transfer, El Nino/La Nina, ozone layer
4	Climate	Student identifies the geographic factors that influence climate.	climate, climate zones
4	Climate Change	Students will identify and explore factors both human and natural affecting global climate change.	climate change
4	Origin of the Universe	Student can define the Big Bang Theory and describe and summarize evidence supporting it.	Big Bang Theory, nebula, nova, nuclear fusion
4	Star Lifecycle	Students will be able to draw and describe the life cycle of a star.	star
4	Formation of the solar system	Student explains the current theories of the formation of a solar system and describes the characteristics of each of the planets.	planet, solar system
4	Galaxies	Student defines and describes the shape of the Milky Way Galaxy and our place in it.	galaxy
2	Structure of Atoms	Student compares and contrasts subatomic particles in relation to their relative masses, charges and location.	electron, proton, neutron, element, isotope, atomic mass, atomic number

9th GRADE INTEGRATED SCIENCE

Students will be able to...

MT Content Standard	Measurement Topic	3.0 Proficiency	Vocab
2	Atomic Structure and Forces	Student compares and contrasts the subatomic particles and their organization within an atom.	electrical force, nuclear force
2	Structure of an Atom and its Isotopes	Student compares and contrasts how subatomic particles differ in isotopes.	
2	Fission and Fusion	Student compares and contrasts nuclear fission and nuclear fusion, and provides an example of each.	
2	Radioactive Decay	Student explains and provides an example of radioactive decay.	
2	Periodicity	Student demonstrates a complete understanding that a series of repeating patterns organize the Periodic Table.	
2	Valence Electrons	Student identifies the number of valence electrons of an element utilizing the Periodic Table.	valence electrons
2	Ionic and covalent bonds and their relation to ions	Students will describe the formation of ions and will be able to compare and contrast covalent and ionic bonding.	ions, chemical bond
2	Chemical Changes	Students correctly use experimental design and a chemical formula to indicate a chemical change has occurred.	reactants, products, exothermic, endothermic
2	Physical Change	Students correctly use experimental design to indicate physical changes with a substance have occurred.	melting, freezing, sublimation, deposition, condensation, boiling, evaporation
2	Conservation of Mass	Student defines the law of conservation of mass and provides examples of its application	law of conservation of mass
2	Energy transfer and local geography	Student measures and calculates values from a data set or experiment that relates energy transfer to properties of matter.	
2	Relationship of Energy and Matter	Student describes, with detail, the particulate level relationship between energy transfer and properties of matter.	
2	Force and Acceleration	Student understands and uses $F=ma$ to describe the relationship between force and acceleration in uniform motion.	
2	Kinematic Equations	Students apply equations to describe simple motion of objects.	force, mass, acceleration, velocity
2	Types of Forces	Student manipulates information to describe, with detail, the forces acting upon an object in a given context.	inertia, gravitational force, electromagnetic force

9th GRADE INTEGRATED SCIENCE

Students will be able to...

MT Content Standard	Measurement Topic	3.0 Proficiency	Vocab
2	Friction	Student differentiates between static and kinetic friction and explains the roll of friction as a force that opposes motion.	
2	Newton's Three Laws	Student describes situations that illustrate Newton's Three Laws of Motion.	
2	Electromagnetic Forces	Student describes electromagnetic force as a relationship between magnetism and electricity.	
2	Kinetic and Potential Energy	Student differentiates between kinetic and potential energy.	energy, potential energy, kinetic energy
2	Mechanical Energy	Student explains the relationship between kinetic energy and potential energy in a closed system as mechanical energy.	
2	Conservation of energy	Student describes the concept of conservation of energy and applies it to the transfer/transformation of energy in a closed system over time.	
2	Thermal Energy	Students will describe thermal energy using temperature as a measure of heat.	temperature, heat
2	Kinetic Molecular Theory	Student utilizes kinetic molecular theory to describe changes in thermal energy, heat and temperature at the particulate level.	
2	Waves/longitudinal and transverse	Student is able to illustrate and describe features of mechanical waves differentiating between longitudinal and transverse.	amplitude, wavelength, frequency, period
2	Wave Forms and Energy Transfer	Students will describe the transfer of energy through waves and how it is related to the media in which it is transferred in.	
2	Electromagnetic Spectrum	Students will define the electromagnetic spectrum and compare and contrast the various frequencies.	electromagnetic spectrum, photon, reflection, refraction
2	Reflection, Refraction and Absorption	Student describes how waves can superpose, bend, reflect, refract and be absorbed as well as relate these properties to wavelength.	
2	Conductors and Insulators	Student classifies materials as conductors or insulators as well as describes properties of each.	current, resistance, voltage, power, conductor, insulator

Course: Biology, Grade 10

Students will be able to...

MT Content Standard	Measurement Topic	3.0 Proficiency	Vocabulary
3	Structure and Function of Cells and Organisms	Student recognizes and/or identifies and explains common structures of all cells	cell membrane, ribosome, genetic material, all organelles
3	Structure and Function of Cells and Organisms	Student recognizes and/or identifies the similarities and differences of prokaryotic and eukaryotic cells	prokaryote, eukaryote
3	Structure and Function of Cells and Organisms	Student recognizes and/or identifies the similarities and differences of animal and plant cells, and the relationships between the products and reactants of photosynthesis and cellular respiration	glucose, chloroplast, CO ₂ , O ₂ , ATP, anaerobic, fermentation
3	Structure and Function of Cells and Organisms	Student explains the process of diffusion and osmosis with regard to concentration gradient and knows and explains the roles of macromolecules	organic molecules, proteins, carbohydrates, lipids, nucleic acids
3	Structure and Function of Cells and Organisms	Student compares and contrasts the structures and basic functions of DNA and RNA.	nucleotide, helical structure, F.Crick, J. Watson
3	Structure and Function of Cells and Organisms	Student identifies complementary base pairs.	A-C-T-U, MRNA, TRNA, RRNA,
3	Structure and Function of Cells and Organisms	Students describe the role of ATP in living cells, describes and models the conversion of stored energy into usable cellular energy ATP	cellular respiration ATP, ADP, Aerobic, anaerobic, mitochondria
3	Structure and Function of Cells and Organisms	Student compares and contrasts aerobic and anaerobic respiration, and states and explains the chemical reactions of cellular respiration	CO ₂ , O ₂ , H ₂ O, glucose, ATP
3	Structure and Function of Cells and Organisms	students identify, describe, and contrast the major stages of mitosis and meiosis	cell division, cell cycle, cytokinesis, All phases, spindle, fiber
3	Structure and Function of Cells and Organisms	student explains why cells must undergo mitosis and meiosis, and differentiates between haploid and diploid chromosome numbers	meiosis 1 and 2, gamete, diploid, haploid, homologous pair, zygote,
3	Structure and Function of Cells and Organisms	student identifies processes that maintain homeostasis and gives examples of the importance of homeostasis	equilibrium, feedback inhibition
3	Structure and Function of Cells and Organisms	Student explains the purpose and process of DNA replication, transcription, and translation.	protein synthesis, gene, DNA polymerase,
3	Principles of Heredity and Related Concepts	Student explains the relationship between DNA and heredity	sex-linked inheritance, co-dominance, pedigree

Course: Biology, Grade 10

Students will be able to...

MT Content Standard	Measurement Topic	3.0 Proficiency	Vocabulary
3	Principles of Heredity and Related Concepts	student summarizes the Laws of Segregation and Independent Assortment and how the process of meiosis produces genetic recombination	heredity, crossing over, complete dominance,
3	Principles of Heredity and Related Concepts	Student explains the differences between dominant and recessive alleles and distinguishes between genotype and phenotype using the Law of Probability and Punnett Squares to predict genotypic and phenotypic ratios	Punnett Square, Mendel
3	Principles of Heredity and Related Concepts	Student explains that some traits are determined by multiple factors	genetics, polygenetic traits, multiple alleles, co-dominance
3	Principles of Heredity and Related Concepts	student distinguishes between sex chromosomes and autosomes and explains how sex-linked inheritance influences some genetic traits	genetic engineering,
3	Principles of Heredity and Related Concepts	Student defines genetic mutation, identifies some of the major causes of mutations, and explains how mutations influence genetic expression	autosomal disorders, pedigree, sex chromosomes, chromosomal disorders
3	Principles of Heredity and Related Concepts	student explains the concept of nondisjunction and its results	chromosomal disorders
	Relationships among organisms in the Physical Environment	student explains the numerous biogeochemical cycles	nutrients, evaporation, transpiration, nitrogen fixation, denitrification, primary productivity, limiting nutrients
3	Relationships among organisms in the Physical Environment	student classifies organisms as either heterotroph or autotrophs and explains similarities and differences between them	consumers, herbivores, carnivores, chemosynthesis,
3	Relationships among organisms in the Physical Environment	student differentiates between food chain and food web and explains the trophic levels in a pyramid model in detail	rule of ten, ecological pyramid,
3	Relationships among organisms in the Physical Environment	student recognizes that the sun is the ultimate source of energy in most ecosystems can explain the process of photosynthesis and differentiates between abiotic and biotic factors in ecosystems	food chain, web, trophic level, energy pyramid, biomass pyramid, pyramid of numbers
3	Relationships among organisms in the Physical Environment	student can describe the concept of biomes and can describe how they are influenced by abiotic and biotic factors	tolerance, microclimate, canopy understory, deciduous, all ten biomes, niche, competition, limiting factors, population

Course: Biology, Grade 10

Students will be able to...

MT Content Standard	Measurement Topic	3.0 Proficiency	Vocabulary
3	Relationships among organisms in the Physical Environment	student understands the concept of carrying capacity and predicts relationships of population dynamics	dependent/independent factors, population density, limiting factor, predator -prey,
3	Relationships among organisms in the Physical Environment	student compares and contrasts the symbiotic relationships that exist between species and how communities progress through a series of changes	dependent/independent factors, population density, limiting factor, predator -prey,
3	Biological Evolution and the Diversity of Life	Students lists and explains the characteristics of classification and can explain the differences and similarities within different levels of organization	taxonomy, Linnaeus, phylogeny, derived character, molecular clock, cladogram, kingdoms, domains etc.
3	Biological Evolution and the Diversity of Life	student explains the importance of binomial nomenclature and construct and use dichotomous keys to classify plants and animals	classification, taxonomy, species, nomenclature, domain
3	Biological Evolution and the Diversity of Life	student recognizes that evolution involves a change in allele frequencies in a population across successive generations	gene pool, relative frequency, polygenic genetic equilibrium, Hardy/Weinberg Principle, fossil, isolations, finches, Galapagos
3	Biological Evolution and the Diversity of Life	a student explains the theory of evolution through natural selection and other factors that influence a population	Darwin's Theory of Evolution, fossil, theory, Galapagos, Hutton, Malthus, Lamarck, peppered moths, natural selection
1	Historical Development and Technology	Student recognizes and can appropriately utilize a variety of microscopes and describe their uses	compound light microscope, micrometer, field of view, depth of field,
1	Scientific Investigation	students through the inquiry process demonstrate the ability to design, conduct, evaluate and communicate the results and form reasonable conclusions of scientific investigations	valid, experimental design, model, evidence, qualitative, quantitative, error analysis
5	Impact of Scientific Development on Communities, Cultures, and Societies	students through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures, and societies	occupations, science, technology, science fields(life, earth, engineering etc), current events, problem, issue, research, collaborative, relevant, summarize, environmental impact, proposed solutions
6	Historical Development and Technology	students understand historical developments in science and technology	timeline, inquiry, famous scientists,

GRADE 12 PHYSICS

Students will be able to...

MT Content Standard	Measurement Topic	Curriculum Break-down Topics	3.0 Task
1.2.A,D	Inquiry/investigations	metric measurements	Student will apply correct metric units to gather data, including analysis and conversion of units
1.2.B	Inquiry/investigations	quantitative problem solving	Student will apply mathematical analysis to data to solve for appropriate variable, and to provide context for a set of data.
1.2.E, F	Inquiry/investigations	graphing and interpretations	Student will design and construct a graph with correct placement of dependent & independent variables, and identify possible sources of error.
	Inquiry/investigations		Student will interpret trends in data using graphical analysis and identify direct & inverse proportions.
2.5	Interaction of M & E	Kinematics: Study of Motion	Student will apply kinematic equations describing motion of objects to solve complex problems.
2.5	Interaction of M & E	Vectors versus scalars	Student will correctly use and differentiate between scalar and vector quantities in describing motion.
1.2, 2.5	Interaction of M & E	Graphical analysis and problem solving of motion	Student will analyze displacement-time, velocity-time and acceleration-time graphs to describe the motion of an object.
2.5	Interaction of M & E	Force and Acceleration Relationships	Student will apply the concept of $F = ma$ to solve dynamics problems.
1.1, 2.5	Interaction of M & E	Vector addition in 1 and 2 dimensions	Student will determine the resultant of several vectors acting concurrently.
2.5	Interaction of M & E	Friction	Student will differentiate between static and kinetic friction. Student will describe friction as a force opposing motion and will solve equations to determine the coefficient of friction and can purposefully apply this knowledge.
2.5	Interaction of M & E	Projectile Motion	Student will differentiate between the vertical and horizontal components of projectile motion and solve related problems
2.5	Interaction of M & E	Circular Motion	Student will describe circular motion in terms of force, acceleration and velocity, and solve related problems.
2.5,5.1, 6.1	Interaction of M & E	Kepler's Laws of planetary motion	Student will state Kepler's Laws and relationships to gravity.
2.5, 6.1	Interaction of M & E	Newton's Law of Gravitational Force	Student will manipulate equations to relate gravitational force, mass and distance.
2.5	Interaction of M & E	Momentum/Impulse	Student will apply the Law of Conservation of Momentum to solve problems involving collisions and explosions

GRADE 12 PHYSICS

Students will be able to...

MT Content Standard	Measurement Topic	Curriculum Break-down Topics	3.0 Task
2.5	Interaction of M & E	Force, Work and Power	Student will differentiate between force, work and power and solve related problems
2.5, 2.6	Interaction of M & E	Simple Machines	Student will identify, build, describe, measure and analyze examples of the six simple machines and solve related problems, including efficiency and mechanical advantage.
2.5	Interaction of M & E	Mechanical Energy	Student will differentiate between gravitational potential energy, elastic potential energy and kinetic energy. Student will explain the conservation of kinetic and potential energies in an ideal system, and solve problems involving energy conversions.
2.6	Interaction of M & E	Thermal Energy	Student will define thermal energy as the total kinetic energy of particles, describes heat as the transfer of thermal energy, and defines temperature as the average kinetic energy.
2.4, 2.6	Interaction of M & E	Specific Heat/heat transfer	Student will describe the process of heat transfer from areas with high thermal energy to areas of low thermal energy, with correlations to specific heat.
2.7	Interaction of M & E	Temperature Changes VS Phase Changes	Students will solve problems and analyze graphs relating to temperature and phase changes of matter.
2.7	Interaction of M & E	Types of Waves	Student will illustrate and describe features of mechanical waves. Student will describe the transfer of energy through a wave. Student will differentiate between a longitudinal and transverse waves. Student will describe how wave properties are related to the medium they are transferred through.
2.7	Interaction of M & E	Wave Properties	Student will apply wave speed, frequency, period, wavelength to solve related problems.
	Interaction of M & E	Wave Characteristics	Students will describe and differentiate reflection, refraction, diffraction and interference using models and lab experiences.
2.7	Interaction of M & E	Sound	Student will classify sound as a longitudinal wave and relate wave properties of frequency, amplitude and harmonic content, with human perceptions of pitch, loudness and quality.
2.7, 5.1, 6.1	S & P of Energy	Light/Electromagnetic Spectrum	Student will classify light as a transverse wave and relate wave properties of frequency, speed, wavelength and energy. Students will recognize the dual wave-particle nature of light.

GRADE 12 PHYSICS

Students will be able to...

MT Content Standard	Measurement Topic	Curriculum Break-down Topics	3.0 Task
2.4, 2.7	Interactions of E & M	Light and Matter Interactions	Students describe how substances are able to absorb and emit electromagnetic radiation.
2.4, 2.7	Interactions of E & M	Optics	Student will describe how light can reflect, refract, diffract and interfere.
2.4, 2.7	S & P of Energy	Electricity & Magnetism	Student will identify, measure, calculate and analyze relationships associated with electricity and with magnetism.

Grades K-2

Science Rubrics

KINDERGARTEN

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Kindergarten**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Safely do a scientific investigation using step by step directions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Following teacher guided investigation, students will complete a scientific experiment using the appropriate steps and procedures.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Observe, scientist, same/different, color, size, sort, record, question, experiment • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Safely do a scientific investigation using step by step directions without demonstrating complete understanding. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Following teacher guided investigation students will complete a scientific experiment using the appropriate steps and procedures with some errors.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Will ask questions based on observations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Ask at least two related and or relevant questions that are associated to the topic that is being observed.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as: <ul style="list-style-type: none"> - Will ask questions, with some errors, based on observations. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Ask at least one question that is related to the topic that is being observed.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Make observations using the five senses. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Uses five senses to make observations drawing a picture or explaining observations about which sense that is being taught. • Recognizes each of the body parts that are associated with the five senses.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Sight, sound, taste, touch, smell • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Make observations using the five senses without complete understanding. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Drawing a picture or explaining, with some assistance, observations about which sense that is being taught. • Recognizes some of the body parts that are associated with the five senses.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify measurement tools and choose the appropriate tool to measure time, temperature, mass, and length. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using the document camera students will be introduced to the different measuring tools and the use for each tool. • Choose the best tool to measure time, temperature, mass, length, and liquid mass.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Beaker, clock, magnifying glass, ruler, scale, thermometer • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identify measurement tools and choose the appropriate tool to measure time, temperature, mass, and length with some errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using the document camera students will be introduced to the different measuring tools and the use for each tool. • Choose the best tool most of the time, to measure time, temperature, mass, length, and liquid mass.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structures and Properties of Matter**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students can sort an object by its color, shape, and size. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Independently sort a variety of manipulatives by their color, shape, and size. • Explain at least two sorting rules for how they sorted groups of objects.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Color, group, motion, shape, size • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Can sort an object by its color, shape, and size with some understanding. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Working in a group setting to sort a variety of manipulatives by their color, shape, and size. • Explain at least one sorting rule to describe a group of objects.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifies light vs. dark in a variety of contexts. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Sorting cut out images of items that produce light or dark. (lamps, flashlights, sun, moon, stars, light bulbs, fire, day and night) • Using a flashlight produce light in a dark room and create shadows using hands. • Draw a picture of day vs. night or light vs. dark.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Dark, light, shadow • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifies light vs. dark with some errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Draw a picture of self at a time of day that would be light or dark. • Sorting cut out images of items that produce light or dark using only light or only dark. (one attribute instead of both)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Forces and Motion**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Showing different ways objects can move (zig zag, round and round, back and forth, fast and slow). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using three objects (example using cars, their body, and a ball) demonstrate ways the objects can move. Using crayons and paper draw the way objects would move if they were zig-zaging, going round and round, etc.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: zig zag, round and round, back and forth, fast and slow Recognizing and recalling isolated details such as: -Showing different ways objects can move (zig zag, round and round, back and forth, fast and slow) with some errors or omissions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Using two different objects (example using cars and a ball) demonstrate ways the objects can move. Using crayons and paper draw one way objects could move.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Forces and Motion**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifies magnets repel and attract objects. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using a variety of magnets and objects demonstrate what objects repel and attract throughout the room. • Sort objects that attract to a magnet and repel the magnet into two different buckets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Magnet, magnetism • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifies with inaccuracies, objects magnets repel and attract. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using a variety of magnets and objects demonstrate what objects repel and attract throughout the room with assistance from a peer or teacher. • Sort objects that attract to a magnet and repel the magnet into two different buckets with assistance from a peer or teacher.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structures and Properties of Energy**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe/show characteristics of light. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using flashlights, mirrors, and prisms, independently draw a picture of how the light reflects or bends. • Explain how light looks and the differences of what can be seen when it is light.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as: <ul style="list-style-type: none"> - Describe/show characteristics of light with some inaccuracies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using flashlights, mirrors, and prisms, in a group or with a partner, draw a picture of how the light reflects or bends. • Explain how light looks and the differences of what can be seen when it is light.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structures and properties of Energy**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe/show characteristics of magnetism. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Explain how/why objects are attracted to one side of a magnet and repelled on the other side.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as: <ul style="list-style-type: none"> - Describe/show characteristics of magnetism. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using paperclips demonstrate that magnets attract on one pole and repel on the other.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structures and properties of Energy**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe/show characteristics of motion. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using a graph tally off each time it takes to blow a variety of objects across the floor. • Explain how or why objects may take more or less breaths.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as: <ul style="list-style-type: none"> - Describe/show characteristics of motion with some inaccuracies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using a graph tally off each time it takes to blow an object across the floor. • Explain, with some errors, how or why objects may take more or less breaths.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structures and Properties of Matter**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify solids, liquids, and gases in a variety of contexts. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Sorting images of solid, liquids, and gases. • Draw a picture of a solid, liquid, or gas and label it.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Solid, liquid, gas • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifies with few errors, solids, liquids and gases. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Sorting images of solid, liquids, and gases. • Draw a picture of a solid, liquid, or gas and label it with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Demonstrates understanding of characteristics that make a living thing. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • List or draw things that a living thing needs to live and grow (eat, drink, etc.) • Draw a picture of a living thing and one thing that it needs to survive.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Plant, animal, living, life cycle, food, energy, change, make new ones (reproduce), make waste (respire, excrete), respond • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Demonstrates understanding of characteristics that make a living thing with inaccuracies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • List or draw things that a living thing needs to live and grow (eat, drink, etc.) • Name one living thing and one thing that it needs to survive.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Demonstrates an understanding of characteristics that make a non-living thing. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Draw a picture of three non-living things.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Non-living • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Demonstrates understanding of characteristics that make a non- living thing with inaccuracies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Draw a picture of at least one non-living thing.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying and classifying living and non-living things using similarities and differences. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Sort images using similarities and differences of animals and plants into separate groups with multiple examples.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Similar, different • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying and classifying living and non-living things using similarities and differences with limited details. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Sort images using similarities and differences of animals and plants into separate groups with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition and Structure of the Universe and the Earth’s Place in It**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Defines or shows that Earth is one of the planets. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Circle, color, and label the planet Earth on a worksheet of the solar system. • Explain that Earth is the third planet from the sun in our solar system.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Planet, Earth • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Demonstrates beginning understanding that defines or shows that Earth is a planet. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Circle and color the planet Earth on a worksheet of the solar system.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition and Structure of the Earth**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • List/draw Earth’s features (mountain, lake, hill, valley, ect). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using photographs, flashcards and computer clip-art students identify earth’s landforms. • Draw a picture of three of Earth’s land features independently.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Mountain, lake, hill, valley, volcano, ocean, land, water, river • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Lists and or draws Earth’s features (mountain, lake, hill, valley, ect) with inaccuracies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using photographs, flashcards and computer clip-art students identify earth’s landforms with assistance from teacher. • Draw a picture of one Earth feature.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition and Structure of the Earth**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Creates an accurate model of an earth feature. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Create a volcano using clay. • Erupt a volcano using baking soda, vinegar, and red food coloring.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Creates a model of a local earth feature with some errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Create a volcano using clay with assistance. • Erupt a volcano using baking soda, vinegar, and red food coloring with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition and Structure of the Universe and the Earth’s Place in it**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explains and or draws that there are different objects in space. (stars, moon, planets) <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Draw and label three different objects found in space. • Describe two attributes of three objects found in space.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Stars, moon, planets • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Explains and or draws that there are different objects in space with inaccuracies. (stars, moon, planets) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Draw and label one object found in space. • Describe one attribute of an object found in space.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Historical Development and Technology**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Name examples of technology. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Walking around the school students will identify different technology. • List some forms of technology using pre-made cue cards.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Technology, computer, calculator • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Name examples of technology with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Walking around the school students will identify different technology. • Draw some forms of technology using pre-made cue cards.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Historical Development and Technology**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Show how to use technology. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstrate proper use of technological devices such as turning on and off, using the mouse, and use of basic programs such as kid pix.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifies and demonstrates a beginning understanding of the uses of technology. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Demonstrate proper use of technological devices such as turning on and off, using the mouse, and use of basic programs such as kid pix, with adult or peer assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe/draw tools that Montana American Indians have made in the past and present using items from nature. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using pictures of various Montana American Indians’ tools the students can match the pictures to the use (i.e. reeds for baskets, scraping tools for cleaning hides). • Explain the use of at least two tools.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - tools • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Describe/draw tools that Montana American Indians have made in the past and present with some inaccuracies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using pictures of various Montana American Indians’ tools the students can match the pictures to the use (i.e. reeds for baskets, scraping tools for cleaning hides).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Kindergarten**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify examples of how Montana American Indians use(d) natural resources. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Identify a plant, animal, and non-living item that Montana American Indians used for survival.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identify how Montana American Indians use(d) natural resources with some errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Draw a picture of a plant, animal, and/or non-living item that Montana American Indians used for survival.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of Science			
Measurement Topic: Historical Development and Technology			
Grade: Kindergarten			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Make observations and ask questions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will observe and ask questions on how plants grow. • Will draw/write in a journal about what is happening with their plant.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Knowledge, natural world, observe, question • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Make observations and ask questions without a complete understanding. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will observe and ask questions on how plants grow with assistance. • Will draw/write in a journal about what is happening with their plant with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of Science		
Measurement Topic: Historical Development and Technology		
Grade: Kindergarten		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identifying that people use their senses to learn about the natural world throughout history. <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> History, past Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Identifying that people use their senses to learn about the natural world throughout history with some errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> Using primary resources students will use their sense of sight to observe the picture. Have students match images that might go with that time of history in relation to the picture they are working on.
		<ul style="list-style-type: none"> Using primary resources, and with peer and/or teacher assistance, students will use their sense of sight to observe the picture. Have students match images that might go with that time of history in relation to the picture they are working on.

FIRST GRADE

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.			
Discipline: Nature of Science			
Measurement Topic: Scientific Investigations			
Grade: First			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Using the five senses to record observations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Having a check list of sight, sound, taste, smell, and touch students are able to record (journal) their sense responses while observing and investigating.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Experiment, investigation, procedure, testable observation, experiment Recognizing and recalling isolated details such as... -With assistance, students use the five senses to record observations <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Having a check list of sight, sound, taste, smell, and touch students are able to record (journal) with help, their sense responses while observing and investigating.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Helping to write a question for a testable experiment. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students generate ideas for an experiment question as a group and record ideas on a chart. They then vote on the best question.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Testable observation • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • In a teacher-led discussion, students are able to generate ideas for an experiment question with assistance, and record ideas to a chart. They then vote on the best question
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Following step-by-step directions in a simple, guided, investigation <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • With a teacher generated guide posted or printed for student use, children are able to check –off each step of an investigation as they complete it.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Investigation, procedure • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> • With assistance, Following step-by-step directions in a simple, guided, investigation - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With a teacher generated guide posted or printed for student use, with assistance, children are able to check – off each step of an investigation as they complete it.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explaining the purpose of an investigation <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • In a discussion format with the teacher , or as a matching game- students are able to identify the purpose of an experiment by reviewing the major elements of investigation.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> -purpose • Recognizing and recalling isolated details such as... <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • A Teacher-led discussion prompts students to identify the purpose of an experiment by reviewing the major elements of investigation. The class may choose from a list of options in answering the teacher questions.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Following the appropriate safety rules <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Scientific safety rules are printed on a poster and are reviewed by students before each investigation. Students may do a check-list to ensure all rules are followed.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • • Recognizing and recalling isolated details such as... <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Scientific safety rules are printed on a poster and are reviewed by the teacher with the students before each investigation. Students may do a check-list to ensure all rules are followed.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structures and Properties of Matter**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying objects according to color, size, texture, shape, and weight. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Referring to charts or diagrams to identify color, size shape, and texture and weight. • Independently sorting a variety of manipulatives by their color, size shape, and texture and weight.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Texture, weight • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - identifying objects according to color, size, texture, shape, and weight with some errors or omissions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Working in small groups to sort a variety of manipulatives by their color, size shape, and texture and weight.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structures and Properties of Matter**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Sorting objects according to color, size, texture, shape, and weight. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Working independently utilizing worksheets/ charts or diagrams to sort items by color, size shape, and texture and weight. Sorting physical objects by 1 or more attributes including color, size shape, and texture and weight. Utilizing a Smart board, to independently sort and move objects by attribute. Independently graphing the results
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Recognizing and recalling isolated details such as... sorting objects according to color, size, texture, shape, and weight with some errors or omissions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Working in groups or with assistance utilizing worksheets/ charts or diagrams to sort items by color, size shape, and texture and weight. Sorting physical objects by singular attributes at a time by color, size shape, and texture and weight. Utilizing a Smart board, to sort and move objects by attribute, with assistance. Graphing the results with a partner.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structures and Properties of Matter**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Observing behaviors of light while drawing light bending and bouncing. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Working independently using a variety of objects (flashlights, prisms, mirrors, curved glass etc.) and then draw their observations. Example: Moving a mirror in front of a light to observe bending and bouncing of the light.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Reflection, refraction, mirror, prism, bend, bounce. • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Observing behaviors of light while drawing light bending and bouncing, with some inaccuracies <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Working in a small group or with assistance using a variety of objects (flashlights, prisms, mirrors, curved glass etc.) and then draw their observations. Example: Moving a mirror in front of a light to observe bending and bouncing of the light.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structures and Properties of Matter**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Conducting simple experiments of light <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Shining a light through a glass jar filled with water, observing the refraction of light where water and air meet. • Summarizing what they have learned that light can do; in a web or graphic organizer.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... Conducting simple experiments of light with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Shining a light through a glass jar filled with water, observing the refraction of light where water and air meet. • Teacher-led discussion and completion of a web or graphic organizer to show (as a whole group) what students have learned that light can do.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structures and Properties of Matter**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Exploring shadows as they change throughout the day. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • With a partner: using a bright light, white paper, and puppets to show the differences in shadow size by placing light and/or puppets closer or further away from each other. • Observing the shape and size changes of shadows at different times of the day- i.e. morning and afternoon recesses.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - shadow • Recognizing and recalling isolated details such as... <p>Exploring shadows as they change, with assistance.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With a group: using a bright light, white paper, and puppets to show the differences in shadow size by placing light and/or puppets closer or further away from each other. • With a partner or group: Observing the shape and size changes of shadows at different times of the day- ie; morning and afternoon recesses.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structures and Properties of Matter**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Conducting simple experiments with light and shadows. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • With a partner: using a bright light, white paper, and puppets to show the differences in shadow size by placing light and/or puppets closer or further away from each other. Then tracing and measuring the shadow size to determine the differences.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Conducting simple experiments with light and shadows with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With a group: using a bright light, white paper, and puppets to show the differences in shadow size by placing light and/or puppets closer or further away from each other. Then tracing and measuring the shadow size to determine the differences.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structures and Properties of Matter**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Selecting and using appropriate tools for measurement of matter. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Showing pictures of different types of matter, students need to select the appropriate measurement tool for each. ie: worksheet, matching game or each student having a card with different pictures of tools.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> Balance, beaker, magnifying lens, measuring tape, ruler, scale thermometer, weight Recognizing and recalling isolated details such as... <p>Selecting and using appropriate tools for measurement of matter with some errors.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> In mixed ability peer grouping: showing pictures of different types of matter, students need to select the appropriate measurement tool for each. i.e. worksheet, matching game or each student having a card with different pictures of tools.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Relationships among organisms and their physical properties**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Listing the five needs of every living thing. (energy, habitat, water, nutrients, air) <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using the Smartboard/Web or a worksheet, students identify what every living thing needs, through matching, connecting, using a graphic organizer.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Listing most of the five needs of every living thing. (energy, habitat, water, nutrients, air) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using the Smartboard/Web or a worksheet, students identify most of what every living thing needs, through matching, connecting, using a graphic organizer.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Relationships among organisms and their physical properties**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying herbivores and carnivores. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • With a partner: Using the characteristics of the animals, view images to determine animal classifications of herbivores and carnivores. Examples of resources: Smartboard, Internet, photographs, videos, books, flashcards.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: herbivores, carnivores, food chain • Recognizing and recalling isolated details such as... Identifying herbivores and carnivores with some errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • In a group or with assistance: Using the characteristics of the animals, view images to determine animal classifications of herbivores and carnivores. Examples of resources: Smartboard, Internet, photographs, videos, books, flashcards.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Relationships among organisms and their physical properties**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Comparing and classifying herbivores and carnivores. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Independently or with a partner: Using a graphic organizer, on the Smartboard, computer, or a worksheet, students sort and organize animals into appropriate groups.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (vocabulary words here) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> • Comparing and classifying herbivores and carnivores with some omissions and errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With assistance in a small teacher-led group: Using a graphic organizer, on the Smartboard, computer, or a worksheet, students sort and organize animals into appropriate groups.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Relationships among organisms and their physical properties**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describing a food chain <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Example Read Aloud Book: <i>Who Eats What</i> by Patricia Lauber • Creating through story-telling or examples, students identify the hierarchy in a food chain through flannel board stories, creative play or acting out the cycle of the animal food chain.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... Describing a food chain with some errors or omissions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Recalling examples, students re-tell the hierarchy in a food chain through flannel board stories, creative play or acting out the cycle of the animal food chain.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Relationships among organisms and their physical properties**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Illustrating a food chain. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Making individual food chain picture books or poster: using information about habitats, herbivores and carnivores and their characteristics. (Children could draw pictures; create on the computer using clip-art or photos, cut-outs from magazines.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • Recognizing and recalling isolated details such as... <p>Illustrating a food chain with assistance.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Making a group or class food chain picture book or poster: using information about habitats, herbivores and carnivores and their characteristics. (Children could draw pictures; create on the computer using clip-art or photos, cut-outs from magazines.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying land features. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using photographs, flashcards, Smartboard and computer clip-art – students identify and give features of land forms. • Drawing a landscape picture incorporating all of the designated land features.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - earth, desert, land, mountain, volcano, valley • Recognizing and recalling isolated details such as... <p>Identifying land features without demonstrating complete understanding of the characteristics.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Following the teacher’s description of specific land forms, students can identify the corresponding land form from a collection of photographs, flashcards, Smartboard and/or computer clip-art. • Drawing a landscape picture incorporating some of the designated land features.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying water features <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using photographs, flashcards, Smartboard and computer clip-art : students identify and can give water features.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Water, lake, ocean, pond, river • Recognizing and recalling isolated details such as... - Identifying water features without demonstrating complete understanding of the characteristics <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Following the teacher’s description of specific water features students can identify the corresponding water features from a collection of photographs, flashcards, Smartboard and/or computer clip-art.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying objects in space, including: stars, moons, planets. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using photographs, flashcards, Smartboard and computer clip-art: students identify objects in space including stars, moons and planets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Stars, sun, moon, planets • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying objects in space, including: stars, moons, planets with some errors or omissions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Following the teacher’s description of specific objects of space students can identify the corresponding stars, sun, moon and planets from a collection of photographs, flashcards, Smartboard and/or computer clip-art.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Classifying objects in Space, including: recognizing the sun as a star, and the differences between stars and planets. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using a Smartboard, Space Video or flashcards students use the properties of stars/planets to classify objects in space into a T -Chart.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Star, sun, moon, planets • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Classifying objects in Space, including: recognizing the sun as a star, and the differences between stars and planets without demonstrating complete understanding of the characteristics. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • As a whole or small group: Using a Smartboard, Space Video or flashcards students use the properties of stars/planets to classify objects in space into a T -Chart.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Recognizing constellations as a group of stars in a pattern, and identifying common constellations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using a Smartboard, Internet site or computer image taken from a telescope, students are able to recognize patterns of stars which form common constellations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Big Dipper, North Star, constellations • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Recognizing constellations as a group of stars in a pattern, and identifying common constellations with some errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students can connect the dots of constellations to recognize and identify the common patterns of the star groups.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying the differences of day and night. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Brainstorming and generating a T-chart, students are able to distinguish examples and features of day and night activities.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - reflection • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying the differences of day and night with some errors or omissions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using acquired knowledge , students will generate two drawings; one depicting day activities and the other of night activities.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Showing and describing what causes day and night. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> With a partner, students are able to demonstrate the causes of day and night by using a globe and flashlight, as a hands-on model of the earth (globe) and the sun (flashlight) to depict the rotation of the earth and different times of sun exposure (day) and non-exposure (night).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: light, dark, day, night, sky Recognizing and recalling isolated details such as... <p>- Showing and describing what causes day and night with vague or incomplete description.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> As a class, students are able to distinguish the causes of day and night by using a globe and flashlight, as a hands-on model of the earth (globe) and the sun (flashlight) to depict the rotation of the earth and different times of sun exposure (day) and non-exposure (night).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Recognizing that the moon seems to change over time. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using a reference book, Smart board, Internet site or computer image taken from a telescope, students are able to name the phase of the moon in time-lapsed photos.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as • • Recognizing and recalling isolated details such as... <p>- Recognizing that the moon seems to change over time with limited understanding.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using a reference book, Smart board, Internet site or computer image taken from a telescope, students are able to describe the different moon phase shapes in time-lapsed photos.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying different kinds of weather. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using real-world references, Internet, video or photos/drawings, students can distinguish different types of weather.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Weather, temperature, wind, rain, snow, clouds • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying different kinds of weather, overlooking critical details. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With assistance, using real-world references, Internet video or photos/drawings, students can distinguish different types of weather.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identifying different features of weather conditions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Independently or With a Partner: Using a graphic organizer, students can compare and contrast different types of weather conditions. (Student(s) fill in a Venn diagram as to how the weather conditions compare.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> -Temperature Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying different features of weather, overlooking some critical details. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> In a Teacher Guided or Small Group Setting: Using a graphic organizer, students can compare and contrast different types of weather conditions. (Teacher fills in a Venn Diagram with children’s responses as to how the weather conditions compare.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Observing and clarifying the daily weather conditions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using the daily calendar and outside weather conditions, students observe and track the weather on a daily basis, for each month (Graph, calendar, weather log, tally chart).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Observation, degrees, Fahrenheit • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Observing and generally explaining the daily weather conditions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • As a whole group, with teacher assistance students are able to use the daily calendar and outside weather conditions, to observe and track the weather on a daily basis, for each month (Graph, calendar, weather log, tally chart).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identifying different types of clouds. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Independently: Using charts, Internet Video, photographs or outdoor observations students are able to identify different types of clouds.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> -clouds Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying most of the different cloud types. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students produce cloud facsimiles’ with their fingers in shaving cream on their desks. Students create cloud scenes with cotton on construction paper. (Construction paper has cloud type labels at the appropriate position in the sky. The cotton is stretched into the corresponding representing each cloud type.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Listing tools and technology used to observe objects in space. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using a matching or partial-completion worksheet, students can correlate appropriate tool names with tools or technology used to observe objects in space.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Satellite, Space Shuttle, Star Charts, Telescope. • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Listing tools and technology used to observe objects in space, with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students can verbally produce and correlate appropriate tool names with tools or technology used to observe objects in space, through matching.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and society.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Telling how technology helps us solve problems and make life easier. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Brainstorming with a teacher, students discuss technology and identify solutions to problems make life easier.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Problem, process, technology • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Demonstrates beginning understanding of how technology helps us solve problems and make life easier <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Brainstorming with a teacher, students identify some technological solutions to problems that make life easier.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and society.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identifying technology in schools and explaining how it is used. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> As a whole group, students brainstorm the technological tools that we use in school. The teacher lists the tools on one side of a T-chart. On the other side of the chart the teacher lists the students' responses as to how this technology is used.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as Recognizing and recalling isolated details such as... <p>- Identifying technology in schools and generally explaining how it is used.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> In small groups, through pictures, the students recognize technology used in the school and brainstorm explanations of how this technology can be used in the school.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and society.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying environmental problems. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Through read alouds, the students identify the environmental problems exhibited in the stories.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Environment • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Has a general sense of environmental problems. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • The teacher produces pictures as examples of environmental problems and through a discussion format the students identify the types of problems.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and society.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying how Montana American Indians use natural resources <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using OPI approved materials, examples books, internet or video clips, students identify, through a discussion format, how the Montana American Indians used the natural resources.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Natural resources • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying how Montana American Indians use natural resources with some omissions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • The teacher provides a list of natural resources on the board, while the students respond in a discussion format the appropriate ways the Montana American Indians used each resource.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and society.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Discussing how the Montana American Indians explain the natural world. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • In a whole group setting, the teacher reads Montana American Indian stories and legends. From the stories, the students discuss the ways in which the Montana American Indians explained the natural world.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Natural world • Recognizing and recalling isolated details such as... <p>- Without demonstrating complete understanding, discussing how the Montana American Indians explain the natural world.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • In small groups, the teacher lists the natural world occurrences on one side of a T-chart , while recording student generated responses of how the Montana American Indians explained these natural world occurrences.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and society.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **First**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identifying objects and/or tools that Montana American Indians have made in the past and present. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using resources from the Travelers' Rest Historical site, students can contrast and compare objects and tools that Montana American Indians used in the past to the objects and tools we use today. For example, providing tools used by the American Indians, the students select the appropriate tool used in the present.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Recognizing and recalling isolated details such as... <p>-Identifying objects and/or tools that Montana American Indians have made in the past and present, with assistance.</p> <p>- However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Through the use of a worksheet or matching flash cards, the students match the tools used by the American Indians in the past to the appropriate tools we use in the present.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of Science		
Measurement Topic: Historical Development and Technology		
Grade: First		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Recognizing that knowledge is gained through questioning and observations. <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: -knowledge, observe, question Recognizing and recalling isolated details such as... <p>-Has a general sense that knowledge is gained through questioning and observations.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> Students will observe and ask questions on how a butterfly changes in a life cycle. Students will journal the results they observe in each stage of a life cycle through stories and pictures.
		<ul style="list-style-type: none"> In a small group, the students will observe and ask questions on how a butterfly changes in a life cycle through stories and pictures. With assistance, the students will journal the results they observe in each stage of a life cycle.

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of Science			
Measurement Topic: Historical Development and Technology			
Grade: First			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Recognizing that everyone can use science to learn about the world. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using a read aloud or video, the students identify ways we use science to learn about the world. The students circle picture examples on a work sheet that identify ways we use science to learn about the world.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Demonstrating limited connections in everyone’s use of science to learn about the world. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Using a game or teacher led activity; the students recognize the ways we use science to learn about the world.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of Science			
Measurement Topic: Historical Development and Technology			
Grade: First			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Recognizing that people have used their senses to learn about their natural world throughout history. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using Native American Games, the students identify the senses needed to play the game in order to learn about the natural world.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> -history, past, natural world Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Demonstrates beginning s understanding that people have used their senses to learn about their natural world throughout history. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With assistance, using Montana American Indian Games, the students identify the senses needed to play the game in order to learn about the natural world.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

SECOND

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions of scientific investigations.		
Discipline: Nature of Science		
Measurement Topic: Scientific Investigations		
Grade: Second		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Safely do a scientific investigation using step-by-step directions <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: observe, scientist, same/different, color, size, sort, record, question, experiment, tools • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Safely do the step-by-step process of a scientific investigation with peer or adult assistance <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigation**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identifying what is being measured in the investigation <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> When growing plants, students will identify that growth can be measured. Students will use appropriate tools to measure growth of the plants.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: observe, scientist, same/different, color, size, sort, record, question, experiment, tools Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Tell what will be measured in the investigation with prompting <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> When growing plants, students will identify that growth can be measured. Students will use appropriate tools to measure growth of the plants with assistance for such things as using the measuring tool and knowing what is the starting and ending parts of the area to be measured.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content.	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes, and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Creating and separating mixtures • Comparing the similarities and differences of mixtures <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Create mixtures and separate them based on different physical properties (salt and sand; iron filings and soil; oil and water). • Explain what a mixture is through oral or written expression. Compare the similarities and differences of two mixtures using oral, written, or demonstration format.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Measure, mixture, separate, size, texture, filtering • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Creating and separating mixtures with assistance <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Draw pictures of creating mixtures and separating mixtures.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes, and interactions of physical and chemical systems.

Discipline: Physical Sciences

Measurement Topic: Structure and Properties of Matter

Grade: Second

Score 4.0		In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.					
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • listing physical properties and measuring the dimensions of objects • comparing the similarities and differences of objects <p>The student exhibits no major errors or omissions.</p>					<ul style="list-style-type: none"> • Make chart to classify properties (such as texture, taste, smell, sound, etc.). • Use chart to explain (orally or in written format) similarities and differences of objects to small group. • Make chart or graph to collect and record data of the dimensions of the objects being investigated. 	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content					
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Compare, differences, physical properties, similarities, measuring, inches, feet, graph • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Listing physical properties with assistance - Measuring dimensions of objects with assistance <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>					<ul style="list-style-type: none"> • In partners, the students will make chart to classify properties (such as texture, taste, smell, sound, etc.). • Chart may be drawn in picture format instead of written or may include a combination of writing and drawing. 	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content					
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.						
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.					
Score 0.0	Even with help, no understanding or skill demonstrated.						

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes, and interactions of physical and chemical systems.

Discipline: Physical Sciences

Measurement Topic: **Structure and Properties of Matter**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describing the three states of matter (solid, liquid, gas) • Describing the physical changes of matter (melting, freezing, evaporation, and boiling) and record the process of changing states of matter <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Create lists of items and categorize them into solids, liquids, and gases. • Create a poster showing the process of the changing states of matter and tell peers about this process in a small group setting, using the poster as a guide.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Solid, liquid, freezing, gas, matter, melting, thermometer • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - telling the three states of matter - describing the physical changes of matter and recording the process of changing states of matter with assistance from a peer or adult <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • From a given set of objects (pencil, rock, juice, water, balloon filled with air [tell the students to think of the air, not the balloon itself], etc.) the students will sort the objects into categories of solid, liquid, gas. • Have students draw a picture of the three states of matter (i.e. ice, water, steam).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: Second

		Grade: Second	Sample Tasks
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describing the life cycles of plants and animals (birth, growth, reproduction, death) <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Draw or make a model of the life cycles of a plant and of an animal and label each stage.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Adult, animal, change, development, egg, grow, life cycle, plant, reproduce, seed, species • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - list the four main steps in the life cycle of a plant or animal (birth, growth, reproduction, death) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • When given an example of the life cycle of a plant and of an animal, label each stage (birth, growth, reproduction, death).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Grouping plants and animals according to their characteristics <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Have students find pictures of plants in magazines, newspapers, on-line, etc. Using a large grid, have students place pictures of plants (or physical plants if available) in the appropriate columns. Repeat using the same plants, categorizing them differently by other characteristics. Then, categorize the same plants by finding two or more similar characteristics. Verbally describe the differences and similarities. • When categorizing animals, use the same procedure as for plants (see above).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Characteristics, classify • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - group plants and animals according to their characteristics with assistance <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Have students find pictures of plants in magazines, newspapers, on-line, etc. Using a large grid, have students place pictures of plants (or physical plants if available) in the appropriate columns. Repeat using the same plants, categorizing them differently by other characteristics. In partners or small group, verbally describe one difference and one similarity between each category. • When categorizing animals, use the same procedure as for plants (see above).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes, and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describing, giving examples, and creating a model of Earth’s natural features • Comparing and contrasting the characteristics of Earth’s natural features <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Draw pictures with labels showing all the land types and describe features (orally or in written format) distinctive to each natural feature. • Create a model of Earth’s natural features using clay. • In small groups, have each student compare and contrast three different natural features.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Desert, Earth, land, lake, mountain, ocean, pond, river, soil, valley, volcano, water, plain, plateau, stream, hill • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Giving examples of earth’s natural resources - Comparing and contrasting the characteristics of Earth’s natural features, with assistance from peers or an adult <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Label each natural feature when given a drawing depicting natural features. • In partners, create a model of Earth’s natural features using clay. • In small groups, have each student compare and contrast two different natural features.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes, and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Comparing and classifying rocks based on color and texture, and knowing that soil is made up of rocks <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given a set of various rocks, the student will group the rocks according to their color and then alternatively by their texture. The student will compare and contrast at least three different rocks either verbally, pictorially, or in writing.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Classify, rock, texture, color • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Description of texture: soft, hard, bumpy, smooth, able to be scratched by another object or not, layers or not, sharp, etc. with prompting <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a set of various rocks, the student will group the rocks according to their color and then alternatively by their texture. The student will compare and contrast two different rocks either verbally, pictorially, or in writing.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes, and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Listing and recording observations of a variety of fossils • Discussing how fossils are evidence of past life <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given pictures (or physical examples if possible) of fossils, students will create a chart in which to record things such as size, shape, what it looks like, interesting characteristics, etc. • Using the above chart, students share their findings with the class, describing in particular the fact that fossils are evidence of past living organisms.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Fossil, extinction, plant, animal, evidence • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Listing and recording observations of a variety of fossils, with assistance - Tell that fossils are evidence of past life <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a chart, students fill in data showing differences and similarities in size, shape, what it looks like, interesting characteristics, etc., with assistance from a peer or an adult. • Using the above chart, students share their findings with a small group or one-on-one with an adult, telling that fossils are evidence of past living organisms.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes, and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Knowing the parts of the water cycle and that it is a never-ending cycle <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students create a picture or model of the water cycle and label each part using arrows to show its cyclic nature.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Precipitation, evaporation, condensation, water • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - the parts of the water cycle, with assistance <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a drawing of the water cycle, students label the parts of the water cycle.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes, and interactions of Earth’s systems and other objects in space.

Disciplines: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifies and compares characteristics of different types of weather conditions <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • The student will name or list five different types of weather and their major attributes. • The students will graph or create a chart showing different types of weather over a month’s time.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Rain, snow, sleet, hail, sun, hot, cold, warm, thunder, lightening • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> • Identifies and compares characteristics of different types of weather conditions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • The student will name or list three different types of weather and their major attributes. • The students will graph or create a chart showing different types of weather over a month’s time with a partner or an adult.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes, and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Universe and the Earth's Place in it**

Grade: **Second**

Score 4.0		In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Knowing the Sun is a star, Earth is a planet, there are other planets in our solar system, Earth has one moon <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students may draw or make a model of the planets, Sun, and moon (in order).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> Earth, moon, stars, planet, Sun Recognizing and recalling isolated details such as... Knowing the Sun is a star, Earth is a planet, there are other planets in our solar system, Earth has one moon, with prompting <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students may draw or make a model of the planets, Sun, and moon and have assistance in putting them in order. Students may work in partners or small groups.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes, and interactions of Earth's systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Comparing and contrasting the four seasons • Contrasting the weather conditions of each season and the role of water in each season <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Cut pictures out of magazines, newspapers, or find them on-line and make a collage of the different seasons, including the types of clothing worn for each season. • Include in the collage what form water is in (rain, snow, ice, melting).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Weather, precipitation, winter, spring, summer, fall, autumn, rain, snow, sleet, hail, temperature, season • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Telling the names of the four seasons - Telling what weather is - Telling the state of water in each season (rain, snow, ice, melting) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Cut pictures out of magazines, newspapers, or find them on-line and make a collage of the different seasons. • Include in the collage what form water is in (rain, snow, ice, melting).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures, and societies.

Discipline: **Nature of Science**

Measurement Topic: **Historical Development and Technology**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describing technology in the community and how it is used in the community • Describing how technology solves problems and makes life easier <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Take a field trip to a local business that uses cutting-edge technology. After the field trip, have the students choose a problem and describe (in writing or verbally) how technology has solved the problem or made life easier with that particular problem.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Community, problem, technology • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Telling about one type of technology in the community - Telling one way that technology solves problems or makes life easier <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Take a field trip to a local business that uses cutting-edge technology. After the field trip, have the students choose a problem within the community. Working in small groups, the students will create a short skit showing the problem and how technology has made life easier.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures, and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying and discussing environmental problems <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Identify and describe the impact that environmental problems have on other living things (cyclic pattern indicating a chain of events).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Environment, issue, problem • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Telling what “environmental problem” means <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Describe one environmental problem and tell at least one impact it has on living things.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures, and societies.

Discipline: **Historical Development and Technology**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Second**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying examples of tools and how they were developed and used by Montana American Indians • Describing how tools make work easier <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using pictures of various Montana American Indians’ tools, have students match a description of what the tool was used for with the corresponding picture. • Have students prepare a skit showing two difficult tasks and how the job is made easier with two different tools.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Process, tool • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using pictures of various Montana American Indians’ tools, have small groups of students match a description of what the tool was used for with the corresponding picture. • Have students prepare a skit showing a difficult task and how the job is made easier with a tool.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of Science		
Measurement Topic: Impact of Scientific Development on Communities, Cultures, and Societies		
Grade: Second		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Asking questions about observations and identify tools that improve observations <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> Knowledge, observe, natural world, question Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> the names of common tools used in observations <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of Science		

- Sample Tasks**
- Students will observe how plants grow, asking each other questions about past, present, and future growth patterns, or other scenarios such as the effect of light/dark on plant growth.
 - Students will name and correctly use tools such as a ruler, microscope, or magnifying glass to observe plant growth.

- Students will observe how plants grow, asking each other questions about past, present, and future growth patterns, or other scenarios such as the effect of light/dark on plant growth.
- Students will name and correctly use tools such as a ruler, microscope, or magnifying glass to observe plant growth with peer or adult assistance.

Measurement Topic: Historical Development and Technology			
Grade: Second			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Describing how people have used their five senses to learn about the natural world throughout history <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Describe, draw, make a model, or act out four senses and how they have been used throughout history (i.e. sight: used to find medicinal plants, touch: used to learn about types of plants and animals that can be used for clothing).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> Hearing, senses, sight, smell, taste, touch, history, natural world Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Telling the five senses and how they are used in the natural world today and in the past <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Describe, draw, make a model, or act out two senses and how they have been used throughout history (i.e. sight: used to find medicinal plants, touch: used to learn about types of plants and animals that can be used for clothing) with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

GRADES 3-5

Science Rubrics

THIRD GRADE

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.		
Discipline: Nature of Science		
Measurement Topic: Scientific Investigations		
Grade: Third		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Formulating questions through the use of observations <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (observation, five senses) • Recognizing and recalling isolated details such as... Listing questions from observations <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> • Based on a demonstration (i.e., changing states of matter, soil erosion) student will generate questions in journal.
		<ul style="list-style-type: none"> • Based on a demonstration (i.e., changing states of matter, soil erosion) student will generate questions in journal, with assistance.

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Recognizing testable questions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Note: testable questions are those questions that can be answered through measurable data. Example: How much growth will be found in a bean plant over time? (Student uses a ruler to measure the plant daily and chart data.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (procedure, investigation, testable question, measure, observation) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - the definition of a testable question <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a list of testable and non-testable questions, the student circles all of the testable questions.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Following appropriate safety rules. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student demonstrates the use of the safety rules for each of the tools presented in class. Example: Role-play appropriate and inappropriate uses of tools.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (procedure, investigation, measure, observation) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Following appropriate safety rules with prompt <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student demonstrates the use of the safety rules for each of the tools presented in class with prompts. Example: Role-play appropriate and inappropriate uses of tools.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Choosing appropriate metric measurement and correctly displaying data using simple tables and graphs. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given an item to measure, student is required to choose the appropriate metric tool that measures the item. Example: Given the task to measure the growth of a bean plant, the student is asked if they would use centimeters or meters. • The results are correctly displayed and labeled in a visual aid to show understanding.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (tables, metric system, volume, liter, mass, gram, kilogram, scale, balance, length, distance, millimeter, centimeter, meter, meter stick, time, seconds, graph, graduated cylinder, thermometer, Celsius) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - matching appropriate metric measurements to the data being used <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given choices to measure the classroom (length of desk, etc.), student can state appropriate tool, i.e., centimeter or meter. • With assistance, the results are correctly displayed and labeled in a visual aid to show understanding.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> ● Comparing results to testable questions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> ● Given the data from an experiment, student compares how the results related to their testable question. Example: How much growth will be found in a bean plant over time? (Student looks at the data and recognizes the actual data and generalizes results, i.e., rapid growth at first, then slowing.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> ● Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (data, results) ● Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying results to testable questions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> ● After observing an experiment, student can give a simple explanation to the testable question.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Using models to demonstrate understanding <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student constructs models to display concepts in science, i.e., solar system, habitat, etc.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (model) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying models to demonstrate understanding <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student observes a pre-made model and identifies basic concepts represented by the model.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Summarizing ways that some American Indians used observation for survival. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • See Indian Education for All website: www.opi.mt.gov/pdf/indianed/resources/ConnectingCultures.pdf Read portion on buffalo entitled, The Buffalo. Students will create the migration path of the Native Americans and the buffalo on a given Montana map. • Note: Lolo Trail was a Easterly path for the Nez Perce
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (natural phenomenon, animal and insect behaviors, weather changes) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - identifying ways that some American Indians used observation for survival <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • See Indian Education for All website: www.opi.mt.gov/pdf/indianed/resources/ConnectingCultures.pdf Read portion on buffalo entitled, The Buffalo. Students will create the migration path of the Native Americans and the buffalo on a given Montana map. This is done with assistance for the 2.0 student.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Classifying and comparing objects according to physical properties. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given a set of objects, i.e., rocks, shells, buttons, student chooses a physical property and classifies the objects based on two or three of the properties. (properties = color, shape, size, mass, texture.) Note: same set of objects will be used throughout this assignment.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (classify, physical properties, mass, texture, volume, solid, liquid, gas, matter, substance, characteristic) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Making observations of physical properties <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a set of objects, i.e., rocks, shells, buttons, student chooses a physical property and classifies the objects based on the property.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Investigating physical properties in matter in which the size, shape, and state of matter change. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using the following: cube of butter and ice cube the student designs an experiment to show the change of state from a solid to a liquid. Student journals the results. The teacher can demonstrate changes of state from solid to gas using dry ice. Student also journals the results of the teacher demonstration to show understanding.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (Physical change, physical property, matter, solid, liquid, gas) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying the physical change with regards to size, shape and state of matter <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student is given a set of pictures showing the differing changes in state. Student identifies by showing the teacher which is solid to liquid, solid to gas, liquid to gas.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Investigating matter in which one or more new kinds of matter form <p>The student exhibits no major errors or omissions.</p>		<p>Steel Wool Investigation Place a dry piece of steel wool in a plastic bag and seal the bag. Dip another piece of steel wool in water and place it in a plastic bowl. Leave them overnight. Next day, remove the dry steel wool from the bag. Use scissors to snip some of its fibers onto a paper plate. Use a toothpick to tap on parts of the wet steel wool. Tap until you have a pile of colored pieces. Use a hand lens to carefully observe the dry fibers and colored pieces from the steel wool. Record in your science journal. Hold a magnet close to the fibers and colored pieces from the steel wool. Compare and record your findings on a chart.</p>
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (chemical properties, rust, explode, burn, matter) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Making observations of chemical changes <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<p>Steel Wool Investigation With assistance, complete the above investigation.</p>
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Summarizing the five needs of every living thing <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Summarize and describe the five needs of every living thing. <p style="text-align: center;">(energy, shelter, water, nutrients, air)</p>
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (living, plant, energy, habitat, water, nutrients, air) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - listing the five needs of living organisms. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Circle the five living things that every living thing needs. <p style="text-align: center;">plants water TV air phone whistle nutrients shelter</p> <p style="text-align: center;">(energy, shelter, water, nutrients, air)</p>
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explaining the functions of basic plant and animal structures/systems <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Illustrate and label the structure of a plant including any of the following appropriate labels: petal, cone, bulb, stem, roots, leaf, flower, seeds. • Given a suitable amount of pictures, the student will classify animals as vertebrate or invertebrate.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (living, plant, structure, stem, root, leaf, flower, petal, seed, bulb, cone, flowering, non-flowering, pollination, vertebrate, invertebrate, systems) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying key plant and animal structures <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Illustrate and label the structure of a plant including any of the following appropriate labels: petal, cone, bulb, stem, roots, leaf, flower, seeds, with assistance. • Given a suitable amount of pictures, the student will classify animals as vertebrate or invertebrate, with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explaining that solar energy is the primary source of energy for plants <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • True or False <p style="text-align: center;">The sun is the primary source for plants. (true)</p>
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (energy, solar energy, primary) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identify that solar energy is the primary source of energy for plants <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given an illustration of an outside scene, including trees, grass, sun, plants, animals and man-made objects, student is asked to circle the primary source of energy for the plants.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Comparing the life cycles of two different animal species, i.e., amphibian, mammal, invertebrates. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Create, from memory, graphic organizers comparing the life cycles of unlike species.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (life cycle, species, organism, animal kingdom, vertebrate, invertebrate, larva, nymph, adult, offspring, pupa, egg) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying the life cycle of two different animal species <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given life cycle graphic organizers of two unlike species, match the labels from the word bank with the appropriate phases.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Defining inherited and learned behaviors. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> After watching a nature video or discussion of both animal behaviors, students will make a list of the learned and inherited behaviors observed. <p>Note: Inherited behavior - a behavior that an organism is born with and does not need to learn. (Migration patterns of animals)</p> <p>Note: Learned behavior - a behavior that is taught or learned from experience. (Bears eating out of the garbage.)</p>
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> (inherited behavior (sometimes referred to instinctual behavior), learned behavior) Recognizing and recalling isolated details such as... <p>Cite examples of inherited and learned behavior.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> A student is given examples of chimpanzee behaviors, i.e., sleeping in a tree, eating a banana or using a stick to obtain termites from a log, the student tells which is the learned behavior.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Comparing the life cycles of two different plant species, i.e. tree, cactus, flower, fern <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Create from memory graphic organizers comparing the life cycles of two different plant species.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (stem, root, leaf, flower, petal, seed, bulb, flowering, non-flowering) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying the life cycle of two different plant species <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given life cycle graphic organizers of two plant species, match the labels from the word bank with the appropriate phases.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identifying adaptations, in a variety of organisms, that are specific to survival in their environment. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given an appropriate amount of pictures of organism adaptations, classify each picture according to the specific organism. i.e., bird adaptations (webbed feet for swimming, talons for hunting).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (adaptation, survival, environment, organism) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Recognizing adaptations in a variety of organisms that are specific to survival in their environment <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given an appropriate amount of pictures of organism adaptations, matching each picture according to the specific organism with a given definition. i.e., bird adaptations (webbed feet for swimming, talons for hunting).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and their Physical Environment**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Demonstrating examples of predator/prey relationships, competition, food chain, and food web. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student constructs a biome using common materials to show the predator/prey relationship of organisms of their choice. Student should be able to use the appropriate vocabulary when describing the contents of the biome.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: (predator, prey, competition, herbivore, carnivore, omnivore, consumer, producer, decomposer, food chain, food web) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> • Identify examples of predator/prey relationships and competition <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student diagrams a pre-planned food web showing predator/prey relationships. • Student diagrams a pre-planned food chain showing producer, consumer, decomposer.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Analyzing different types of soils and the differences in their makeup (mixtures, grain size, moisture-holding capacity) <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given different types of soils, i.e., sand, loam and clay – observe with hand lenses/microscopes the different types of soils. Document results. Using gram scale, weigh dry samples. Add equal amounts of water to each sample, observe by using the five senses and weigh wet samples. Document results.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: (weathered rock, humus, water, sand, loam, clay, soil, air) • Recognizing and recalling isolated details such as... • matching soils to their characteristics <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given above investigation, student is able to match the different soils to their particular characteristics, i.e., grain size = sand, clay = high moisture content
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Science**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describing the five different types of weathering that occur in rocks <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • List five different types of weathering occurring in rocks and describe two of them. (Ice, wind, gravity, plant roots, water.) <p>Note: Weathering is the breaking up and carrying away of rock. Erosion is the process of carrying weathered rock from one place to another.</p>
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (erosion, weathering, water, wind, gravity, plant roots, ice) • Recognizing and recalling isolated details such as ... <ul style="list-style-type: none"> - Identifying individual processes that can weather rocks. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a worksheet showing pictures of the five different types of weathering occurring in rocks, match the pictures to the definitions. (Ice, wind, gravity, plant roots, water.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Comparing and contrasting two causes of erosion <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given a list of the four types of erosion (water, wind, gravity, glacier), student will compare and contrast using visual aids two of the causes of erosion in action. (Ideas – illustration, Venn diagram.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (erosion, water, wind, gravity, glacier) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying causes of erosion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given illustrations of the four types of erosion (water, wind, gravity, glacier), student will label the appropriate pictures using a word bank.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Differentiating between melting, freezing, evaporation, condensation, and precipitation <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given a definition or example of each state, student labels each of the five states.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (melting, freezing, boiling, evaporation, condensation, precipitation, water cycle, water vapor) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student identifies the five phases of the water cycle. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a diagram of the water cycle, student completes the cycle by inputting appropriate labels from a given word bank of: melting, freezing, evaporation, condensation, precipitation.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Recording local temperature and precipitation <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student participates with the class by sharing responsibility of reading a thermometer and rain gauge daily and recording the data on a class chart.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: (Fahrenheit, Celsius, temperature, rain gauge, local weather) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying temperature on a thermometer <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With assistance, student participates with the class by sharing responsibility of reading a thermometer and rain gauge daily and recording the data on a class chart.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Distinguishing between local weather and climate for each season <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Describe the weather for each season in your region. (Student then writes out the description of the varying seasons.) • Describe the general climate for two different regions in the world. (Student then writes out the description of the two varying climates.) <p>Note: Weather is daily event, climate is weather over time.</p>
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (climate, weather, seasons, fall, autumn, winter, spring, summer) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying that weather conditions vary between different places on Earth. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given illustrations of different types of weather, student matches the definition of each. (cloudy, partly cloudy, rain, sun) • Given illustrations of different types of climate, student matches the definition of each. (example: desert, polar, etc.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Universe and the Earth’s Place in it**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Graphing the relative location of planets and the sun <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Illustrate and label the solar system.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (solar system, planets, sun, moon) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identifying the planets in our solar system <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Label a diagram of the solar system given a word bank.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Society**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explaining how technological knowledge, processes, and products are used to solve problems <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • In discussion of current and historical events, relate science technology to problem solving. Example: The student explains how advances in technology moved man beyond planet Earth.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (technology, knowledge, society, processes, products, impact, discovery • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identify technology as knowledge, processes, and products used to solve problems <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a set of pictures relating to space exploration, student is able to match that technology with the problem that it solves. Example: If the you want to view the moon, the appropriate tool to use is... (a) microscope (b) telescope (c) flashlight
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Society**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Comparing and contrasting the uses of tools over time. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given a subset of pictures from space exploration, i.e., the different types of rockets up through the space shuttle, student are required to place the pictures on a timeline showing progression. The student then compares and contrasts the improvements.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (tool, culture) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identify how tools for specific use have changed over time <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given two pictures of a tool that has changed over time, student is able to identify the changes. Example: An 1890's landline phone is shown alongside a cellular device. Student explains the differences in technology.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Society**

Grade: **Third**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Summarizing how changes in tools over time have influenced Montana American Indian cultures <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student notes the differences in transportation changes for the American Indian from past to present.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (tool, culture) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> • Identifying how changes in tools over time have influenced Montana American Indian cultures. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student can point out the differences in traditional and modern American Indian shelters.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of Science			
Measurement Topic: Historical Development and Technology			
Grade: Third			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Relating examples where scientific inquiry is used to gain understanding of the natural world through discussion of environmental concerns and solutions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> In discussion of current events and environmental concerns, relate science inquiry to problem solving. Example: The class researches a local problem within the natural community and identifies steps being used in the problem solving process.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> (scientific inquiry, natural world, environment) Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Identifying examples where scientific inquiry is used to gain understanding of the natural world through discussion of environmental concerns and solutions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> In discussion of current events and environmental concerns, relate science inquiry to problem solving, with assistance. Example: The class researches a local problem within the natural community and identifies steps being used in the problem solving process.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

FOURTH GRADE

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.		
Discipline: Nature of Science		
Measurement Topic: Scientific investigations		
Grade: Fourth		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student writes a question that can be investigated through experimentation and or observation.</p> <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - procedure, materials, investigation, testable question, measure, observation • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, with minimal guidance, writes a question that can be investigated through experimentation and/or observation <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> • Given materials needed to conduct an experiment, student would write a question, conduct an experiment (either independently or collaboratively) and would be able to produce an answer because of their experiment.
		<ul style="list-style-type: none"> • Given materials needed to conduct an experiment, student would write a question with some assistance, conduct an experiment (either independently or collaboratively) and would be able to produce an answer because of their experiment.

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student identifies at least two safety procedures in a simple investigation.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • During investigations, teacher would observe safe behaviors. • Student would be able to verbalize two safety procedures they followed during their investigation.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - procedure, materials, investigation, testable question, measure, observation • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student identifies, with limited details, at least two safety procedures in a simple investigation <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • During investigations, teacher would observe safe behaviors. • Given a list of procedures to choose from, student would be able to identify which were safe.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student, with precision and accuracy, follows all procedural steps of a simple student designed investigation.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student successfully plans an investigation, follows the plan, and can present their findings
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - tables, metric system, volume (milliliter, liter), mass (gram, kilogram), distance (centimeter, meter), time (seconds), graph, graduated cylinder, meter stick, thermometer (Celsius), graphs, charts, diagrams, increase, decrease, data, results, beaker • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student follows all procedural steps of a simple student designed investigation <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student plans an investigation, follows most of the steps in the plan, and can present their findings.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student records data, in metric units, using tables, graphs, and/or diagrams; and presents them in oral and written form. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • After an investigation, student will be able to explain their graphs, tables, and diagrams to at least one person. Graphs, tables, and diagrams contain correct information and are formatted correctly.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - tables, metric system, volume (milliliter, liter), mass (gram, kilogram), distance (centimeter, meter), time (seconds), graph, graduated cylinder, meter stick, thermometer (Celsius), graphs, charts, diagrams, increase, decrease, data, results, beaker • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student records data, in metric units, using tables, graphs, and/or diagrams, with inaccuracies; and presents them in oral or written form. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • After an investigation, student will be able to work collaboratively to create and explain their graphs, tables, and diagrams. Graphs, tables, and diagrams have some inaccuracies or are not formatted correctly.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **or Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Student relates similarities and differences between models and the actual phenomenon.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • After creating a model of an active volcano, student would be able to produce a Venn diagram comparing and contrasting the model with an actual volcano.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - scale, compare, contrast, phenomenon, legend/key • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student relates similarities and differences between models and the actual phenomenon, without demonstrating complete understanding. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • After creating a model of an active volcano, student would be able to give some similarities and/or differences between the model and an actual volcano, either in written or verbal form.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Student identifies that a valid test consists of a change in one variable and a control group, through an investigation.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given an investigation growing grass in different soil types, student will be able to document in their journal the steps of the investigation, the outcome, and will identify the control group and variables. Student will be able to explain the importance of making one change in a variable accurately.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> variable, control, group Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> -Student identifies that a valid test consists of a change in one variable and a control group, through an investigation, with error. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given an investigation growing grass in different soil types, student will be able to document in their journal the steps of the investigation, the outcome, and will identify the control group and variables. Student will be able to explain the importance of making one change in a variable accurately.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student identifies examples of Montana American Indians using observation in nature and in historical context.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> After establishing background knowledge, student will produce a model of a tool Native American’s constructed out of a need they had, due to their environment. Student will be able to explain where in nature they acquired the materials to make the tool.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> -Student identifies examples of Montana American Indians using observation in nature and in historical context, with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> After establishing background knowledge, student will produce a model of a tool Native American’s constructed out of a need they had, due to their environment, with minimal assistance. Student will be able to explain where in nature they acquired the materials to make the tool, with some inaccuracies.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of matter and energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student describes the effect of distance on the magnetic field after investigating attraction and repulsion with magnets.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given rulers, magnets, and a large nail, student could set up an experiment in which they measure the distance between the nail and the magnet at the moment the nail is attracted to the magnet. The student would be able to describe their findings and independently draw a conclusion about the effect of distance on the magnetic field.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> attract, repel, magnet, magnetic field Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student describes, with errors, the effect of distance on the magnetic field after investigating attraction and repulsion with magnets. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given rulers, magnets, and a large nail, student could collaboratively set up an experiment in which they measure the distance between the nail and the magnet at the moment the nail is attracted to the magnet. The student would be able to describe their findings.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and properties of energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student defines the terms reflect, refract, and absorb after investigating the visible spectrum.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given a prism, a variety of colored film, hand mirror, glass of water, flashlight, and a variety of everyday objects, student would correctly determine if light was reflected, refracted, or absorbed. Student would be able to draw pictures, from memory, representing reflection, refraction, and absorption. Student would be able to write each definition from memory
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> reflect, refract, absorb, visible spectrum, prism Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student defines, with inaccuracies, the terms reflect, refract, and absorb after investigating the visible spectrum. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given a prism, a variety of colored film, hand mirror, glass of water, flashlight, and a variety of everyday objects, student would correctly determine if light was reflected, refracted, or absorbed, with guidance. Student would be able to correctly define reflect, refract, and absorb when presented in matching or fill in the blank format. Given pictures representing reflection, refraction, and absorption, student would correctly label or match each.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and properties of energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student classifies materials as those that can reflect, refract or absorb after investigating the visible spectrum.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student would collect everyday objects and correctly display them in groups of objects that either: reflect, refract, or absorb light.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - reflect, refract, absorb, visible spectrum, prism • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, with errors, classifies materials as those that can reflect, refract or absorb after investigating the visible spectrum. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a prism, a variety of colored film, hand mirror, glass of water, flashlight, and a variety of everyday objects, student would correctly sort the items into groups that reflect, refract, or absorb •
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and properties of energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student models wave motion using up and down, back and forth, speed.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students could work in small groups with a “slinky”, parachute, or other object to create a wave moving up and down, back and forth, and experiment with speed. • Student would be able to journal and illustrate a correct generalization about wave motions.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - wave, vibration, sound, motion, speed, frequency, volume, pitch, wavelength, amplitude • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student models wave motion using up and down, back and forth, speed, with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students could work in small groups with a “slinky”, parachute, or other object to create a wave moving up and down, back and forth, and experiment with speed. • Student would be able to journal their observations of wave motions.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and properties of energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student describes and lists examples of a wave and describes the relationships between a vibration and a sound wave.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given a ruler, students could work in pairs to investigate the effect the length of a ruler has on the sound it produces when “flicked” on the side of a desk. Student would accurately describe and list examples of a wave in their journal and correctly describe in writing or illustrations the relationship between a vibration and a sound wave.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> wave, vibration, sound, motion, speed, frequency, volume, pitch, wavelength, amplitude Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student describes and lists examples of a wave and describes the relationships between a vibration and a sound wave with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given a ruler, students could work in pairs to investigate the effect the length of a ruler has on the sound it produces when “flicked” on the side of a desk. Student would describe and list examples of a wave in their journal, with some inaccuracies and/or describe in writing or illustrations the relationship between a vibration and a sound wave with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of matter and energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student identifies, through investigation, that energy is the ability to cause change.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Teacher demonstration using candles and how heat energy changes the candle and students record their observations in a journal. • Student could explain how energy has the ability to cause change by using correct vocabulary and giving an example.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - energy, light, heat, motion, magnetism, electricity, sound • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, without complete understanding, identifies energy as the ability to cause change. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Teacher demonstration using candles and how heat energy changes the candle and illustrate the demonstration in their journal. • Student could state how energy has the ability to cause change by using vocabulary and giving an example, with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and properties of energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student identifies electricity as a flow of energy and compares/contrasts current electricity and static electricity.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student explores static electricity by rubbing an inflated balloon on fabric, then slowly approaching a stream of water from a faucet and observing results • Student explores static electricity by rubbing two inflated balloons, attached to each other with a long string, with fabric. Allow the balloons to suspend from the string at the same height observe the balloons when a piece of paper is inserted between the balloons. • Student would be able to correctly explain the difference between static and current electricity, in their own words
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - electricity, energy, current, static, closed and open circuits, switch, parallel, series, battery (dry-cell vs. wet-cell), positive charge, negative charge • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student identifies electricity as a flow of energy and compares/contrasts current electricity and static electricity with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same two activities as above • Student would be able to explain the difference between static and current electricity with some errors and/or omissions. • Student would be able to correctly define static and current electricity when given definitions to refer to.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of matter and energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student demonstrates safe uses of electricity while constructing an example of parallel and series circuits.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given batteries, wires, and light bulbs, students would independently create parallel and series circuits, in which the bulbs would successfully light up. Student would be able to draw a diagram, from memory, illustrating both parallel and series circuits.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> electricity, energy, current, static, closed and open circuits, switch, parallel, series, battery (dry-cell vs. wet-cell), positive charge, negative charge Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student needs assistance to construct an example of an electrical circuit safely. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given batteries, wires, and light bulbs, students would create parallel and series circuits with assistance, in which the bulbs would successfully light up. Given a diagram of both a parallel and a series circuit, student would correctly identify each
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of matter and energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student, after investigating, describes how speed, direction and forces affect the motion of an object.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can throw a rubber ball various times or roll it down a ramp onto different surfaces and discuss how speed, direction, and forces were altered with various manipulations • Students can illustrate and explain in their journal how speed, direction, and forces affected the motion of the ball.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - speed, direction, force, motion, push, pull, change in motion • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, after investigating, describes with errors how speed, direction and forces affect the motion of an object. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students can throw a rubber ball various times or roll it down a ramp onto different surfaces and discuss how speed, direction, and forces were altered with various manipulations • Students can illustrate and label, using descriptive words, in their journal how speed, direction, and forces affected the motion of the ball.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Forces and motion**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student builds simple machines and explains how they make work easier using real life examples.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given a variety of objects (ones needed to make a simple machine) to explore, student would successfully create a model of each type of simple machine and be able to give a real life example of when the simple machine would be used. Student would be able to formulate a real life example of a simple machine and would be able to explain how they make work easier.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> simple machine, work, levers, inclined plane, wheel and axle, pulley, wedge, screw Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student builds simple machines, but does not have complete understanding as to how they make work easier or give real life examples <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given a variety of objects (ones needed to make a simple machine) to explore, student would successfully create a model of each type of simple machine. Given several real life examples, student would be able to correctly group them into similar types of simple machines (lever, pulley, etc.) and may or may not be able to produce explanation for how they make work easier.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and properties of energy**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student explains how sound is produced, transmitted, and received; and how it can be changed.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • In small groups, students will work together to explain how sound is produced, transmitted, and received after investigating with glasses containing different amounts of water to hear different pitches. • Groups could plan a way to demonstrate how sound is produced, transmitted, and received and “teach” the class.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - frequency, amplitude, pitch, wavelength, vibration, tension, medium, transmit, instrument • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student explains how sound is produced, transmitted, and received; and how it can be changed without a complete understanding <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • In small groups, students will work together to explain how sound is produced, transmitted, and received after investigating with glasses containing different amounts of water to hear different pitches, with coaching. • Groups could plan, with guidance, a way to demonstrate how sound is produced, transmitted, and received and share with the class.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and properties of energy**

Grade: **Fourth**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student designs and constructs instruments that produce sound.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given materials (such as: shoe box, rubber bands, straws, water glasses, empty cans, scrap of leather, etc.), student would present an instrument that successfully produces sound. Student would be able to explain in a journal why their instrument works.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> frequency, amplitude, pitch, wavelength, vibration, tension, medium, transmit, instrument Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student designs and constructs instruments that produce sound, with assistance <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given materials (such as: shoe box, rubber bands, straws, water glasses, empty cans, scrap of leather, etc.), student would create, with assistance, an instrument that successfully produces sound. Student would be able to explain in a journal the steps taken to produce the instrument.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth's systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, structure, and processes of the earth**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Students define both body and trace fossils and explain how each is formed.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • After teacher led discussion, students can experiment with different types of fossil forms, using mud imprints. • Students can accurately illustrate and explain their findings in their journals
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - fossil, body fossil, trace fossil, environment, impression • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students define both body and trace fossils and explain, with errors, how they are formed. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • After teacher led discussion, students can experiment, with peer guidance, different types of fossil forms, using mud imprints. • Students can illustrate their findings in their journals and are able to verbally explain their illustrations
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, structure, and processes of the earth**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student describes how fossils’ age can be determined by their position in sedimentary rock.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can independently research how to determine a fossil’s age, using internet or media sources (i.e.: The Grand Canyon educational website) • Students report their findings to a small group of peers
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - sedimentary rock, fossil • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student describes how fossil’s age can be determined by position in sedimentary rock with inconsistencies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students can research, with assistance, how to determine a fossil’s age, using internet or media sources (i.e.: The Grand Canyon educational website) • Students recite their findings to a small group of peers
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, structure, and processes of the earth**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student illustrates erosion, weathering, volcanoes, and earthquakes; and the effects they have on earth’s features.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • After classroom discussion using different media sources, students would split into groups and choose one of the following: erosion, weathering, volcanoes, and earthquakes. Groups would produce a model and develop a definition for their chosen topic.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - erosion, weathering, earthquakes, and volcanoes • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student illustrates erosion, weathering, volcanoes, and earthquakes; and the effects they have on earth’s features, with errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • After classroom discussion using different media sources, students would split into groups and choose one of the following: erosion, weathering, volcanoes, and earthquakes. Groups would produce a model and develop a definition for their chosen topic, with some inaccuracies
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, structure, and processes of the earth**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Student compares and contrasts the formation and characteristics of the three basic types of rocks: sedimentary, metamorphic, and igneous.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • After background knowledge has been obtained via discussion, examining samples, and viewing video, students will independently fill out a Venn diagram
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - classification, igneous, metamorphic, sedimentary, pressure, deposition • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student compares and contrasts the formation and characteristics of the three basic types of rocks: sedimentary, metamorphic, and igneous with errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • After background knowledge has been obtained via discussion, examining samples, and viewing video, students will collaborate with peers and/or teacher to fill out a Venn diagram
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, structure, and processes of the earth**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student classifies rock samples by type and identifies everyday uses for each type.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given several rock samples, students can independently classify them into rock types. Student could accurately identify a use for each type in their journal.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> classification, igneous, metamorphic, sedimentary, pressure, deposition Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student classifies rock samples by type and identifies everyday uses for each type, with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given several rock samples, students can collaborate with peers to classify them into rock types. Student could identify a use for each type in their journal, with some inaccuracies.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of science**

Measurement Topic: **Impact of scientific development on communities, cultures, and society**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student identifies the uses of technology in science and discusses examples of scientific or technological discoveries that impact a community, culture, and a society.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • After researching technological discoveries, students will develop a timeline (from a download) illustrating the discoveries and explain the impact they have had on a community, culture, or society.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - technology, society, environment, community, culture • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student identifies the uses of technology in science and discusses examples of scientific or technological discoveries that impact a community, culture, and a society; with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • After researching technological discoveries with assistance, students will develop a timeline (from a download) illustrating the discoveries and explains the impact they have had on a community, culture, or society, with some inaccuracies.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of science**

Measurement Topic: **Impact of scientific development on communities, cultures, and society**

Grade: **Fourth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student researches and summarizes local environmental problems and proposes solutions to these problems, using scientific knowledge.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students would work in cooperative groups to research teacher approved local environmental issues (using newspaper, Internet, etc.) and would develop logical solutions to the problem
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> technology, society, environment, community, culture Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Student researches and summarizes local environmental problems and proposes inadequate solutions to these problems. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students would work in cooperative groups to research teacher approved local environmental issues (using newspaper, Internet, etc.) and would develop solutions to the problem, with guidance from the teacher
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of science		
Measurement Topic: Impact of scientific development on communities, cultures, and society		
Grade: Fourth		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student states and discusses historical examples of scientific knowledge influencing the development of Montana American Indian cultures.</p> <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - technology, society, environment, community, culture • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student states and discusses historical examples of scientific knowledge influencing the development of Montana American Indian cultures, with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> • Through various media sources, whole classroom discussions, students will reflect upon and then brainstorm technologies that have impacted or driven scientific discoveries. • After identifying multiple discoveries, students working in small groups will develop a timeline of events on a poster illustrating substantial technological advancements from a historical perspective.
		<ul style="list-style-type: none"> • Through various media sources, whole classroom discussions, students will reflect upon and then brainstorm technologies that have impacted or driven scientific discoveries. • After identifying discoveries, students working in small groups will develop a timeline of events on a poster illustrating substantial technological advancements from a historical perspective with guidance from the teacher.

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of science			
Measurement Topic: Impact of scientific development on communities, cultures, and society			
Grade: Fourth			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student researches and presents examples of scientific inquiry used to gain understanding of the natural world by multiple scientists or individuals.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student independently researches, using various media sources; and presents examples of scientific inquiry used to gain understanding of the natural world by multiple scientists or individuals
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - scientific inquiry, natural world, collaborate • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, with assistance, researches and presents examples of scientific inquiry used to gain understanding of the natural world by multiple scientists or individuals. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student researches , using teacher provided media sources; and presents examples of scientific inquiry used to gain understanding of the natural world by multiple scientists or individuals
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of science		
Measurement Topic: Impact of scientific development on communities, cultures, and society		
Grade: Fourth		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Student will produce from memory occupations that use science.</p> <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - scientific inquiry, natural world, collaborate - • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, with errors, will produce from memory occupations that use science. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
Sample Tasks		
<ul style="list-style-type: none"> • Student will produce, from memory, occupations that use science 		
<ul style="list-style-type: none"> • Given a list of occupations, student could identify the occupations that use science. 		

FIFTH GRADE

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fifth**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explain the relationship between a testable question and a hypothesis <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Connect this with the study of clouds and the physical properties of water where students can hypothesize and write a testable question in relation to the experiment.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> -control, prediction, hypothesis, variable, testable question, independent variable, dependent variable • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students will recognize a testable question and hypothesize and explain the differences with difficulty <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Connect this with the study of clouds and the physical properties of water where students can hypothesize and write a testable question in relation to the experiment with peer and teacher support.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Plan and conduct an investigation and identify and explain purpose for the following: independent/dependent variables, and control group <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students can plan and conduct an investigation using plants with various types of variables.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: -control, prediction, hypothesis, variable, testable question, independent variable, dependent variable Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Students can provide a vague outline of an investigation and can identify the purpose for the following: independent/dependent variables, and control group <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students can plan and conduct an investigation using plants with various types of variables with peer and teacher guidance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Collect and record data through observation, tools, tables and graphs <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students when observing weather will be able to collect data in their journals using thermometers, barometers, wind gauge, cloud identification charts, and weather maps.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - graduated cylinder, scales, Celsius thermometers, beaker, digital probes, stop watch, balances, metric units, data tables, graphs • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Students with inconsistencies, collects data and organizes it with errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students when observing weather will be able to collect data in their journals with inaccuracies using thermometers, barometers, wind gauge, cloud identification charts, and weather maps.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific investigations**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will accept or reject hypothesis by comparing data and communicate findings in written or oral format <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • After conducting various plant experiments, students will compare data results and accept or reject their hypothesis.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: hypothesis, supported, not supported, prediction • Recognizing and recalling isolated details such as... Students will accept or reject hypothesis by comparing incomplete data and communicate findings with inaccuracy <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • After conducting various plant experiments, students will compare data results and accept or reject their hypothesis with support from their teacher and/ or peers.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Impact of scientific development on communities, cultures and society**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify and give examples of how Indians have used observations of their surroundings to explain processes of nature <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Discuss and journal how Native Americans used their observations of naturally occurring fire to manipulate and benefit through the use of fire as an agricultural tool.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (vocabulary words here) • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> • Identify given examples of how Indians have used observations of their surroundings to explain processes of nature <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Discuss how Native Americans used their observations of naturally occurring fire to manipulate and benefit through the use of fire as an agricultural tool.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Historical development and technologies**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explain the purpose of a model after following step-by-step directions and list examples of computer simulations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students after completing models of the earth, sun and moon will journal and demonstrate how each terrestrial body rotates and revolves in relation to one another. • Students will base their demonstration off an online resource exhibiting a space simulation.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> 2-D, 3-D, computer simulations, legend/key • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students list various types of models and computer simulations and can build a model with step-by step instructions with error <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students after completing models of the earth, sun and moon will journal and demonstrate how each terrestrial body rotates and revolves in relation to one another. • Students will base their demonstration off an online resource exhibiting a space simulation with support and aid from teacher and/or peers.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structure and property of matter**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Identify common elements, and define elements as pure substances.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can make trading cards, fact cards of common elements, and/or other hands on activities that reinforce the concepts. • Students can make replicate the periodic table with elements 1-15 and be able to define what a pure substance is.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> -element, compound, mixture, pure substance • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students, with inconsistencies, identifies common elements and define them as pure substances <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students can make trading cards, fact cards of common elements, and/or other hands on activities that reinforce the concepts, with assistance. • Students can make replicate the periodic table with elements 1-15 and be able to define what a pure substance is, with inaccuracies.
		Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structure and property of matter**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Identify common compounds (water, carbon dioxide, salt).</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students can pick a simple chemical compound and make a model identifying the elements that the compound is made from and present structure to class. (use different colored paper, marshmallows) Students can write the chemical makeup of a simple compound and its common name from memory.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - element, compound, mixture, pure substance Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Identify common compounds (water, carbon dioxide, salt), with errors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students can pick a simple chemical compound and make a model identifying the elements that the compound is made from and present structure to class. (use different colored paper, marshmallows) Students can match the chemical makeup of a simple compound to its common name.
		Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structure and property of matter**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <p>Explain the relationship between elements, compounds, pure substances, and mixtures.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will be able to accurately journal about the relationship between elements, compounds, pure substances, and mixtures and be able to give examples of each.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - element, compound, mixture, pure substance Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student confuses the relationship between elements, compounds, pure substances, and mixtures. - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will be able to journal with inaccuracies about the relationship between elements, compounds, pure substances, and mixtures and give simple examples of each.
	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content		
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Structure and property of matter**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Student defines physical properties as properties that do not change the chemical nature of matter i.e. color, smell, freezing point, boiling point, melting point, and magnetism.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Use water as an example to demonstrate the concept that matter does change physically but not chemically, have student journal observations during demonstration and draw the change in water molecules. • Students without error will illustrate and discuss using correct vocabulary how physical properties do not change the nature of matter.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mass, volume, chemical change, physical change, physical property, chemical property • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student defines without complete understanding physical properties as properties that do not change the chemical nature of matter i.e. color, smell, freezing point, boiling point, melting point and magnetism. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Use water as an example to demonstrate the concept that matter does change physically but not chemically, have student journal observations during demonstration and draw the change in water molecules. • Students with error will illustrate and discuss using vocabulary that physical properties do not change the nature of matter.
		Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and property of matter**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Define and identify chemical properties as properties that do change the chemical nature of matter. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Give students background information about chemical properties and create an experiment using PH testing of several liquid examples. Show that Iron (Fe) flakes are attached to magnets before and after the iron flakes rust (just let them soak in water for a while, have students write observations). • Students will elaborate what chemical properties are and list some examples of chemical properties.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mass, volume, chemical change, physical change, physical property, chemical property • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, with errors, defines chemical properties that change the chemical nature of matter i.e. combustion, rust, decompose. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Give students background information about chemical properties and create an experiment using PH testing of several liquid examples. Show that Iron (Fe) flakes are attached to magnets before and after the iron flakes rust (just let them soak in water for a while, have students write observations, with errors). • Students will list some examples of chemical properties.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identify that most matter can exist as a solid, liquid, or gas depending on temperature and give examples. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will observe and journal the three states of water in liquid, solid, and gas forms from a simple demonstration by the teacher. After a whole group discussion, students will become familiar and be able to identify other types of matter and their various forms i.e., (mercury, nitrogen etc.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: sublimation, evaporation, condensation, freezing point, melting point, energy, boiling point, solid, liquid, gas, matter Recognizing and recalling isolated details such as... Student with errors, identifies that most matter can exist as a solid, liquid or gas depending on the temperature. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will observe and record the three states of water in liquid, solid, and gas forms from a simple demonstration by the teacher. After a whole group discussion, students will become familiar with the basic types of matter and their various forms i.e., (mercury, nitrogen etc.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe the processes of sublimation, condensation, and evaporation. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • To demonstrate sublimation students could set wet socks in the freezer/outside (in winter) and note that the sock with eventually dry, journal findings. (solid-gas) • Condensation and evaporation can be demonstrated with boiling water (steam-evaporation) and a cold pie plate (to collect condensation) and journal observations • Students will be able to compare and contrast sublimation, condensation, and evaporation using correct vocabulary.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: -sublimation, evaporation, condensation, freezing point, melting point, energy, boiling point, solid, liquid, gas, matter • Recognizing and recalling isolated details such as... Student, with inaccuracies, describes the processes of sublimation, condensation, and evaporation. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • To demonstrate sublimation students could set wet socks in the freezer/outside (in winter) and note that the sock with eventually dry, journal findings. (solid-gas) • Condensation and evaporation can be demonstrated with boiling water (steam-evaporation) and a cold pie plate (to collect condensation) and journal observations. • Students will be able to compare and contrast sublimation, condensation, and evaporation using vocabulary with error.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Observing cells using a microscope and describing the basic structure and function of a cell, and finally Illustrate/model the structures of plant and/or animal cells.</p> <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students, after observing cells via pictures and microscopes, will construct models/drawings of animal and/or plant cells using various medium forms available to them. • Students will be able to illustrate, label, and describe basic cell structure and function with no errors.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> -cell membrane, cell wall, nucleus, vacuoles, cytoplasm, mitochondria, chloroplast • Recognizing and recalling isolated details such as... Students will recite until memorized the various parts that make up an animal or plant cell. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students, after observing cells via pictures and microscopes, will construct models/drawings of animal and/or plant cells using various medium forms available to them with assistance. • Students will match the various parts of a cell to a particular drawing or model of an animal or plant cell.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Identify the parts of a flower and explain their reproductive function. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students in small group settings will be given flowers for dissection in an attempt to learn the parts of a flower. Students will draw the parts of a flower in their journals and explain the functions of each.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: -stamen, sepal, pistil, pollen, ovule Recognizing and recalling isolated details such as... Match parts of a flower to a diagram and explain the function with error <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students in small group settings will be given flowers for dissection in an attempt to learn the parts of a flower. Students will draw the parts of a flower in their journals and state the functions of each with error.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify plant structures and compounds involved in photosynthesis and transpiration. • Explain the relationship between photosynthesis and transpiration. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will use diagrams and various media sources to establish foundation of knowledge of plant structure, photosynthesis and transpiration. • Draw and label plant structures using correct vocabulary and write the compound for photosynthesis without error.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: -chlorophyll, photosynthesis, oxygen, carbon dioxide, sugar, water, light energy, transpiration, water vapor, roots, leaves Recognizing and recalling isolated details such as... - Student explains only parts of the relationship of the process of photosynthesis and transpiration using key structures and compounds. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will use diagrams and various media sources to establish foundation of knowledge of plant structure, photosynthesis and transpiration with guidance. • Given a diagram, students will label plant structures using correct vocabulary and write the compound for photosynthesis with error.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Employ a dichotomous key to separate a collection of basic objects, and discuss the rule of classification. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students are given several opportunities to practice and create dichotomous keys using various media i.e. (jellybeans, animals, objects, themselves). • Given a set of objects or pictures students without assistance will be able to design a dichotomous key.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: • dichotomous key, classification systems, classify • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students, with errors, employs a dichotomous key to separate basic objects <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students are given several opportunities to practice and create dichotomous keys using various media i.e. (jellybeans, animals, objects, themselves). • Given a set of objects or pictures students with support will be able to design a dichotomous key.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify the 5 Kingdoms, and explain the characteristics of kingdom (warm/cold blooded, vertebrate /invertebrate), phylum, and class. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will be exposed to different organisms, animals via pictures and through class discussions and be able to classify/differentiate the kingdoms. • Students will be able to differentiate between the 5 kingdoms, and given an organism will classify it correctly • Students will be able to classify animals into their respective animal kingdom i.e. (reptiles, amphibians, etc.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - dichotomous key, kingdom, phylum, class, vertebrate, invertebrate, cold-blooded, warm-blooded - Students identifies the kingdoms and needs assistance to recognize differences between kingdom, phylum, and class, students defines either warm-blooded/cold-blooded or vertebrate/invertebrate - Students, with errors, compares and contrasts two characteristics of the animal kingdom <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will be exposed to different organisms, animals via pictures and through class discussions and be able to classify the 5 kingdoms with guidance. • Students will be able to compare the 5 kingdoms, and given an organism will classify it correctly • Students will be able to match animals into their respective animal kingdom i.e. (reptiles, amphibians, etc.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Science**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Classify plants by: flowering, non-flowering, mosses, and ferns. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> After teacher led discussion on the differences of plant types, using a dichotomous key, students in a cooperative group will classify the different plants, real or pictured. Students will independently classify any given plant correctly.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> dichotomous key, kingdom, phylum, class, mosses, ferns, flowering, non-flowering Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Students classifies plants by: flowering, non-flowering, mosses, and ferns without complete understanding <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> After teacher led discussion on the differences of plant types, using a dichotomous key, students in a cooperative group will classify the different plants, real or pictured with teacher support. Students will independently classify, with prompts, any given plant correctly.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth's systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as: Describe Earth’s physical features and explain how glaciations and weather affects them. The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • With media and teacher led demonstrations, students will observe and journal the forces shaping Earth’s physical features. • Given a picture of a physical feature (canyons, buttes, deltas, etc.) students will hypothesize the reasons for how the feature was shaped.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Glaciations, erosion, deposition, plate tectonics, continental drift, mountain, earthquake, volcano • Recognizing and recalling isolated details such as... Student explains glaciations and weathering effects Earth’s surface with limited details <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With media and teacher led demonstrations, students will observe the forces shaping Earth’s physical features. • Given a picture of a physical feature (canyons, buttes, deltas, etc.) students will make assumptions about the reasons for how the feature was shaped.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Earth**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the water cycle, its application to weather, and identifies type of clouds and how each predicts weather <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will observe and name clouds in the sky while indicating what weather they may produce and write their observations in a journal as a cooperative group. • After teacher led discussion, students can produce an illustration and written explanation for the role of clouds in the water cycle.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - water cycle, condensation, evaporation, precipitation, forecast, meteorologist • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student with inaccuracies, explains the water cycle and its application to weather, and identifies different types of clouds and how they each predicts weather <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will observe and name clouds in the sky while indicating what weather they may produce and write their observations in a journal as a cooperative group with teacher assistance. • After teacher led discussion, students can produce an illustration and/or oral explanation for the role of clouds in the water cycle.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe properties of air masses moving across the earth’s surface <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students through teacher led discussions, diagrams, videos will acquire a working knowledge of air masses and how they affect weather patterns. • Students can illustrate air front- movement and predict its potential weather outcome.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - air mass, front, air pressure, warm front, cold front, precipitation, air currents • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students describes properties of Earth’s air masses without a complete understanding <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students through teacher led discussions, diagrams, videos will acquire a basic knowledge of air masses and how they affect weather patterns. • Students can illustrate air front- movement and state its potential weather outcome with the use of guides (notes, journal, etc.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student interprets a weather map using correct symbols <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will have the opportunity to interpret various weather maps from various locations around the U.S. • Students will have the opportunity to use various weather media related to weather predictions.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - air mass, front, air pressure, warm front, cold front, precipitation, air currents • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student interprets a weather map using correct symbols with few errors <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will have the opportunity to interpret various weather maps from various locations around the U.S. with guidance. • Students will have the opportunity to use various weather media related to weather predictions with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Universe and the earth's Place in it**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students explain with an illustration or model, Earth’s rotation in relation to the sun and how rotation causes day and night <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can create and label a model depicting the earth’s rotation relative to the sun. • Students can research websites devoted to the earth and sun’s relationship. • Teachers can explain and demonstrate using a light and an object representing the earth rotating around the sun to reinforce student’s knowledge of the subject.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Earth, planet, sun, moon, relative, phases of the moon, light, orbit • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students explains with an illustration or model, Earth’s rotation in relation to the sun and how rotation causes day and night, with inaccuracies <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students can identify a model depicting the earth’s rotation relative to the sun. • Students can research with help from teacher, websites devoted to the earth and sun’s relationship. • Teachers can explain and demonstrate using a light and an object representing the earth rotating around the sun to reinforce student’s knowledge of the subject.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Universe and the earth's Place in it**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies, with understanding, the relation between the Earth, Sun, and moon identifying the moon is lighted by the sun <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will comprehend the relation of the sun, earth, and moon through modeling their relationship with the use of a light and two objects representing the earth and moon. • Students will apply understanding through illustration and explanation of this relationship in their journals.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Earth, planet, sun, moon, relative, phases of the moon, light, orbit • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students can identify the relationship between the earth, sun, and moon, and identify the moon is lighted by the sun <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will understand a relationship exists between the sun, earth, and moon through modeling their relationship with the use of a light and two objects representing the earth and moon. • Students will illustrate this relationship in their journals.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Universe and the earth's Place in it**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students identifies the phases of the moon by how much of the lighted part of the moon can be seen from Earth <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using diagrams and demonstrations, students will be able to identify that the moon has different phases and they depend on how much of it is lighted by the sun through Earth’s shadow. • Students will be able to illustrate and name the phases of the moon in order independently.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Earth, planet, sun, moon, relative, phases of the moon, light, orbit • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student identifies the phases of the moon by how much of the lighted part of the moon can be seen from Earth with an incomplete description <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using diagrams and demonstrations, students will be able to identify that the moon has different phases and they depend on how much of it is lighted by the sun through Earth’s shadow, with assistance and support. • Students will be able to match an illustration of the moon’s phases with its correct name.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure, and Processes of the Universe and the earth's Place in it**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify and discuss characteristics and movements of meteors, comets, and asteroids. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using various media sources, students working in small groups will conduct a student led research project complete with drawings and a presentation on the differences of meteors, comets, and asteroids.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - meteor, comet, asteroid, solar system • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, with assistance, identifies and discusses characteristics and movements of meteors, comets, and asteroids <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Using various media sources, students working in small groups will conduct a student led research project complete with drawings and a brief summary (oral or written) about the characteristics of meteors, comets, and asteroids.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Society**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify, research, and summarize the scientific issues relevant to local current event or problems involving science. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Independently or in small groups, students will design, analyze and present a collage poster exhibiting current local and state issues relevant to science.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - current event, issue, problem, environmental impact • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students identifies local scientific current event or problem with limited details, and with limited guidance, conduct research and summarize issues relevant to the event or problem <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Independently or in small groups, students will collect, design, and present a collage poster exhibiting current local and state issues relevant to science.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Society**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Investigate and explain how science and technology have had an impact on Montana American Indians. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students analyze censored articles regarding the impact science has had on indigenous Montana tribes in a whole group setting.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - technology, scientific discoveries, advances • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students investigates and with limited details, explains how science and technology impact Montana American Indians <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students summarize censored articles regarding the impact science has had on indigenous Montana tribes in a whole group setting.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Society**

Grade: **Fifth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify specific fields, occupations, and technologies within each field of science. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Invited guests from various scientific fields discuss with students: opportunities, technologies used, and schooling involved in becoming successful contributors of society. • With established background students will write a summary about one specific scientific field.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - milestones, occupation • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Students recognize some uses of technology unique to specific science field occupations and some occupations within specific fields. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Invited guests from various scientific fields discuss with students: opportunities, technologies used, and schooling involved in becoming successful contributors of society. • With established background students, will be able to discuss one specific scientific field.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of Science			
Measurement Topic: Historical Development and Technology			
Grade: Fifth			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes historical scientific discoveries influenced by technological advances, including Montana American Indian examples. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Through various media sources, whole classroom discussions, students will reflect upon and then brainstorm technologies that have impacted or driven scientific discoveries. • After identifying multiple discoveries, students working in small groups will develop a timeline of events on poster board illustrating substantial technological advancements from a historical perspective.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - milestones, occupation • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Student, with errors, identifies historic technological advances, including Montana American Indian examples. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Through various media sources, whole classroom discussions, students will reflect upon and then brainstorm technologies that have impacted or driven scientific discoveries. • After identifying discoveries, students working in small groups will develop a timeline of events on poster board illustrating substantial technological advancements from a historical perspective with guidance from the teacher.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

Science Curriculum

Grade 6-8

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Earth and Space Sciences, Life Sciences, Physical Sciences, or Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student observes a problem, makes a testable question, and performs the scientific method. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will write a testable question for an investigation and includes materials, procedures, control, variables, safety precautions, data collection, and analysis methods.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, observes a problem, makes a testable question, and performs the scientific method. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - hypothesis, control, variable, data <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With help, student will write a testable question for an investigation and includes materials, procedures, control, variables, safety precautions, data collection, and analysis methods.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Earth and Space Sciences, Life Sciences, Physical Sciences, or Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students select and uses appropriate tools including technology to make measurements (in metric units), gather, process, and analyze data from scientific investigations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will identify metric base units and use the appropriate graphical representation of the data.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, select and use appropriate tools including technology to make measurements (in metric units), gather, process, and analyze data from scientific investigations. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Gram, liter, meter, Celsius, mean, median, mode, range <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With help, student will identify metric base units and use the appropriate graphical representation of the data.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Earth and Space Sciences, Life Sciences, Physical Sciences, or Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student reviews, communicates, and defends results of investigations, including considering alternative explanations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will communicate results by sharing and comparing data with others and defend conclusions by providing examples from data.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, reviews, communicates, and defends results of investigations, including considering alternative explanations. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Supported, refute, hypothesis <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With help, student will communicate results by sharing and comparing data with others and defend conclusions by providing examples from data.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Earth and Space Sciences, Life Sciences, Physical Sciences, or Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student creates models to illustrate scientific concepts and uses the model to predict change. (e.g., computer simulation, stream table, graphic representation) <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will create representative models to demonstrate knowledge of scientific concepts (i.e., biomes, cells, life systems, density, water cycle).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, creates models to illustrate scientific concepts and use the model to predict change. (e.g., computer simulation, stream table, graphic representation) • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Working models, representative models <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With help, student will create representative models to demonstrate knowledge of scientific concepts (i.e., biomes, cells, life systems, density, water cycle).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Earth and Space Sciences, Life Sciences, Physical Sciences, or Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies strengths and weakness in an investigation design. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will identify the essential components of investigation design (i.e., sample size and selection, repetition, repetition, controls).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, identifies strengths and weakness in an investigation design. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Inquiry, investigation, sample size, control, repeated trials <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With help, student will identify the essential components of investigation design (i.e., sample size and selection, repetition, repetition, controls).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Earth and Space Sciences, Life Sciences, Physical Sciences, or Nature of Science**

Measurement Topic: **Scientific Investigations**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student compares how observations of nature form an essential base of knowledge among the Montana American Indians. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will identify examples of knowledge of various Montana American Indian tribes gained from observations. • Student will compare how observations of nature form an essential base of knowledge among the different Montana American Indian tribes (e.g., migration patterns, planting cycles, etc.)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, compares how observations of nature form an essential base of knowledge among the Montana American Indians. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Montana American Indian tribes: Blackfoot, Crow, Salish, Kootenai, Assiniboine Sioux, Little Shell, Northern Cheyenne, Chippewa Cree, Pend d'Oreille, and Gros Ventre <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • With help, student will identify examples of knowledge of various Montana American Indian tribes gained from observations. • With help, student will compare how observations of nature form an essential base of knowledge among the different Montana American Indian tribes (e.g., migration patterns, planting cycles, etc.)
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify common elements and compounds by their symbol and chemical formula: • Create and manipulate simple models of common elements and compounds. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will choose any ten elements and list atomic symbol, mass, atomic number, and characteristics on an index card. Students will exchange the cards with classmates and try to identify the elements. • Students will create a 3-D model of an element.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • with prompting, identifies the relationships between atoms or molecules, elements or compounds, and pure substances or mixtures • with prompting, creates and manipulates simple models of common elements and compounds • Recognizing and recalling specific terminology such as: <p style="text-align: center;">atom, element, compound, pure substance, mixture, molecule</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will choose any ten elements and list atomic symbol, mass, atomic number, and characteristics on an index card with some information provided on the card. • Students will create a model of an element.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Classify matter as atoms, molecules, elements, compounds, pure substances, or mixtures and identify the relationship between atoms, molecules, elements, compounds, pure substances and mixtures. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will be assigned a group of elements from the periodic table. They will research the similarities and differences among the elements in their respective groups and a make a poster illustrating the properties of these elements.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student accurately describes matters as atoms or molecules, elements or compounds, and pure substances or mixtures Recognizing and recalling specific terminology such as: atom, element, compound, pure substance, mixture, molecule <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Within a group students will be assigned several elements from the periodic table. They will research the similarities and differences among the elements in their respective groups and a make a poster illustrating the properties of these elements.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Distinguish between and define chemical and physical properties of matter. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Ask each student to write the name of an object on a slip or paper. Collect the slips of paper and put them into a container. Draw them one at a time and have students name a physical and chemical property for each item.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student defines chemical and physical properties of matter Recognizing and recalling specific terminology such as: States of matter, density, solubility, malleability, mass, ductility, thermal, color, shape, reactivity <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Ask each student to write the name of an object on a slip or paper. Collect the slips of paper and put them into a container. Draw them one at a time and have students name a physical and chemical property for each item using their notes.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Structure and Properties of Matter**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Compare objects and substances based on their physical properties and simple chemical properties and classify objects and substances based on common physical properties and simple chemical properties. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> During a lab, students will observe physical and chemical changes and learn to recognize each type of change when it occurs and list the properties of each.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student classifies objects and substances based on physical properties and simple chemical properties. Recognizing and recalling specific terminology such as: chemical property, physical property, chemical change, physical change <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With assistance during a lab, students will observe physical and chemical changes and learn to recognize each type of change when it occurs and list the properties of each.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Describe, identify, and compare/contrast various forms of energy. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will list changes they have observed occurring around them during the day (cooking, eating, changes in temperature, lights going on or off and so on). Students will identify and describe the energy used. Students will compare and contrast the differences amongst the forms of energy.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student describes and identifies various forms of energy. Recognizing and recalling specific terminology such as: energy, potential energy, kinetic energy, thermal energy, mechanical energy, radiant energy, chemical energy, nuclear energy, electric energy, Law of Conservation of Energy <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will list changes they have observed occurring around them during the day (cooking, eating, changes in temperature, lights going on or off and so on). Students will identify and describe the energy used. Students will compare and contrast the differences amongst the forms of energy. Students will use a vocabulary list to help aid them.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student applies the Law of Conservation of Energy to explain various forms of energy transformation. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will be given various objects/events and will have to recall the type of energy used and determine what transformation occurred. For example, a spinning top, pendulum, a wind-up toy, rubbing hands together, juggling, and so on.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student defines the Law of Conservation of Energy. Recognizing and recalling specific terminology such as: Law of Conservation of Energy, energy transformation <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With a partner, students will be given various objects/events and will have to recall the type of energy used and determine what transformation occurred. For example, a spinning top, pendulum, a wind-up toy, rubbing hands together, juggling, and so on.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Describe various types of light waves (visible and invisible) and identify characteristics of the electromagnetic spectrum. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will be given a blank chart of the electromagnetic spectrum and will fill out the types of light waves and the wave lengths. Students will list different electromagnetic waves that are all around them (e.g. home, neighborhood, and their town) and why they are important.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student identifies characteristics of the electromagnetic spectrum. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> visible spectrum, ultraviolet, infrared, reflection, refraction, electromagnetic spectrum <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will be given a partially completed chart of the electromagnetic spectrum and will fill out the types of light waves and the wave lengths. Students will list different electromagnetic waves that are all around them (e.g. home, neighborhood, and their town) and why they are important.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Describe the behavior of light (e.g. refraction, reflection, diffraction) and explain the behavior of light (particle vs. wave, reflection, diffraction, speed) <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using mirrors, lenses, and prisms students will be able to describe and explain the behavior of light (e.g. refraction, reflection, diffraction).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with prompting, explains the behavior of light in terms of reflection, refraction and diffraction. Recognizing and recalling specific terminology such as: visible spectrum, ultraviolet, infrared, reflection, refraction, electromagnetic spectrum <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will be given pictorial examples to use as context clues to understand the behavior of light (e.g. refraction, reflection, diffraction).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Compare and contrast the three types of heat transfer. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students obtain several utensils made of different materials (silver, stainless steel, plastic, and wood) that are in a beaker so they are not touching each other. A small glob of frozen butter is put on each utensil at the same height. After hot water is poured into each beaker students will observe what happens to the butter and determine how heat is transferred. After this activity students will be lead into a discussion about the types of heat transfer.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student lists and describes the three types of heat transfer. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - radiant heat, conduction, convection <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students obtain several utensils made of different materials (silver, stainless steel, plastic, and wood) that are in a beaker so they are not touching each other. A small glob of frozen butter is put on each utensil at the same height. After hot water is poured into each beaker students will observe what happens to the butter and determine how heat is transferred. After this activity students will be lead into a discussion about the types of heat transfer and shown pictures illustrating the transfer of thermal energy.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	

Score 0.0	Even with help, no understanding or skill demonstrated.		
MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.			
Discipline: Physical Sciences			
Measurement Topic: Sources and Properties of Energy			
Grade: Sixth - Eighth			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Describe and prove through modeling the properties of magnetic materials. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students are given various materials and determine which are magnetic versus nonmagnetic. Students will distinguish the properties of the magnetic group.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student describes properties of magnetic materials. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> Magnetic field, magnetic domains, electromagnetic, attraction, repulsion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students are given various materials and determine which are magnetic versus nonmagnetic. Students will distinguish the properties of the magnetic group with a list of possible properties to choose from.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe and identify the properties of electricity and how it is produced. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will build a series and parallel circuit including measuring current and voltage. Students will use Ohm’s Law to calculate the voltage of a circuit.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with prompting, describes the properties of electricity. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - electricity, current, voltage, power, static electricity, circuits, insulators, conductors, Ohm’s Law <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Within a group, students will build a series and parallel circuit including measuring current and voltage. Given the formulas students will use Ohm’s Law to calculate the voltage of a circuit.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe the relationship between electricity and magnetism. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will build a working DC motor. They will then list three factors that may affect the motion of the coil. They will design an experiment to test one of those factors.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recognizes the relationship between electricity and magnetism. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Electromagnet, magnet, electricity, current, voltage <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will build a working DC motor. They will explain how magnetism and electricity interact to cause the wire coil to rotate.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Identify the parts of waves. • Compare and contrast longitudinal and transverse waves. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students complete and label both a longitudinal and transverse wave diagram.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies the parts of waves and identifies longitudinal and transverse waves. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - crest, trough, resting position, wavelength, amplitude, intensity, frequency, pitch, resonance, longitudinal, transverse • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students complete and label both a longitudinal and transverse wave diagram with a word bank.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe the basic properties of sound. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students investigate the basic properties of sound with various stations set up around the classroom. Students will explain the cause and effect of each station.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies the characteristics of sound with some inaccuracies. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - crest, trough, resting position, wavelength, amplitude, intensity, frequency, pitch, resonance, interference, Doppler effect, echoes, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students investigate the basic properties of sound with various stations set up around the classroom. Students will describe what is happening at each station.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Discuss the variables that affect the speed of sound (e.g., temperature, density). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will develop and test a logical activity to demonstrate the speed of sound.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with prompting, identifies variables that affect the speed of sound. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Loudness, pitch, resonance, Doppler effect, m/s <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will determine the speed of sound based on provided examples from the teacher.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explain the three states of matter. Explain the relationship between changes in thermal energy and states of matter (e.g., increase/decrease of thermal energy = change in state). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • In a lab activity students will record and observe as a beaker of ice changes states as thermal energy is added. Students will create a graph that shows temperature and phase changes over time.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with prompting, explains how temperature change relates in the three states of matter. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - thermal energy, melting point, boiling point, solid, liquid, gas, sublimation, evaporation, condensation <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • In a lab activity students will record and observe as a beaker of ice changes states as thermal energy is added. Students will graph temperature and time and then with teacher help students will label the phase changes.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Recognize that temperature measures the average kinetic energy of particles in a substance. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • During a whole class demonstration students will observe the movement of dye that is applied to both a beaker filled with ice water and hot water. Students can either explain the cause and effect with a drawing or written description.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with prompting, recognizes that temperature measures the average kinetic energy of particles in a substance. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - kinetic energy <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • During a whole class demonstration students will observe the movement of dye that is applied to both a beaker filled with ice water and hot water. Students can either explain the cause and effect with a drawing or written description.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	Sample Tasks
	3.5 In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Describe what will change and what will remain unchanged at the particulate level when matter experiences an external force or energy change. <p>The student exhibits no major errors or omissions.</p>	<ul style="list-style-type: none"> Before doing the activity have students form a hypothesis for the activity. Students thoroughly rinse out soda can(s) and add water to the can---about 1 tablespoon, enough to cover the entire bottom. Place the can on top of the burner. Use an oven mitt/tongs to lift the can off the burner and dunk it, top end down, into a beaker filled with cold water. Watch the can crumble and crush. Students will then write a detailed description how the motions of gas particles are related to the pressure exerted by the gas.
	2.5 No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with prompting, describes what will change and what will remain unchanged at the particulate level when matter experiences an external force or energy changes. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> thermal energy, melting point, boiling point, solid, liquid, gas, Boyles Law, Charles Law <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	<ul style="list-style-type: none"> Before doing the activity have students predict what will happen. Students will put a balloon in an ice filled beaker and apply heat to another balloon in beaker. After the activity students will explain what happens to the gas particles in the balloon as the gas is both cooled and warmed.
	1.5 Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5 With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.	

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Forces and Motion**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Describe the basic characteristics of motion (position, direction, speed, reference point) and identify variables that affect the motion of an object. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will analyze how the basic characteristics of motion (position, direction, speed, reference point) and what variables affect a person riding a roller coaster.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recognizes and lists the basic characteristics of motion. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - gravity, balanced force, unbalanced force, friction, net force, air resistance, speed, velocity, acceleration, mass, inertia, momentum, air pressure, lift, drag <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students are given a list of possible variables to help explain the basic characteristics of motion (position, direction, speed, reference point) that affect a person riding a roller coaster.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Forces and Motion**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Explain the relationship between speed, velocity, acceleration, force, mass, and momentum. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will participate in a lab investigating how the angle of a ramp affects speed, velocity, acceleration, and momentum as the object (marble, golf ball, tennis ball) moves across the floor. Students will graph the speed of the object against the angle of the ramp and explain the relationship between the two variables.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student recognizes and explains, with guidance, the relationship between speed, velocity, acceleration, force, mass and momentum. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> speed, velocity, acceleration, mass, inertia, momentum <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With guidance students will participate in a lab investigating how the angle of a ramp affects speed, velocity, acceleration, and momentum as the object (marble, golf ball, tennis ball) moves across the floor. Students will graph the speed of the object against the angle of the ramp and explain the relationship between the two variables.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Forces and Motion**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Explain Newton's Laws of Motion and include examples. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will construct an activity and demonstrate to the whole class one of Newton's Laws of Motion. Students will be assessed based on the level of critical thinking and explanation using terminology.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student explains, with generalized examples, Newton's Laws of Motion. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - gravity, balanced force, unbalanced force, friction, net force, air resistance, speed, velocity, acceleration, mass, inertia, momentum, air pressure, lift, drag, Newton's laws of motion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will construct an activity and demonstrate to the whole class one of Newton's Laws of Motion with examples provided by teacher. Students will be assessed based on the level of critical thinking and explanation using terminology.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Forces and Motion**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Compare and contrast simple and complex compound machines. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students are given the six simple machines. Students need to assess how each simple machine helps make work easier, and then create a workable compound machine from three or more of the simple machines provided.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recalls examples of simple and compound machines. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - simple machine, compound machine, work, force, lever, pulley, inclined plane, wedge, screw, wheel and axle, fulcrum, pivot, mechanical advantage <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Ask each student to bring in a compound machine or a picture of a compound machine. Have them identify the simple machines that make up the machine they selected and explain how they work together to perform the machine's intended function.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.		
Discipline: Physical Sciences		
Measurement Topic: Forces and Motion		
Grade: Sixth - Eighth		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Recognize that a machine makes work easier by changing the amount or direction of the force. Identify that simple and compound machines transfer energy by doing work. <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with prompting, recognizes that a machine makes work easier by changing the amount or direction of the force. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> simple machine, compound machine, work, force, lever, pulley, inclined plane, wedge, screw, wheel and axle, fulcrum, pivot, mechanical advantage <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> The students will prove that each of the six simple machines make work easier through the use of the simple machines and provided objects in various stations set up around the classroom The students will complete written assessments at each station, which will be evidence of students' understanding.
		<ul style="list-style-type: none"> The students will prove that each of the six simple machines make work easier through the use of the simple machines and provided objects in various stations set up around the classroom The students will complete written assessments at each station, which will be evidence of students' understanding.

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Forces and Motion**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Measure and calculate efficiency, ideal and actual mechanical advantage for simple machines using the appropriate formulas (e.g., work $w=f \times d$). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will use appropriate formulas to calculate ideal and actual mechanical advantage for simple machines.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student measures and calculates, with promoting, the mechanical advantage for simple machines. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - simple machine, compound machine, work, force, lever, pulley, inclined plane, wedge, screw, wheel and axle, fulcrum, pivot, mechanical advantage <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will use provided formulas to calculate ideal and actual mechanical advantage for simple machines.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Forces and Motion**

Grade: **Sixth - Eighth**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Create simple and complex compound machines to examine and measure the related forces. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will build a compound machine that includes at least 3 simple machines that makes simple tasks much more complicated such as, a Rube Goldberg. The students will include a drawing of the machine with labeled simple machines and the forces involved in each step of the machine.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, creates simple and complex compound machines to examine and measure the related forces. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - simple machine, compound machine, work, force, lever, pulley, inclined plane, wedge, screw, wheel and axle, fulcrum, pivot, mechanical advantage <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will build a compound machine that includes at least 3 simple machines that will move a roll of pennies three feet. Students will include a labeled drawing of their machine and will verbally explain to the whole class.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the function of a chromosome. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will build a model and explain some of the functions of a chromosome.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student explains some of the functions of a chromosome. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - chromosome, body cell, sex cell <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will recognize the structure of a chromosome and be able to explain some of the functions of chromosomes.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies organisms with different numbers of chromosomes. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will be able to compare different organisms and the number of chromosomes each has by stating examples.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recalls that organisms can have different numbers of chromosomes. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - chromosome, body cell, sex cell <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will be able to recall that organisms can have different number of chromosomes and with help find a chromosome number.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies the number of chromosomes in human body cells and human sex cells. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can compare the number of chromosomes in the human body cells and human sex cells and explain why they are different.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With prompting, student identifies the number of chromosomes in human body cells and human sex cells. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - chromosome, body cell, sex cell <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student can show the number of chromosomes in human body cells and human sex cells.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines and identifies gene, inheritance, phenotype, and genotype. • Student identifies examples of inherited characteristics and explains the dependence of genes. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students recognize that traits are inherited by gene. • Students will interpret allele combinations to show possible phenotype and genotype.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student defines and identifies gene, inheritance, phenotype, and genotype with some inaccuracies. • Student identifies examples of inherited characteristics and with prompting, explains the dependence of genes. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - phenotype, genotype, dominant, recessive, gene, inheritance, traits <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students can define gene, inheritance, phenotype and genotype but cannot explain how each relates to one another.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines and identifies dominant and recessive traits. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can demonstrate and explain through modeling how and why dominant and recessive traits affect the outcome of an organism.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student defines and identifies dominant and recessive traits using a single perspective. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - phenotype, genotype, dominant, recessive, gene, inheritance, traits <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will be able to show dominant and recessive traits that make up an organism.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines, uses, and interprets Punnett squares to predict simple genetic crosses. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can demonstrate the proper use of a Punnett square and can explain the potential outcome of the genetic crosses.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student defines, use and interpret Punnett squares, with incomplete understanding of prediction of simple genetic crosses. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Punnett square, genetic cross, genotype, phenotype <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Can make a Punnett square with help and make a prediction that may be inaccurate.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student is able to identify and observe single-celled and multi-cellular organisms. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can compare and contrast single-celled and multi-cellular organisms and give examples of each.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With some errors, student is able to identify and observe single-celled and multicellular organisms. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Punnett square, genetic cross, genotype, phenotype <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students with help can compare and contrast single-celled and multi-cellular organisms and give examples of each.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies, describes and illustrates the structure and function of organelles in meeting the needs of cells. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can accurately create a model and label the structure and function of each organelle.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes the structure and function of organelles in meeting the needs of cells. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - eukaryotic, prokaryotic, nucleus, bacteria <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students given a diagram can label the structure of the cell.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student differentiates cells as either prokaryotic or eukaryotic. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can compare and contrast prokaryote and eukaryote cells.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With errors, student differentiates cells as either prokaryotic or eukaryotic. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - eukaryotic, prokaryotic, nucleus, bacteria <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students with help can compare and contrast prokaryote and eukaryote cells.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student can explain and illustrate the different levels of organization within the organism. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student can explain and illustrate the different levels of organization within the organism.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student lists and explains the different levels of organization within the organism. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - eukaryotic, prokaryotic, nucleus, bacteria <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students given a diagram with word bank will be able to label and possibly infer the organization levels of an organism.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies the purposes of cell division. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can identify and explain the purpose of cell division (growth, reproduction, replacement).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With limited detail, student identifies the purposes of cell division. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - eukaryotic, prokaryotic, nucleus, bacteria <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students identify some reasons why cells divide.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes the key events in each phase of mitosis and identifies the differences in mitosis and meiosis. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can illustrate and explain each phase of mitosis. • Students can compare and contrast mitosis and meiosis.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student describes some key events in each phase of mitosis and identifies some differences in mitosis and meiosis. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mitosis, meiosis, asexual, sexual reproduction, phase <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students with a diagram can describe some key events in each phase of mitosis. • Students with help can compare and contrast mitosis and meiosis.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student differentiates between sexual reproduction and asexual reproduction. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will compare and contrast sexual reproduction and asexual reproduction.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With inaccuracies, student differentiates between sexual reproduction and asexual reproduction. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mitosis, meiosis, asexual, sexual reproduction, phase <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students with help will compare and contrast sexual reproduction and asexual reproduction.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes respiration and investigates it as a process by which organisms (plants and animals) use the energy from sugars to carry out life functions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will be able to demonstrate or diagram how the molecules are used in respiration.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With limited detail, student describes respiration and investigates it as a process by which organisms (plants and animals) use the energy from sugars to carry out life functions. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - photosynthesis, respiration <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will be able to fill-in or a diagram.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the process by which organisms obtain energy from the sun. • Student diagrams the flow of energy through photosynthesis and its decomposition through respiration. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will illustrate and label the flow of energy through photosynthesis and its decomposition through respiration.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student has a general sense of the process by which organisms obtain energy from the sun. • With some errors, student diagram the flow of energy through photosynthesis and its decomposition through respiration. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - photosynthesis, respiration <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students, with help, will label a diagram of photosynthesis and respiration.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student recognizes different biomes and analyzes energy movement in biomes (food webs and pyramids). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will create an illustration of energy flow in biomes (food webs and pyramids).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With minimal inaccuracies, student recognizes different biomes and analyzes energy movement in biomes (food webs and pyramids). • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - biomes, food web, food pyramid, producer, primary and secondary consumers, food chain, decomposer <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will be given a diagram that represents energy flow in biomes and label the direction of energy flow.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

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Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student classifies organisms in food webs based upon characteristics (e.g., physical and behavior). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will classify and explain why organisms are producers, primary or secondary consumers given their location in the food web.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With minimal inaccuracies, student classifies organisms in food webs based upon characteristics (e.g., physical and behavior). • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - biomes, food web, food pyramid, producer, primary and secondary consumers, food chain, decomposer <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will classify organisms as producers, primary or secondary consumers in the food web.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student distinguishes between a population and a community. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will compare and contrast populations and communities.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student has a general understanding of the differences between a population and a community. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - population, community <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students, with help, will compare and contrast populations and communities.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

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Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies living and non-living factors that affect populations and communities and explain how populations are impacted by changes in living and non-living factors in the environment. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will investigate and infer how living and non-living factors affect communities/populations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student has a general understanding of the identity of living and non-living factors that affect populations and communities and can sometimes explain how populations are impacted by changes in living and non-living factors in the environment. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - population, community <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students, with help, will investigate and infer how living and non-living factors affect communities/populations.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships Among Organisms and Their Physical Environment**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies different types of symbiosis and their positive and negative effects. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will interpret the symbiotic relationships between organisms and classify each as one of the three (mutualism, commensalism, and parasitism) and explain what the effects are (positive or negative).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies simple types of symbiosis and a few positive and negative effects. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - symbiosis, mutualism, commensalism, parasitism, predator, prey, competition <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student identifies simple types of symbiosis and a few positive and negative effects.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the relationship between kingdom, phylum, class, order, family, genus, and species. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students can construct a modern classification system and differentiate between each classification (kingdom, phylum, class, order, family, genus, and species).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student lists kingdom, phylum, class, order, family, genus, and species and has a vague understanding of the relationships. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - dichotomous key, kingdom, taxonomy, phylum, genus, species, scientific name, scheme <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students, with help, can construct a modern classification system and differentiate between each classification (kingdom, phylum, class, order, family, genus, and species).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes similarities and differences among organisms of different, but closely related taxa (i.e., pine trees, big cats, rodents, ungulates). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will look at modern classification of organisms and will describe similarities and differences (binomial nomenclature).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student has a general understanding of similarities and differences among organisms of different, but closely related taxa (i.e., pine trees, big cats, rodents, ungulates). • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - dichotomous key, kingdom, taxonomy, phylum, genus, species, scientific name, scheme <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will recognize and describe briefly the similarities and difference of organisms in closely related taxa.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student creates and uses a basic classification scheme to identify plants and animals. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students design an original classification scheme to identify plants and animals.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With some inaccuracies, student creates and uses a basic classification scheme to identify plants and animals. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - dichotomous key, kingdom, taxonomy, phylum, genus, species, scientific name, scheme <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will design an original classification scheme with limited steps to identify plants and animals.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains and provides examples of adaptations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will explain in detail and provide specific examples of adaptation in organisms.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With prompts, student explains and provides examples of adaptations. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - adaptation, natural selection, evolution, fossil <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will explain and provide examples of adaptation.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines natural selection and explains the relationship between natural selection and adaptations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will explain natural selection and how it drives the relationship between natural selection and adaptation.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student defines natural selection and has a general understanding of the relationship between natural selection and adaptations. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - adaptation, natural selection, evolution, fossil <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will explain in limited detail natural selection and how it drives the relationship between natural selection and adaptation.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures, and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and Diversity of Life**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies natural selection as a mechanism of evolution, identifies lines of evidence that support evolution, and explains how the fossil record provides evidence of life forms' appearance, diversification, and extinction. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will interpret fossil records (appearance, diversification, and extinction) to support how natural selection affects evolution.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies natural selection as a mechanism of evolution, realizes that the theory of evolution is supported by lines of evidence, and knows that the fossil record supports the theory. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - adaptation, natural selection, evolution, fossil, extinction <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will recall natural selection as a mechanism of evolution and explain in limited detail the theory of evolution.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Sixth –Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies, diagrams and labels the composition and structure of the atmosphere <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given a table of altitude data, student will graph and label the atmospheric layers. • Student will identify the composition of the atmosphere.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies, diagrams and labels the structure of the atmosphere, with inaccuracies, and may be able to explain some concepts of composition. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - atmosphere, troposphere <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will label a diagram of atmospheric layers. • Student will recognize the basic composition of the atmosphere.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies, diagrams and labels the components of the water cycle. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will create a diagram of the water cycle and label the components.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With assistance, student identifies diagrams and labels the components of the water cycle. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - precipitation, evaporation, condensation, water vapor <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a diagram of the water cycle with a word bank, student will label the components.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes properties of air masses moving across the earth’s surface and how they can be used to forecast weather. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will diagram the movement of air masses and the weather caused by them. Student will also explain why specific weather is caused by warm fronts and cold fronts.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With assistance, student describes properties of air masses moving across the earth’s surface and how they can be used to forecast weather. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - air mass, front, air pressure, warm front, cold front, precipitation, air currents <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will observe the movement of air masses and list weather caused by them.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes convection currents. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student summarizes the process of convection and identifies examples of convection currents.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student describes convection currents, with inaccuracies. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - convection currents • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Density <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student recites the process of convection.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Atmospheric Processes and the Water Cycle**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains how ocean currents are caused by convection currents and explains the impact of ocean currents on large-scale weather patterns. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will predict how ocean currents will impact weather patterns based on their model.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student has a general understanding of how ocean currents are caused by convection currents and of their impact on large-scale weather patterns. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - ocean currents, jet stream, el Niño, gulf stream <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will observe the interaction between hot and cold water currents (blue/red food coloring) using teacher guidance or demonstration.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies and models or diagrams internal structures of the earth and their characteristics. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will construct a model of earth’s internal structures and labels the composition, temperature, depth and layer names.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies and models or diagrams internal structures of the earth and gives limited details of their characteristics. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mantle, inner core, outer core, crust, lithosphere <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will memorize the layers and order of earth’s internal structure.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student diagrams convection currents inside of the earth. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will describe convection and diagram how it occurs in earth’s mantle.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student diagrams, with limited detail, convection currents inside of the earth. • Recognizing and recalling specific terminology such as: - mantle, inner core, outer core, crust, lithosphere <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will draw a convection current in earth’s interior
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student explains the movement of plates over time. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Student will predict the boundaries of plates and the direction of plate movement given world maps of seismology, volcanology, geochronology of ocean floor and landforms.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student has a general understanding of the movement of plates over time. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mantle, inner core, outer core, crust, lithosphere Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Plate boundary <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given photocopies of earth’s plates, students will construct a model of Pangea and a map of plate boundaries.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student explains or models the differences between oceanic and continental plates. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Student will apply their knowledge of density and the composition of oceanic and continental plates to explain the processes that result from different plate boundaries.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student has a general understanding of the differences between oceanic and continental plates, and may be able to construct a model. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mantle, inner core, outer core, crust, lithosphere Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Density, subduction, trench, convergent, transform, divergent <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Student will list the composition of oceanic and continental plates and construct a model demonstrating one type of plate boundary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student models and explains constructive forces on the earth. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will construct a model of the formation of the Hawaiian Islands and give evidence for direction of plate movements.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student models and/or explains constructive forces on the earth with inaccuracies. • Recognizing and recalling specific terminology such as: - mantle, inner core, outer core, crust, lithosphere <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will construct a model of subduction.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student compares and contrasts types of rocks formed from different earth processes. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will classify various rocks as metamorphic, igneous, and sedimentary based on their physical and chemical properties.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With guidance, student compares and contrasts types of rocks formed from different earth processes. • Recognizing and recalling specific terminology such as: - rock cycle, metamorphic, sedimentary, igneous <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will observe different rock types and list characteristics of each.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student models and explains the appearance of the earth caused by destructive forces (i.e., weathering and erosion). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will create a presentation citing evidence of erosion by wind, water and ice.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With guidance, student models and explains the appearance of the earth caused by destructive forces (i.e., weathering and erosion). • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - constructive, weathering , erosion • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Glaciers, chemical weathering <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given photographs of erosional features, student will explain how erosion affects landforms.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student makes use of common rock and mineral identification tests to identify rocks and minerals, including common Montana rocks and minerals. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will design an experiment to identify several rocks and mineral samples.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with some inaccuracies, makes use of common rock and mineral identification tests to identify rocks and minerals, including common Montana rocks and minerals. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - mineral, rock, hardness, streak, luster <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given lab steps, student will determine the identity of several rock and mineral samples.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student lists how rocks and minerals are used in daily life. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will use multiple sources to research and describe how American Indians have used rocks and minerals, historically and contemporary.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student lists a limited number of examples of how rocks and minerals are used in daily life. • Recognizing and recalling specific terminology such as: - mining <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will research how copper is used in daily life.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student explains the importance of the mining industry [in Montana] and the uses of rocks and minerals. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Student will role play (ARCO President, Salish elder, FWP biologist, community member) to compare and contrast the varying perspectives of the mining industry in Montana.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With limited detail, student explains the importance of the mining industry [in Montana] and the uses of rocks and minerals. Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Milltown Dam <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Student will research a common mineral mined in Montana and explain its use.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student diagrams the interaction between igneous, sedimentary and metamorphic rocks through the rock cycle. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will construct a bulletin board that diagrams and labels the rock cycle, from memory.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student diagrams the interaction between igneous, sedimentary and metamorphic rocks through the rock cycle with some inaccuracies. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - rock cycle, metamorphic, sedimentary, igneous • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Melting, cooling, cementation, weathering, erosion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a word bank, student will label a diagram of the rock cycle.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies major geologic divisions of time. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will design a timeline of earth’s history and calculate an accurate ratio for the timeline divisions.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies major geologic divisions of time with some inaccuracies. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Cenozoic era, Mesozoic era, Paleozoic era, Precambrian • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> - Geologic timeline, age of earth <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will interpret a geologic timescale and identify relative ages of major events.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Earth**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student categorizes the predominant organisms that appear within each major division of geologic time. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will create an animated timeline (online) depicting the predominant organisms within each division of geologic time.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student categorizes the predominant organisms that appear within each major division of geologic time with some inaccuracies. Recognizing and recalling specific terminology such as: - Cenozoic era, Mesozoic era, Paleozoic era, Precambrian <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given illustrations of organisms, student will place organisms in the proper division of geologic time.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student explains, using a model, how the Earth rotates and revolves around the sun. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using a model, student will demonstrate and explain the cause of seasons.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Demonstrating limited knowledge, student explains, using a model, how the Earth rotates and revolves around the sun. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - rotation, revolution, orbit, axis, solstice, climate zone, Northern/Southern hemisphere, latitude, elevation, equator <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Using a model, student will demonstrate the difference between rotation and revolution.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student identifies Earth’s climate zones and their key characteristics and how Earth’s tilt and revolution affects climate zones. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Student will compare and contrast the climatographs of 2 different locations on earth and model the factors (tilt/revolution, elevation) that influence the climate of each.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With some inaccuracies, student identifies Earth’s climate zones and their key characteristics and shows a general understanding of how Earth’s tilt and revolution affects climate zones. Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - rotation, revolution, orbit, axis, solstice, climate zone, Northern/Southern hemisphere, latitude, elevation, equator <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> In a small group, student will compare and contrast the climatographs of 2 different locations on earth and model the factors (tilt/revolution, elevation) that influence the climate of each.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains how Montana’s location on Earth influences Montana’s climate. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will summarize the factors (elevation, latitude, tilt, revolution) that affect Montana’s climate in a brochure format. • Other exploration ideas available online @ Journey North
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with prompting, can explain how Montana’s location on Earth influences Montana’s climate. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - rotation, revolution, orbit, axis, solstice, climate zone, Northern/Southern hemisphere, latitude, elevation, equator <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given a guiding outline or graphic organizer, student will summarize the factors (elevation, latitude, tilt, revolution) that affect Montana’s climate. • Other exploration ideas available online @ Journey North.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student predicts how a change in planetary movement would change Earth’s days, seasons, years and climate. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Given changes in revolution speed, degree of axis tilt, or rotation speed, student will develop a logical conclusion about changes in earth’s days, seasons, years, and climates.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With prompting, student predicts how a change in planetary movement would change Earth’s days, seasons, years and climate. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - rotation, revolution, orbit, axis, solstice, climate zone, Northern/Southern hemisphere, latitude, elevation, equator <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will predict changes in earth’s days and years if rotation and revolution speeds were altered. • Student will hypothesize how climate would be affected by a change in earth’s tilt.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes the earth, moon, planets, and other objects in space in terms of relative size and structure. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will construct an accurate, proportional model of the solar system, including earth, moon, and planets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<ul style="list-style-type: none"> - The student exhibits no major errors or omissions regarding the simpler details and processes, such as: - With limited detail, student describes the earth, moon, planets, and other objects in space in terms of relative size and structure. - Recognizing and recalling specific terminology such as: - planet, moon, orbit, period of rotation, year, day, gravity, force - However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> - In a small group, student will construct an accurate, proportional model of the solar system, including earth, moon, and planets.
	1.5	- Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student identifies that planets in our solar system have different lengths of orbits and periods of rotation. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Student will design a board game that assesses knowledge of planetary orbits and periods of revolution. Student-made answer key required.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student , with limited detail, identifies that planets in our solar system have different lengths of orbits and periods of rotation. Recognizing and recalling specific terminology such as: - planet, moon, orbit, period of rotation, year, day, gravity, force <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Student will assist in designing a board game using knowledge of planetary orbits and periods of revolution around the sun and then play the game until exhibiting competence.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

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Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student discusses how length of orbit and period of rotation affects length of years and days, and compares and contrasts the length of days and years on different planets. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Student will design a board game that assesses knowledge of planetary orbits and periods of revolution. Student-made answer key required.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student discusses how length of orbit and period of rotation affects length of years and days on earth and some planets. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - planet, moon, orbit, period of rotation, year, day, gravity, force <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will assist in designing a board game using knowledge of planetary orbits and periods of revolution around the sun and then play the game until exhibiting competence.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

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Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student can describe the role of gravity in the orbit of moons around planets and planets around the sun. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will explain how size and distance affects gravitational forces.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With prompts, student can describe the role of gravity in the orbit of moons around planets and planets around the sun. • Recognizing and recalling specific terminology such as: - planet, moon, orbit, period of rotation, year, day, gravity, force <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will define gravity. • Student will recall that gravity affects objects in space.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines scientific theory as an explanation supported by rigorous testing and multiple lines of evidence. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will cite evidence used to create the Big Bang Theory.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recognizes scientific theory as an explanation supported by rigorous testing and multiple lines of evidence. • Recognizing and recalling specific terminology such as: - scientific theory, evidence, solar system, gas, dust, accretion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will recognize that the Big Bang Theory is based on multiple lines of evidence.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

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Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains that the sun and planets formed from the accretion of dust and gases. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will compare and contrast the widely accepted Nebular Theory with other perspectives/ideas of solar system formation.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student demonstrates a basic understanding that the sun and planets formed from the accretion of dust and gases. • Recognizing and recalling specific terminology such as: - scientific theory, evidence, solar system, gas, dust, accretion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will illustrate the steps of the Nebular Theory.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Discipline: **Earth and Space Sciences**

Measurement Topic: **Composition, Structure and Processes of the Universe and the Earth's Place In It**

Grade: **Sixth- Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies how planets, such as the Earth, changed after their formation. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will describe how earth’s round shape is influenced by gravity. • Student will connect the concepts of heat, gravity, and density to explain how earth’s inner layers were formed.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student has a general understanding of how planets, such as the Earth, changed after their formation. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - scientific theory, evidence, solar system, gas, dust, accretion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will recognize that earth’s shape is influenced by gravity.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student researches a variety of science and technological fields and will identifies and describes a variety of occupations within the field of science and the field of technology. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will differentiate between several science-based occupations by researching and creating a poster.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student researches a limited variety of science and technological fields and will identifies and describes a few occupations within field of science and field of technology. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - occupations, science, technology, science fields (life science, earth science, engineering, physical science) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will investigate a science-based occupation by researching and creating a poster.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes uses of technology unique to specific occupations within each field of science. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will assess water quality by shadowing and working side by side with a county health department employee.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes limited uses of technology unique to specific occupations within each field of science. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> ○ occupations, science, technology, science fields (life science, earth science, engineering, physical science) • Recognizing and recalling isolated details such as... <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will observe the tools used by research scientists at a local lab.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies a local current event or problem involving science. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will evaluate the impact of contaminated sediments in the Clark Fork River.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With prompting, student identifies a local current event or problem involving science. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (vocabulary words here) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will recall that the Clark Fork River has been remediated, due to contamination.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student researches and summarizes the scientific issues relevant to that local current event or problem. • Student presents and discusses the research on local scientific issue. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student investigates the human health complications caused by arsenic in drinking water and presents research.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student researches and locates scientific issues relevant to that local current event or problem, and presents and discusses the relevant research, in limited detail. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - environmental impact, proposed solutions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student lists the contaminants found in the sediments at the former Milltown Dam area and presents information in limited detail.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

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Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes methods scientists use to collaborate and share scientific findings with other scientists. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will critique the procedure and data collection methods of a peer’s science fair project.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies some methods scientists use to collaborate and share scientific findings with other scientists. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> ○ current event, problem, issue, research, summarize, collaborate, relevant <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will recognize that presenting at Science Fair is a method of sharing scientific finding with other scientists.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes methods scientists use to share scientific findings with the public. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will demonstrate several methods of sharing their own scientific findings with the public (ex. Blog, podcast, journal article, science fair).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With limited assistance, student identifies and describes methods scientists use to share scientific findings with the public. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (vocabulary words here) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will list several methods scientists use to share scientific findings with the public.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains environmental impacts of a local current event or problem. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will illustrate and describe a proposal for the remediated site at Milltown.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • In limited detail, student explains environmental impacts. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> ○ environmental impact, proposed solutions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will predict that fish species will have a higher survival rate after contaminated sediments are removed from the former Milltown Dam site.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student proposes solutions to a local current event or problem. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will assess the actual proposed solutions to the Milltown Dam.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With limited understanding, student proposes solutions to a local current event or problem. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - environmental impact, proposed solutions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will recite actual proposed solutions to the Milltown Dam.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

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Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth-Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student investigates how science and technology have an impact on Montana American Indians. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will describe why the Salish Tribe was a stakeholder in the Milltown Dam removal debate.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With guidance, student investigates how science and technology have an impact on Montana American Indians. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - environmental impact, proposed solutions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will recall that the Salish Tribe was a stakeholder in the Milltown Dam removal debate.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of Science		
Measurement Topic: Impact of Scientific Development on Communities, Cultures, and Societies		
Grade: Sixth - Eighth		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes examples of technological advances throughout history, including Montana American Indian examples. <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies and describes some examples of technological advances throughout history, including Montana American Indian examples. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (vocabulary words here) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> • Student will connect the use of an atlatl by Montana American Indians with simple machines (levers).
		<ul style="list-style-type: none"> • Student will recognize that Montana American Indians used an atlatl to increase velocity of the arrow.

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of Science		
Measurement Topic: Impact of Scientific Development on Communities, Cultures, and Societies		
Grade: Sixth - Eighth		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains how technology advances science understanding. • Student identifies and explains scientific discoveries influenced by these technologies. <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student explains with some inaccuracies how technology advances science understanding. • Student identifies and explains with some inaccuracies scientific discoveries influenced by these technologies. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (vocabulary words here) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
Sample Tasks		
<ul style="list-style-type: none"> • Student will research the invention of the aqualung and how its invention allowed divers to explore oceans in 1943. 		
<ul style="list-style-type: none"> • In a small group, student will research the invention of the aqualung and how its invention allowed divers to explore oceans in 1943. 		

MT Science Content Standard 6: Students understand historical developments in science and technology.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student identifies and describes the importance of various physical, life, and earth scientists and their discoveries. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Student will create a Fakebook.com page on Galileo Galilei's observations and how they influenced theories and societal beliefs of astronomy.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student identifies and describes in limited detail the importance of various physical scientists and their discoveries. Recognizing and recalling specific terminology such as: <p>Examples of Scientists: Aristotle (motion), Archimedes (Levers and properties of buoyancy), Galileo, Newton, Da Vinci (further research on motion), Einstein (discovered gravity's effect on light), Goddard (designed the first liquid propelled rocket), Hooke & Van Leeuwenhoek (development of microscope), Pasteur (pasteurization and vaccines), Mendel (heredity), Darwin (evolution), Curie (radiation), Virchow, Schwann & Schleiden (cell theory), Crick & Watson (DNA), Steno (recognized the importance of rock layers), Hutton (Naturalness of change theory), Boltwood (dating and timescale), Horner (fossils and Museum of the Rockies), Hubble (astronomy), Cousteau (oceanography)</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Student will identify the discoveries of Edwin Hubble.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures, and Societies**

Grade: **Sixth - Eighth**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the impact of science changing human understanding of the natural world on past and present societies. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student will cite evidence observed by Hubble to explain that the universe is larger than the Milky Way galaxy.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with prompting, explains the impact of science changing human understanding of the natural world on past and present societies. • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - (vocabulary words here) <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student will differentiate between the theories of Ptolemy and Copernicus in attempting to explain the center of the universe.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

HIGH SCHOOL

SCIENCE RUBRICS

Grade 9- Integrated Science (Physics and Weather)

Grade 10- Biology

Grade 11- Chemistry

Grade 12- Physics

NINTH GRADE- INTEGRATED SCIENCE (PHYSICS)

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.		
Strand: Physical Science		
Measurement Topic: Structure of Atoms		
Course/Grade: Integrated Science/9th (Physics)		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student compares and contrasts subatomic particles in relation to their relative masses, charges and location. <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with prompting, compares and contrast subatomic particles in relation to their relative masses, charges and location. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> Students will develop a model of an atom with the proper arrangement of subatomic particles. They will describe the characteristics of each particle and the relation to mass, weight and isotopes.
		<ul style="list-style-type: none"> With assistance.

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Atomic Structure and forces**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student compares and contrasts the subatomic particles and their organization within an atom. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will describe each of the subatomic particles and their characteristics.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student compares and contrasts the subatomic particles and their organization within an atom. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will list the subatomic particles and at least 2 characteristics.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Fission and Fusion**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student compares and contrasts nuclear fission and nuclear fusion, and provides an example of each. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will describe both nuclear fission and fusion reactions and be able to list at least 2 examples.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students, with prompting, compares and contrasts nuclear fission and nuclear fusion, and provides an example of each. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will be able to define fission and fusion reactions and be able to list at least 1 example.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Radioactive Decay**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains and provides an example of radioactive decay. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will be given written examples of radioactive isotopes and their half lives, they will then determine how long it would take to reach 1/16 of its original mass and describe radioactive decay.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with prompting, explains and provides an example of radioactive decay <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students will be able to define half life and compute the mass of an isotope with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Periodicity**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student demonstrates a complete understanding that a series of repeating patterns organize the Periodic Table. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will be able to describe the periodic table and the repeating patterns which organize the table.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student demonstrates a general understanding that a series of repeating patterns organize the Periodic Table. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to answer basic questions on the periodic table and the patterns which make it up.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Valence Electrons**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student identifies the number of valence electrons of an element utilizing the Periodic Table. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will be given a variety of atoms and using the periodic table will determine the valence electrons.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with prompting, identifies the number of valence electrons of an element utilizing the Periodic Table. However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> With assistance students will be able to determine the valence electrons from a periodic table.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Ionic and covalent bonds and their relation to ions**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will describe the formation of ions and will be able to compare and contrast covalent and ionic bonding. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using diagrams or models, students will be able to show the various types of bonds. (covalent and ionic)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students will describe the formation of ions and will be able to compare and contrast covalent and ionic bonding. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will be able to define and describe covalent and ionic bonds.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Chemical Changes**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students correctly use experimental design and a chemical formula to indicate a chemical change has occurred. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will perform an experiment and show through chemical formulas that chemical change has occurred.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With assistance students correctly use experimental design and a chemical formula to indicate a chemical change has occurred However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> Students will perform the above with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Physical Changes**

Course/Grade: **Integrated Science/9th (Physics)**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	Sample Tasks
4.0		
	3.5 In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students correctly use experimental design to indicate physical changes within a substance have occurred. <p>The student exhibits no major errors or omissions.</p>	<ul style="list-style-type: none"> Students will design an experiment to show physical change.
	2.5 No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With assistance students correctly use experimental design to indicate physical changes within a substance. However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 	<ul style="list-style-type: none"> Students will perform an experiment showing physical changes and report their results.
	1.5 Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>	
	0.5 With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
0.0	<p>Even with help, no understanding or skill demonstrated.</p>	

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Conservation of Mass**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines the law of conservation of mass and provides examples of its application <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will be able to describe the law of conservation of mass and how it applies.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student shows understanding of the law of conservation of mass but may need prompting to provide examples • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will define the conservation mass and provide examples.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Energy Transfer**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student measures and calculates values from a data set or experiment that relates energy transfer to properties of matter (specific heat, calorimeter, free energy etc.) <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Use an experiment with calorimeter to show energy transfer and properties of matter. Ex. calorie content of food and digestion.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with guidance, performs simple measurements and calculations from a data set or experiment that relates energy transfer to properties of matter .However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> Performs above experiment with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Relationship of Energy and Matter**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes, with detail, the particulate-level relationship between energy transfer and properties of matter. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Have students complete lab and describe the phase change that occurs in water when heat is applied.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recognizes that energy transfer is related to properties of matter and can relate it to the particulate level with guidance. • • • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Force and Acceleration**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student understands and uses $F=ma$ to describe the relationship between force and acceleration in uniform motion. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Use various masses to design an experiment to show the relationship between mass and acceleration and how they affect force.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with prompting, uses $F=ma$ to describe the relationship between force and acceleration in uniform motion. .However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Kinematic Equations**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students apply equations to describe simple motion of objects. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students perform speed and acceleration lab and describe results.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with prompting, applies kinematic equations to describe simple motion of objects <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students complete lab and define speed and acceleration.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: Physical Science

Measurement Topic: Types of Forces

Course/Grade: Integrated Science/9th (Physics)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student differentiates between static and kinetic friction with detail, and explaining why friction is a force that opposes motion. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Plan for student to design hands and experiments to describe effects of friction on the pendulum.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student, with describing, differentiate between static and kinetic friction and recognize that friction is a force that opposes motion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will be able to define or describe the differences between static and kinetic friction.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.5	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
Score 0.5	Even with help, a partial understanding of the 2.0 content, but not the 3.0 content.		
Score 0.0	Even with help, no understanding or skill demonstrated.		
Score 0.0			

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Newton's Three Laws**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student describes situations that illustrate Newton's Three Laws of Motion <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will describe real life examples of where we see Newton's 3 laws in action.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student identifies a limited number of situations that illustrate Newton's Three Laws of Motion <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will be able to identify the 3 laws.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Electromagnetic Forces**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes electromagnetic force as a relationship between magnetism and electricity <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will be able to describe electromagnetic force and give examples.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies electromagnetic force as a relationship between magnetism and electricity • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to define what an electromagnetic force is.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Kinetic and Potential Energy**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student differentiates between kinetic and potential energy. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will be able to describe and design a demonstration of kinetic and potential energy.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with guidance, differentiates between kinetic and potential energy • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to define kinetic and potential energy.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Mechanical Energy**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the relationship between kinetic energy and potential energy in a closed system as mechanical energy • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will compare and contrast kinetic and potential energy and how they function in mechanical energy.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recognizes that mechanical energy is the sum of the potential and kinetic energy in a closed system. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to define mechanical energy.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Conservation of Energy**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes the concept of conservation of energy and applies it to the transfer/transformation of energy in a closed system over time • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will be able to describe conservation of energy and discuss its relevance to our society and planet Earth.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student describes conservation of energy, but requires assistance to apply it to the transfer/transformation of energy in a closed system over time • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will define conservation of energy and give 2 examples.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Thermal Energy**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.		
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will describe thermal energy using temperature as a measure of heat. The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> Students will design an experiment to illustrate thermal energy. They will also be able to use the proper technology to measure and describe thermal energy.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content		
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students will measure thermal energy using temperature as a measure of heat. However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> Students will define thermal energy and know how to use a thermometer to measure variations.
1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content		
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.		
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Kinetic Molecular Theory**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student utilizes kinetic molecular theory to describe changes in thermal energy, heat and temperature at the particulate-level The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will identify and illustrate how changes in thermal energy affect molecular motion at the particulate level.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recognizes kinetic molecular theory in context of thermal energy, heat and temperature at the particulate-level • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to define and give examples.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Waves/longitudinal and transverse**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student is able to illustrate and describe features of mechanical waves differentiating between longitudinal and transverse. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will use a slinky or other tool to demonstrate and describe the various types of waves.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With guidance, student is able to illustrate and describe features of mechanical waves differentiating between longitudinal and transverse. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Wave Forms and Energy Transfer**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will describe the transfer of energy through waves and how it is related to the media in which it is transferred in. The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> Students will describe how a wave is affected by media. They will use sonar as an example.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students will describe the transfer of energy through waves and how it is related to the media in which it is transferred in with few inaccuracies. However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Electromagnetic Spectrum**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will define the electromagnetic spectrum and compare and contrast the various frequencies. The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> Students will use a multimedia presentation to describe the electromagnetic spectrum and how we separate or categorize the various frequencies.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students will define the electromagnetic spectrum and list the various frequencies categories within the spectrum. However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> Students will be able to define what the EM spectrum is and recognize or label the frequency categories.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Strand: **Physical Science**

Measurement Topic: **Reflection, Refraction and Absorption**

Course/Grade: **Integrated Science/9th (Physics)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes how waves can superpose, bend, reflect, refract and be absorbed as well as relate these properties to wavelength • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will use a wave tank or internet to investigate the properties of waves and their interactions.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies that waves can superpose, bend, reflect, refract and be absorbed. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to recognize the interaction of waves in various conditions.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.			
Strand: Physical Science			
Measurement Topic: Conductors and Insulators			
Course/Grade: Integrated Science/9th (Physics)			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	The student demonstrates an understanding of important information, such as: <ul style="list-style-type: none"> • Student classifies materials as conductors or insulators as well as describes properties of each. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will be able to describe conductors and insulators and give examples for both heat and electricity.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	The student exhibits no major errors or omissions regarding the simpler details and processes, such as: <ul style="list-style-type: none"> • Student identifies properties of materials that make it an electrical conductor or insulator. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to define conductor and insulator and give an example of each.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

NINTH GRADE- INTEGRATED SCIENCE (WEATHER)

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Plate Tectonics Movement

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students describe the independent movement of Earth’s crustal plates. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students participate in activity/demonstration showing plate movement. Complete a written description of Earth’s crustal plate movement.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student demonstrates a beginning understanding of the relationship between the Earth’s crust and mantle. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students participate in activity/demonstration showing plate movement. Complete basic questions that describe Earth’s crustal plate movement.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Plate Tectonics Theory

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes the observations and evidence that led to the formation of the theory of plate tectonics. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Develop a multimedia presentation of students' choice with written description on Alfred Wagner.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> - Student demonstrates a general understanding of the observations and evidence that led to the formation of the theory of plate tectonics. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Develop PowerPoint presentation of students' choice with written outline on Alfred Wagner.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Plate Tectonics Convection**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student models the interaction of heat-driven convection and the movement of the plates. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Perform lab on convection using ice cubes, hot plate and food coloring. Write summary and draw a labeled picture of results.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> - Student describes the interaction of heat-driven convection and the movement of the plates. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Perform lab on convection using ice cubes, hot plate and food coloring. Draw and label picture of results.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Plate Tectonics Plate Boundaries**

Course/Grade: **Integrated Science/9th (Weather)**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.		
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies the types of plate boundaries. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Draw and describe plate boundaries and present to the class.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content		
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> - Student defines some of the types of plate boundaries. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Draw and label Poster of Plate Boundary types and present to class.
1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content		
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.		
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Plate Tectonics Interaction and Product**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student models ways plates interact at plate boundaries and the outcome of that interaction. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Build a model of a functional or model of a fault system to show plate activity.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> - Student describes ways plates interact at plate boundaries. - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Do a powerpoint or poster of plate boundary interactions in relation to volcanoes and earthquakes.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Plate Tectonics and relation to geologic settings**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student relates earthquakes and volcanic activity to plate boundaries and other geologic settings. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Build a model of a functional volcano or model of a fault system to show plate activity.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With some inaccuracies, student relates earthquakes and volcanic activity to plate boundaries and other geologic settings. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Do a powerpoint or poster of plate boundary interactions in relation to volcano and earthquakes.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Rocks and Minerals**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines mineral. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Use proper terminology and describe a mineral.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> - Student vaguely defines mineral. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Give a definition of mineral in students own words.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Rock and Mineral Identification**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will classify minerals according to their chemical and physical properties using proper lab techniques. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Set up a lab to test various minerals using proper tools and techniques. Have students design and report results.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Students will vaguely classify minerals according to their chemical and physical properties using proper lab techniques. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Assist students in the implementation of lab to test minerals using proper techniques.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Rocks and Minerals/Environments and Processes**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student describes environments and processes that lead to the formation of various minerals. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will get various samples of minerals and use the information they have to describe how they were formed.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With inaccuracies, student describes environments and processes that lead to the formation of various minerals. .However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> With assistance students will get various samples of minerals and use the information they have to describe how they were formed.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Rocks and Mineral/Rock Cycle**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes the rock cycle and its processes. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will do a group presentation through a skit or multimedia presentation on the rock cycle and its processes.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student describes differences between rock types. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to describe verbally or in written form the process in the rock cycle.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Rocks and Mineral/Rock Identification**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will classify rocks according to their chemical and physical properties using proper lab techniques. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will use proper lab techniques to sample and identify various rock samples.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Students will vaguely classify rocks according to their chemical and physical properties using proper lab techniques. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Above with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Rocks and Minerals as Resources**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will identify various rock and mineral resources, how they are obtained and their value to modern society and Native American culture. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will choose a rock or mineral and report to the class the cultural and societal importance of this mineral to our modern society and to Native American cultures.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students will identify a few rock and mineral resources, how they are obtained and their value to modern society and Native American culture. .However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Strand: **Earth and Space Science**

Measurement Topic: **Scientific Method**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will explain and demonstrate the steps in the scientific method. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will design an experiment that uses the scientific method.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students will explain the steps of the scientific method. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Strand: Earth and Space Science

Measurement Topic: Experimental Design

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will model and design an experiment using proper variables and controls by generating a valid hypothesis and testable question. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will model and design an experiment using proper variables and controls by generating a valid hypothesis and testable question.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students will model and design an experiment using proper variables and controls by generating a valid hypothesis and testable question with some instructor assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Students will model and design an experiment using proper variables and controls by generating a valid hypothesis and testable question with some instructor assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Strand: **Earth and Space Science**

Measurement Topic: **Scientific Theory**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students explain the concept of scientific theory. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Develop comparison chart showing differences between law and theory.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Students explain the concept of scientific theory with some inaccuracies. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> In own words, tell the difference between law and theory.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Fossils as evidence of change over time

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains how various fossils show evidence of past life. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Use internet to research fossils and their origin and present to class in multimedia form.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <p>Student understands how various fossils show evidence of past life.</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Use internet to research fossils and their origin and present to class.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Fossils/geologic time**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student models the scale of geologic time <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Create timeline and describe events that separate major eras.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student, with assistance, models the scale of geologic time. However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Create timeline.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Fossils/Relative and Absolute Dating

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student interprets rock layers using principles of relative and absolute age dating. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Use web based activity to introduce students to superposition and dating techniques.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student understands rock layers using principles of relative and absolute age dating. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • With assistance, students will be able to use web based activity to introduce students to superposition and dating techniques.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Forecasting**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies measurable weather-related variables and technology commonly used in forecasting • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students use weather maps to describe local weather patterns to the class. •
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies some measurable weather-related variables and technology commonly used in forecasting. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will use local weather maps to answer questions on variables associated with forecasting.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Fronts, Air Masses and Pressure Systems

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student describes fronts, air masses, and pressure systems and how they relate to cloud formation and precipitation. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will use a pop bottle, match and water to represent cloud formation and present results and explanation to class.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With some inaccuracies student describes fronts, air masses, and pressure systems and how they relate to cloud formation and precipitation. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Energy transfer and local geography

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	The student demonstrates an understanding of important information, such as: <ul style="list-style-type: none"> • Discuss and analyze how local geographic effect energy transfer and weather patterns. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will be able to analyze how topography, oceans and the sun drive our weather patterns and present this to the class.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	The student exhibits no major errors or omissions regarding the simpler details and processes, such as: <ul style="list-style-type: none"> • List geographic factors that affect energy transfer and weather patterns. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Climate**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies the geographic factors that influence climate • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will design geographic models and use these models to describe the influences of geography on weather and climate.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With some inaccuracies, the student defines the geographic factors that influence climate. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Climate Change

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will identify and explore factors both human and natural affecting global climate change. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will produce a multimedia presentation comparing and contrasting human vs natural factors affecting climate change. •
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With some inaccuracies, students will identify and explore factors both human and natural affecting global climate change. • • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will design a poster or PowerPoint comparing human vs natural factors affecting climate change. •
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Origin of the Universe

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	The student demonstrates an understanding of important information, such as: <ul style="list-style-type: none"> • Student can define the Big Bang Theory and describe and summarize evidence supporting it. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will write a brief paper describing the Big Bang theory and analyze the evidence to support this theory.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	The student exhibits no major errors or omissions regarding the simpler details and processes, such as: <ul style="list-style-type: none"> • Student can define the Big Bang Theory and describe and summarize evidence supporting it. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will be able to briefly describe the Big Bang Theory and the evidence which supports this theory. •
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: **Earth and Space Science**

Measurement Topic: **Star Lifecycle**

Course/Grade: **Integrated Science/9th (Weather)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will be able to draw and describe the life cycle of a star. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will either draw, model or design a presentation describing the life cycle of stars.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student will be able to label the stages of a star’s life cycle. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will draw and label the life cycle of a star.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.

Strand: Earth and Space Science

Measurement Topic: Formation of the Solar System

Course/Grade: Integrated Science/9th (Weather)

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	The student demonstrates an understanding of important information, such as: <ul style="list-style-type: none"> • Student explains the current theories of the formation of a solar system and describes the characteristics of each of the planets. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Using a web based program like starry night, students will investigate our solar system and the characteristics of each of the solar bodies.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	The student exhibits no major errors or omissions regarding the simpler details and processes, such as: <ul style="list-style-type: none"> • Student recognizes the current theories of the formation of a solar system and the characteristics of each of the planets. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • With assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth’s systems and other objects in space.			
Strand: Earth and Space Science			
Measurement Topic: Galaxies			
Course/Grade: Integrated Science/9th (Weather)			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	The student demonstrates an understanding of important information, such as: <ul style="list-style-type: none"> • Student defines and describes the shape of the Milky Way Galaxy and our place in it. • The student exhibits no major errors or omissions. 		<ul style="list-style-type: none"> • Students will draw or model the milky way and place our solar system within the model. •
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	The student exhibits no major errors or omissions regarding the simpler details and processes, such as: <ul style="list-style-type: none"> • Student defines the shape of the Milky Way Galaxy and our place in it. • However, the student exhibits major errors or omissions regarding the more complex ideas and processes. 		<ul style="list-style-type: none"> • Students will draw or use a diagram of the milky way and place or solar system within it. •
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

TENTH GRADE- BIOLOGY

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student recognizes and/or identifies and explains common structures of all cells <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Student can independently identify, label, and describe cell structures on a diagram Student creates cell analogy (“cell as a city”)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student recognizes and/or identifies most common structures of cells. Vocab: all organelles <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Student can identify, label, and describe cell structures on a diagram using a vocabulary bank Students can construct a model of a cell with some errors
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student identifies the similarities and differences of prokaryotic and Eukaryotic cells. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Compare and contrast prokaryotic and eukaryotic cells (create graphic organizer) Analyze the origins of both types of cells
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student recognizes and/or identifies most similarities and differences of prokaryotic and eukaryotic cells. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Student Compares prokaryotic and eukaryotic cells with minor errors
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences or Nature of Science**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: Biology, Grade 10

		Sample Tasks	
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		
	3.5 In addition to score 3.0 performance, in-depth inferences and applications with partial success.		
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student recognizes and or indentifies the similarities and differences of animal and plant cells and the relationships between the products and reactants of photosynthesis and cellular respiration <p>The student exhibits no major errors or omissions.</p>	<ul style="list-style-type: none"> • List and describe major organelles of animal and plant cells • Students make labeled drawings and descriptions from prepared animal and plant cells comparing and contrasting organelles 	
	2.5 No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content		
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student recognizes and/or identifies most similarities and differences of animal and plant cells and explains with some inaccuracies, the relationship between the products and reactants of photosynthesis and respiration • glucose, chloroplast, CO₂, O₂, ATP, anaerobic, fermentation <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	<ul style="list-style-type: none"> • List and describe most major organelles of both types of cells • Using prepared slides of cells can identify most major organelles 	
	1.5 Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content		
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5 With help, a partial understanding of the 2.0 content, but not the 3.0 content.		
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: Biology, Grade 10

Score 4.0		In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the process of diffusion and osmosis with regard to the concentration gradient and student knows and explains the rolls of macromolecules <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Describe how the transport of materials in cells in and out of cells enables cells to maintain homeostasis (e.g., osmosis, diffusion, active transport). • Execute labs that show how the transport of materials through a membrane • Illustrate and diagram macromolecules
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student presents an incomplete explanation of diffusion and osmosis with regard to concentration gradient and explains the rolls of macromolecules • Vocabulary: organic molecules, proteins, carbohydrates, lipids, nucleic acids, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Simplified version of 3.0 task
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student compare and contrast the basic functions of DNA and RNA <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Construct a model to describe the structure of DNA and RNA • Summarize how genetic information encoded in DNA provides instructions for assembling protein molecules
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student explains the various function of DNA and RNA with limited detail • Vocab: nucleotide, helical structure, F.Crick, J. Watson <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Recreate chromosomes and DNA replication models with minor errors
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student identifies complementary base pairs <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students research the discovery of the role of DNA in base pairing and properly apply Chargaff's rules to base pairing • Students properly reconstruct and model the DNA molecule
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With some errors, student identifies complementary base pairs • Vocab: A-C-T-U, MRNA, TRNA, RRNA, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student applies Chargaff's rules to base pairing
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students describe the role of ATP in living cells, describes and models the conversion of stored energy into usable cellular energy ATP <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Diagram Gap phases and identify functions of each phase • Investigate the role of ATP in living cells
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student with minimal errors can describe how energy stored within organic molecules can be converted into ATP • Vocab: cellular respiration ATP, ADP, Aerobic, anaerobic, mitochondria <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student defines and vaguely describes the role of ATP in living cells • Given diagram student could label/identify each gap phase
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student compares and contrasts aerobic and anaerobic respiration, and states and explains the chemical reactions of cellular respiration <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student can write, balance and analyze the chemical equation for respiration • Assess similarities and differences between aerobic and anaerobic respirations
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies a few similarities and differences between aerobic and anaerobic respiration and states the chemical reaction • Vocab: CO₂, O₂, H₂O, glucose, ATP <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given the balanced equation for respiration the student communicates limited understanding of cellular respiration •
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • students identify, describe, and contrast the major stages of mitosis and meiosis <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students recreate the stages of meiosis and mitosis on a poster board with explanations of each stage • Students create multimedia presentation showing correct stages of both meiosis and mitosis
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies major events of meiosis and mitosis with some inaccuracies • Vocab: cell division, cell cycle, cytokinesis, All phases, spindle, fiber <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Distinguishes and identifies with minimal errors all stages of mitosis and meiosis
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • student explains why cells must undergo mitosis and meiosis, and differentiates between haploid and diploid chromosome numbers <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using multimedia resources research the causes of meiosis and mitosis and their subsequent results • Students write a story about a chromosome going through meiosis or mitosis for the first time using illustrations and creativity they must give accurate information about the movement of the chromosomes
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student demonstrates a general understanding of why cells must undergo mitosis and meiosis and differentiates between haploid and diploid chromosome numbers with some errors • Vocab: meiosis 1 and 2, gamete, diploid, haploid, homologous pair, zygote, prophase, metaphase, anaphase, telophase <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Explain difference between haploid and diploid numbers and researches a general understanding of the purpose of cell division
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • student identifies processes that maintain homeostasis and give examples of homeostasis <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Apply concepts of homeostasis to cells under differing conditions • Execute an experiment with maintaining homeostasis in cell like conditions
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student identifies limited processes that maintain homeostasis and gives examples of homeostasis • Vocab: equilibrium, feedback inhibition <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students compare the regulation of body temperature in humans with the regulation of air temperature in a house
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Structure and Function of Cells and Organisms**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the purpose and process of DNA replication, transcription, and translation. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using a graphic organizer differentiate between replication, transcription and translation. • Summarize how genetic information encoded in DNA provides instructions for assembling protein molecules
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student has a general sense of the purpose and process of transcription, translation, and DNA replication • Vocab: protein synthesis, gene, DNA polymerase, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student can identify with some errors the process of transcription, translations and NDA replication
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the relationship between DNA and heredity <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Cite evidence and relate Mendelian principles to modern-day practices of plant and animal breeding\ • Students investigate models to determine how DNA probes help to identify individuals • Students research internet and scientific journals for current information relating to genetics and present a multimedia presentation to their classmates
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student demonstrates a general sense of understanding of the relationship between DNA and heredity • Vocab: sex-linked inheritance, co dominance, pedigree, genetics, Mendel <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student constructs Punnett squares of pea plant traits with no errors •
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student summarizes the Laws of Segregation and Independent Assortment and how the process of meiosis produces genetic recombination <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student develops a scientific model summarizing the Laws of Segregation and Independent Assortment and how the process of meiosis produces genetic recombination • Students construct a genetics problem to be given to a classmate that must tests incomplete dominance, co dominance, multiple alleles or polygenic traits (must have answer key)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Students summarizes the Laws of Segregation, Independent Assortment and how the process of meiosis produces genetic recombination with inaccuracies • Vocab: heredity, crossing over, complete dominance, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student creates model of meiosis with minor errors
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the differences between dominant and recessive alleles and distinguishes between genotype and phenotype using the Law of Probability and Punnett Squares to predict genotypic and phenotypic ratios <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students explore their phenotypical characteristics and construct Punnett squares with the correct genotypes • Student Constructs Punnett Squares of their blood type
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student demonstrates a vague understanding between genotypes and phenotypes and constructs a Punnett Square but cannot connect the relationship with the Law of Probability • Vocab: Punnett Square, Mendel, heterozygous, homozygous, probability <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students write and instructional manual with step by step instructions for using Punnett Squares including a labeled diagram of a Punnett Square
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains that some traits are determined by multiple factors <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students research multiple-allele traits and construct Punnett Squares from the research • Students set up genetic crosses with fruit flies and observe different inheritance patterns and test cross them, and share their findings with the class
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With guidance, student explain that some traits are determined by multiple factors • Vocab: genetics, polygenetic traits, multiple alleles, codominance, independent assortment, F2 generation, incomplete dominance, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student distinguishes with help multiple- allele traits from dominant- recessive traits
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • student distinguishes between sex chromosomes and autosomes and explains how sex-linked inheritance influences some genetic traits • <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students will correctly use models to show what happens to chromosomes in cells during meiosis • Students differentiate between sex chromosomes and autosomes through and organizational chart • Students construct pedigrees that show inheritance patterns
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student distinguishes between sex chromosomes and autosomes and knows that sex linked inheritance influences some genetic traits but cannot explain why • Vocab: genetic engineering, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students create a brochure on a autosomal disorder in humans
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student defines genetic mutation, identifies some of the major causes of mutations, and explains how mutations influence genetic expression <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Research strange/unusual genetic mutations and create media brochure explaining cause, effect and prognosis • Describe how mutations may affect genetic expression and cite examples of mutagens
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With prompting, student defines genetic mutation, identifies some major causes of mutations and knows that mutations are connected to genetic expression • Vocab: autosomal disorders, pedigree, sex chromosomes, chromosomal disorders <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Completes tasks above with minimal errors
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Principles of Heredity and Related Concepts**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the concept of nondisjunction and its results <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Student research and create an informative brochure to educate the general public on chromosomal disorders that result from nondisjunction
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student defines nondisjunction and states the results with minimal understanding • Vocab: chromosomal disorders, nondisjunction <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Given certain information could create a brochure that distinguished between sex-linked disorders and chromosomal disorders • Students distinguished between sex-linked disorders and sex-chromosomes disorders
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships among organisms in the Physical Environment**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student explains the numerous biogeochemical cycles <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Summarize the role of algal blooms in disrupting the equilibrium in the aquatic ecosystem • Use a flow chart to trace the flow of energy in the carbon cycle •
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student names the numerous biogeochemical cycles • Vocab: nutrients, evaporation, transpiration, nitrogen fixation, denitrification, primary productivity, limiting nutrients, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student names the numerous biogeochemical cycles •
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships among organisms in the Physical Environment**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student classifies organisms as either heterotroph or autotroph and explains the similarities and differences between them <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students create a presentation that compares and contrasts auto and heterotrophs Pick an ecosystems and classify all organisms as autotrophs or heterotrophs and identify similarities and differences
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student classifies organisms as either a heterotroph or autotroph with some inaccuracies and with limited detail explains the differences and similarities between them Vocab: consumers, herbivores, carnivores, chemosynthesis, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Distinguish between autotrophic and heterotrophic cells In small groups students brainstorm a list of types of living things then classify each according as an autotroph or heterotroph and differentiate between them
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships among organisms in the Physical Environment**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students differentiate between the food chain, food web and explain the trophic levels in a pyramid model in detail <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students will research one level of the trophic pyramid and then combine their research as a class Execute a lab that shows a living food web and be able to communicate the biological organization of that experiment
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student defines the terms food chain and food web, and explains trophic levels in a pyramid model with limited detail Vocab: rule of ten, ecological pyramid, biomass, energy <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Given information students can recreate a disassembled trophic pyramid, food chain and web
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships among organisms in the Physical Environment**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student recognizes that the sun is the ultimate source of energy in most ecosystems can explain and produce the equation and the process of photosynthesis and differentiate between abiotic and biotic factors in an ecosystem <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Students analyze the chemical equation for photosynthesis and create a presentation showing all aspects of it Create a graphic organizer comparing and contrasting abiotic and biotic factors
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student can produce the equation for photosynthesis. Student recognizes the sun is the ultimate source of energy but fails to recognize the connection within ecosystems and is able to differentiate between some biotic and abiotic factors in ecosystems Vocab: food chain, web, trophic level, energy pyramid, biomass pyramid, pyramid of numbers, biogeochemical cycles <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Create a poster showing the chemical equation for photosynthesis and interpret all aspects of it
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships among organisms in the Physical Environment**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student can describe the concept of biomes and can describe how they are influenced by abiotic and biotic factors <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Given a variety of materials (recyclables, paint, basic art supplies, photos of animals etc) students in a creative but accurate way depict the biomes Given a disturbance to an ecosystem students develop a logical argument detailing the changes to the biotic and abiotic factors
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student understand the concept of biomes and has limited understanding of how they are influenced by abiotic and biotic factors Vocab: tolerance, microclimate, canopy understory, deciduous, all ten biomes, niche, competition, limiting factors, population <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Assign groups a different biome and each group will serve as the class expert on the biome and teach the other students about the abiotic and biotic factors that influence it.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships among organisms in the Physical Environment**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student understands the concept of carrying capacity and predicts relationships of population dynamics <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Using current data from FWP research and develop a logical argument for the management of wolves Through a lab students will be able to draw conclusions as to what happens to a population that depends on limited resources (grow bacteria)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With some inaccuracies student understands the concept of carrying capacity and predicts relationships of population dynamics Vocab: dependent/independent factors, population density, limiting factor, predator -prey, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Develop and complete a concept map showing the important characteristics of a population
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Relationships among organisms in the Physical Environment**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • student compares and contrasts the symbiotic relationships that exist between species and how communities progress through a series of changes <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students research, analyze and present a symbiotic relationship of their choice to the class • Investigate how ecosystems recover from a disturbance
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • with limited understanding student compares and contrasts the symbiotic relationships that exist between species and how communities progress through a series of changes • vocab dependant/independent factors, population density, limiting factor, predator -prey, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Students create flow charts of ecosystem comparing symbiotic relationships
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and the Diversity of Life**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student lists and explains the characteristics of classification systems and can differentiate the differences and similarities within different levels of organization <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Students research the history of the classification system and present it to the class • Student will create a cladogram based on several derived characteristics of a type of manufactured item • Assess how evolutionary relationships are related to classification systems • Identify the unity and diversity found within the Kingdoms of life
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • With some inaccuracies student lists and explains the characteristics of classification system and can differentiate the differences and similarities within different levels of organization • Vocab: taxonomy, Linnaeus, phylogeny, derived character, molecular clock, cladogram, kingdoms, domains etc <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Student researches the history of the classification system • Create and pneumonic device for the hierarchy of the classification system
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and the Diversity of Life**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student explains the importance of binomial nomenclature and constructs and uses dichotomous keys to classify plants and animals <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Critique criteria used for classification of organisms (ie: dichotomy, structure, broad to specific, binomial nomenclature) Student will create a dichotomous key for 10 organisms/plants found outside the classroom
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student realizes the importance of binomial nomenclature and uses a dichotomous key Vocab: classification taxonomy, species, nomenclature, domain <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Student uses a dichotomous key to classify plants and organisms
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and the Diversity of Life**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student recognizes that evolution involves a change in allele frequencies in a population across successive generations <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Execute a hands-on lab using Hardy/Weinberg Principle Student completes an investigation lab involving the genetic diversity of bacteria
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student recognizes with minimal errors that evolution involves a change in allele frequencies in a population across successive generations Vocab: gene pool, relative frequency, polygenic genetic equilibrium, Hardy/Weinberg Principle, fossil, isolations, finches, Galapagos, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With assistance student Execute a hands-on lab using Hardy/Weinberg Principle Student completes an investigation lab involving the genetic diversity of bacteria
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 3: Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

Discipline: **Life Sciences**

Measurement Topic: **Biological Evolution and the Diversity of Life**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student critiques the theory of evolution through natural selection and other factors <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Identify strengths, weaknesses, and assess the validity of the experimental design of an investigation through analysis and evaluation of the Theory of Evolution Develop a logical argument that connects genetic variability to a species' potential for adaptation to a changing environment
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student recognizes the theory of evolution through natural selection and other factors Vocab: Darwins Theory of Evolution, fossil, theory, Galapagos, Hutton, Malthus, Lamarck, peppered moths, natural selection <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With guidance identify strengths, weaknesses, and assess the validity of the experimental design of an investigation through analysis and evaluation Theory of Evolution show a logical argument that connects genetic variability to a species' potential for adaptation to a changing environment
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigation**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student recognizes and can appropriately utilizes a variety of microscopes and describe their uses <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Utilizes a variety of microscopes in conjunction with other tools and equipment to complete various hands on scientific investigations Student applies proper safe handling of lab equipment and materials
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student with minimal assistance student recognizes and can appropriately utilize a variety of microscopes and describe their uses Vocab: Appropriate technology, scientific method, compound light microscope, micrometer, field of view, depth of field <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With minimal assistance utilizes a variety of microscopes in conjunction with other tools and equipment to complete various hands on scientific investigations Student applies proper safe handling of lab equipment and materials
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigation**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student through the inquiry process demonstrates the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Generate a question, identify dependant and independent variables, formulate a testable, multiple hypotheses, plan an investigation, predict its outcome, safely conduct the scientific investigation, and collect and analyze data Select and use appropriate tools including technology to make measurements (in metric units), gather, process and analyze data from scientific investigations using appropriate mathematical analysis, error analysis, and graphical representations
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> with assistance student will through the inquiry process demonstrates the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations vocab: valid, experimental design, model, evidence, qualitative, quantitative, error analysis <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> With assistance Generate a question, identify dependant and independent variables, formulate a testable, multiple hypotheses, plan an investigation, predict its outcome, safely conduct the scientific investigation, and collect and analyze data With assistance Select and use appropriate tools including technology to make measurements (in metric units), gather, process and analyze data from scientific investigations using appropriate mathematical analysis, error analysis, and graphical representations
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies.

Discipline: **Nature of Science**

Measurement Topic: **Impact of Scientific Development on Communities, Cultures and Societies**

Course: **Biology, Grade 10**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures, and societies <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Make a presentation that predict how key factors (e.g., technology, competitiveness, and world events) affect the development and acceptance of scientific thought Given a topic evaluate the ongoing collaborative scientific process by gathering and critiquing information Research how current science and technology affects a contemporary Montana American Indian Communities (e.g., biotech, natural resources, management and conversation)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> With assistance Student through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures, and societies Vocab: occupations, science, technology, science fields(life, earth, engineering etc), current events, problem, issue, research, collaborative, relevant, summarize, environmental impact, proposed solutions <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		With assistance all of the above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.		
Discipline: Nature of Science		
Measurement Topic: Historical Development and Technology		
Course: Biology, Grade 10		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> student demonstrates an understanding of historical developments in science and technology <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student with minimal prompting demonstrates and understanding of historical developments in science and technology Vocab: timeline, inquiry, famous website <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> Analyze and illustrate the historical impact of scientific and technological advances, including, Montana American Indian examples. Construct a timeline showing at least 6 major scientific advancements as new technology becomes available
		<ul style="list-style-type: none"> Research and present to the class science as a human endeavor and an ongoing process

TENTH, ELEVENTH, & TWELTH GRADE- CHEMISTRY

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.		
Discipline: Nature of Science		
Measurement Topic: Scientific Investigation/Inquiry		
Grade: Chemistry 10-12		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will apply correct metric units to gather data, including conversion of units <p>The student exhibits no major errors or omissions.</p>	
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Metric system and units • Recognizing and recalling isolated details such as... • Distinguishing units for mass, volume, length <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.
Score 0.0	Even with help, no understanding or skill demonstrated.	
		Sample Tasks
		<ul style="list-style-type: none"> • Measure and distinguish mass-volume-distance as metric units. • Make metric unit conversions.
		<ul style="list-style-type: none"> • Review Metric System and units • Measure and distinguish mass-volume-distance as metric units. • Make conversions, with assistance.

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigation/Inquiry**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will apply mathematical analysis to data to solve for appropriate variable, and to provide context for a set of data. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work to compute densities of samples. Use $D = \frac{m}{V}$ to solve for appropriate variables, and analyze for proper units.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: mass, volume, density Recognizing and recalling isolated details such as... using Density equation and appropriate units <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Lab work to compute densities of samples, with guidance. Use $D = \frac{m}{V}$ to solve for appropriate variables, and analyze for proper units, with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigation/Inquiry**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will design and construct a graph with correct placement of dependent & independent variables, and identify possible sources of error. • Student will interpret trends in data using graphical analysis and identify linear relationships, direct & inverse proportions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Lab work using data to generate graphs (Fahrenheit versus Celsius) and to establish a linear mathematical relationship. • Mass versus volume graph of a given liquid to establish direct proportion. • Density versus volume graph of metals with the same mass to establish inverse proportion.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: independent, dependent variables, direct & inverse proportions, metric units • Recognizing and recalling isolated details such as... analyzing graphs. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		Same as above with guidance or assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will distinguish between mixtures and pure substances (elements & compounds) and give examples of each. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Observe models of mixtures & pure substances. • Complete flowcharts of classifications of matter. • Give examples of each.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Elements, compounds, mixtures, • Recognizing and recalling isolated details such as... - homogeneous, heterogeneous, solution <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above, with guidance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will use Periodic Table to identify metals, non-metals and metalloids. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Visual observations and inferences about classification of sample material. Using Periodic Table to predict classification of elements. Identify common properties of metals, non-metals and metalloids, and common examples.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: metal, non-metal, metalloid, conductor, insulator, malleable, ductile, Periodic Table of Elements Recognizing and recalling isolated details such as... Using the Periodic Table <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above, with guidance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interactions of Energy and Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will describe macroscopic observations to distinguish between physical and chemical changes. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstration and lab work.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: physical and chemical changes, matter, energy, precipitate, reaction, phase change • Recognizing and recalling isolated details such as... Evidences of change, lab safety. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Demonstration and lab work. • Emphasize vocabulary
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Energy and Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will distinguish between an endothermic and exothermic reaction and give examples of each. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Demonstrations and lab work. Student generated list of common examples (burning, photosynthesis, electrolysis of H₂O)
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: endothermic, exothermic, chemical potential energy Recognizing and recalling isolated details such as... Lab safety. <p>-</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above. Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of Science			
Measurement Topic: Historical Development			
Grade: Chemistry (10-12)			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will have general understanding of the historical development of the current atomic model. • Student will compare and contrast subatomic particles in relation to their relative masses, charges and location. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstrations and computer simulations (Crooke’s Tube and Rutherford Experiment, “think tube”).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: protons, neutrons, electrons, models, atom, element • Recognizing and recalling isolated details such as... Scientific models. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry (10-12)**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will differentiate attraction/repulsion of electrical forces and nuclear forces. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstrations and interactive computer simulations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> • Attraction, repulsion, electrical forces and nuclear forces. - • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> model of an atom - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will compare and contrast subatomic particles in different elements , and isotopes of an element. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Interactive computer simulation.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: electron, proton, neutron, element, atomic number, mass number, isotope <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Interactive computer simulation Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will have an understanding of the significance of atomic mass, and how it relates to the concept of moles. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Use of Periodic Table to identify atomic mass • Calculate some simple examples of atomic masses • Relate atomic mass to molar mass. • Gram/mole conversions.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: atomic mass, molar mass, mole • Recognizing and recalling isolated details such as... mathematical conversions - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above. • Assistance with conversions and computing atomic masses
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0	In addition to score 3.0 performance, in-depth inferences and applications with partial success.		
3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will write names or formulas for common inorganic compounds <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab practice and worksheets on chemical nomenclature and chemical formulas
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content		
2.0	<ul style="list-style-type: none"> The student exhibits no major errors or omissions regarding the simpler details and processes, such as: Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> subscripts, ions, polyatomic ions Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> using the Periodic Table and a chart of ions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Lab practice and worksheets on chemical nomenclature, and chemical formulas with assistance.
1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content		
1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.		
0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will utilize chemical formulas to compute the formula/molecular mass of a compound and determine percent compositions, empirical formulas, and molecular formulas. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work and worksheets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<ul style="list-style-type: none"> The student exhibits no major errors or omissions regarding the simpler details and processes, such as: Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> Molecular formula, empirical formula, percent composition Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Mathematical and unit manipulations. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Lab work and worksheets. Emphasize vocabulary distinctions and assistance with mathematical set-ups.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will write and balance formula equations. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Build models, lab work and practice worksheets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Reactants, products, coefficients • Recognizing and recalling isolated details such as... <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Emphasize vocabulary and assist with practice problems.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will describe classes of chemical reactions and use the properties of each to predict products/reactants for simple chemical reactions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Demonstrations and lab work and worksheets. Lab safety
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: synthesis, decomposition, single replacement, combustion, double replacement reactions Recognizing and recalling isolated details such as... - reactants, products, reactivity <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interactions of Matter and Energy**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will describe conditions necessary to change reaction rate of chemical reactions (in terms of particle collisions). <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstration and lab work.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: activation energy, catalyst, inhibitor • Recognizing and recalling isolated details such as... ions, temperature, reactant & product concentrations, surface area, <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Demonstration and lab work.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will use the Law of Conservation of Mass and balanced chemical equations to determine mass relationships between reactants and products. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work, demonstrations and worksheets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: stoichiometry ,mass to mass, mass to mole, mole to mole Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> Law of Conservation of Mass <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Assistance with above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Energy**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will differentiate wavelength (color) and energy of the electromagnetic spectrum for particular applications. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work doing flame test of metal salts. Review of Electromagnetic Spectrum.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Electromagnetic spectrum <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will be able to write electron configurations for similar elements and identify the number of valence electrons of an element using the Periodic Table. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Use energy level diagrams to write electron configurations and electron dot notations for early elements. • Identify electron structure similarities in groups and families of elements.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: orbital, sublevels and levels, electron pairs, octets, spins • Recognizing and recalling isolated details such as... - atomic models and Periodic Table <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above with guidance and assistance. • Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 6: Students understand historical developments in science and technology.			
Discipline: Nature of Science			
Measurement Topic: Historical Development			
Grade: Chemistry 10-12			
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will have a general understanding of the historical development of the Periodic Table of Elements. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Building a table of objects based on similarities and differences.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> families, groups, periods, Mendeleev Recognizing and recalling isolated details such as... Periodic Table structure and function. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Building a table of objects based on similarities and differences, with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will demonstrate a understanding that certain properties of elements are based on their positions on the Periodic Table. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Using clues to piece together parts of the Periodic Table of Elements. • Practice sheets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: Atomic radii, electro-negativity, ionization energy, electron affinity • Recognizing and recalling isolated details such as... - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Guidance with above. • Emphasize vocabulary
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will describe the role of electrons in bonding situations; compare and contrast ionic and covalent bonds and how these relate to macroscopic properties. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Electron dot diagrams of polyatomic ions, ionic and molecular compounds. Lab work with compounds.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: ions, polyatomic ions, ionic bonds, covalent bonds, electro-negativity Recognizing and recalling isolated details such as... <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Above with guidance. Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will describe how molecular geometry is related to the nature of the intermolecular forces of simple molecules. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstrations and practice with molecular model kits. • Apply electro-negativity to determine bond type. • Use of above to determine polarity and non-polarity of a molecule.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: polar and non-polar molecules, dipole, tetrahedral, pyramidal, bent, linear, intermolecular force, London dispersion, dipole-dipole, hydrogen bond • Recognizing and recalling isolated details such as... geometric structures <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Guidance with above. • Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will utilize kinetic molecular theory to describe temperature and pressure at the particulate-level. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Interactive computer simulation to describe temperature. Reading a barometer to measure pressure. Conversion of pressure units.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Temperature, pressure, standard atmospheric pressure, barometer, millimeters of Hg, atmosphere, pascals Recognizing and recalling isolated details such as... Kinetic Molecular Theory and reading measurement tools, conversion of units. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above, with assistance. Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Matter and Energy**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will describe, at the particulate level, the relationship of the volume, pressure and temperature of a gas. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Lab and interactive computer simulations to derive samples of volume, temperature and pressure data. • Graph and analyze data to derive Charles' Law, Gay-Lussac's Law and Boyle's Law. • Derive Combined Gas Law. • Solve problems related to gas laws.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Recognizing and recalling specific terminology such as: <ul style="list-style-type: none"> - Charles', Boyle's, Gay-Lussac's, and Combined Gas Laws • Recognizing and recalling isolated details such as... <ul style="list-style-type: none"> mathematical manipulations and graphical analysis (direct & indirect proportions) - <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above, with assistance. • Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Interaction of Energy and Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p><i>The student demonstrates an understanding of important information, such as:</i></p> <ul style="list-style-type: none"> Student will utilize Avogadro's principle and Ideal Gas equation to problem-solve stoichiometric problems involving gaseous reactants and/or products. <p><i>The student exhibits no major errors or omissions.</i></p>		<ul style="list-style-type: none"> Lab work and Avogadro's Principle to derive standard molar volume. Problem solving using molar volume. Solving problems using the Ideal Gas Law. Lab work to determine the molar mass of a gas, using Ideal Gas Law. Solving stoichiometric mass to volume problems at STP and non-STP conditions.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Avogadro's principles and Ideal Gas Law <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Assistance (one-on one) with above. Emphasis of mathematical manipulations, relationships, units, and vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0			
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will describe at the particulate level the differences between solids, liquids and gases, and phase changes. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Demonstrations & computer simulations to model nature of solid, liquid and gas phases. Lab to generate a cooling curve. Analysis of cooling curve to identify melting/freezing and boiling/condensation point and recognize energy/temperature involved during a phase change.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Solid, liquid, gas, heat of vaporization, heat of fusion, sublimation Recognizing and recalling isolated details such as... Energy VS temperature <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> All of the above, with guidance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will relate macroscopic properties such as solubility, to the intermolecular forces. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work to derive selectivity of Solvent Rule. Computer simulation of dissolving process. Lab to develop a solubility curve for particular salts. Analyzing solubility graphs and application to real-life situations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: solute, solvent, solubility, solution, saturated, super-saturated, unsaturated <p>-</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above. Emphasis of vocabulary
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will define concentration and problem-solve by computing concentrations such as molarity. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Describe how to prepare solutions by molarity. Solve problems using molarity equations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Concentration, volume, molar mass , Molarity Recognizing and recalling isolated details such as... Dimensional analysis and mathematical manipulations. <p>-</p> <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above with assistance. Emphasis on metric units, vocabulary and dimensional analysis.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Sciences**

Measurement Topic: **Sources and Properties of Matter**

Grade: **Chemistry 10-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will compare and contrast fission, fusion and radioactive decay, and give examples of each. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Investigate radioactive element use in everyday life (radioactive dating, medical therapy, energy sources, weapons). Practice work with Periodic Table and radio-isotopes (decay process products). Interactive computer simulations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing and recalling specific terminology such as: Nucleus, neutron, proton, electron, fission, fusion, radioactivity, alpha decay, beta decay, neutron emission Recognizing and recalling isolated details such as... Law of Conservation of Mass & Energy (thermodynamics), atomic model, isotopes, nuclear energy <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above, with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

ELEVENTH & TWELVETH GRADE - PHYSICS

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.		
Discipline: Nature of Science		
Measurement Topic: Scientific Investigations		
Course: Physics		Grades: 11-12
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	Sample Tasks
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will apply correct metric units to gather data, including analysis and conversion of units <p>The student exhibits no major errors or omissions.</p>	<ul style="list-style-type: none"> Computer simulation of uses of calipers. Make measurements with a ruler, a Vernier caliper and a micrometer caliper. Make conversions of metric units to MKS system units. Unit analysis and simplification problems.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> using metric units but needs assistance in reading measuring devices and in making conversions. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>	<ul style="list-style-type: none"> Computer simulation of uses of calipers. All the above with guidance
1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.	

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigation**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will apply mathematical analysis to data to solve for appropriate variable, and to provide context for a set of data. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Solve algebraic problems for identified variable with appropriate unit analysis.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Solving simple equations for a given variable but needs assistance with more complex equations <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Solve algebraic problems for identified variable with appropriate unit analysis, with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 1: Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

Discipline: **Nature of Science**

Measurement Topic: **Scientific Investigation**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will design and construct a graph with correct placement of dependent & independent variables, and identify possible sources of error. • Student will interpret trends in data using graphical analysis and identify mathematical relationships such as direct & inverse proportions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Lab situations to gather and process data into graphical form, using graphical analysis. • Use technology such as Vernier sensors. • Graphical analysis of generated or given data to identify mathematical possible relationships.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Constructing and interpreting data graphs showing dependent & independent variables. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> • Identifying mathematical relationships from graphs 		<ul style="list-style-type: none"> • Lab situations to gather and process data into graphical form, using graphical analysis, with assistance. • Use technology such as Vernier sensors. • Graphical analysis of generated or given data to identify possible relationships, with assistance of graphical summary sheet.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will apply kinematic equations describing motion of objects to solve complex problems. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Solving problems for appropriate variable with correct unit (s).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Solving simpler equations describing motion of objects, and more complex equations with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Solving problems for appropriate variable with correct unit (s).
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will correctly uses and differentiates between scalar and vector quantities in describing motion. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Give examples and apply appropriate units to kinematic scalar and vector quantities. • Draw simple vector diagrams with correct representative magnitude and direction
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Having a general idea of the distinction between scalar and vector quantities. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> • Showing appropriate directionality of a vectors 		<ul style="list-style-type: none"> • Give examples and apply appropriate units to kinematic scalar and vector quantities. • Draw simple vector diagrams with correct representative magnitude and direction
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will analyze displacement-time and velocity-time and acceleration-time graphs to describe the motion of an object. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work (using sensors to generate data) analyzing real-time graphs to describe motion. Given a graph, describe the motion. Given motion description, draw the corresponding graph.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Recognizing differences, but need assistance in analysis. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> Finding displacement, velocities or accelerations from corresponding graphs 		<ul style="list-style-type: none"> With guidance, set up graph to describe motion, or describe motion from a given graph.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will apply the concept of $F = ma$ to solve dynamics problems. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Lab work to derive $F = ma$ (Newton's 2nd Law) • Solve dynamics problems.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student will apply $F = ma$ to solve dynamics problems. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> • Integrating the second law into vertical and horizontal accelerated motions 		<ul style="list-style-type: none"> • Assistance in derivation and application of $F = ma$. • Solve dynamics problems.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interactions of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will determine the resultant of several vectors acting concurrently for linear and two dimensions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Use Trigonometry functions and the law of sines and cosines to find resultants of vectors acting in two dimensions. Using technology (sensors) to find resultant and derive the concept of the equilibrant
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student will determine the resultant of linear vectors acting concurrently, but need assistance with two-dimensional vectors. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> Using the law of sines and cosines and drawing proper vector diagrams 		<ul style="list-style-type: none"> Use Trigonometry functions to find resultants of vectors acting in two dimensions. Using technology (sensors) to find resultant and derive the concept of the equilibrant
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will differentiate between static and kinetic friction. Student will describe friction as a force opposing motion and will solve problems to determine the coefficient of friction. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work to compare static to kinetic friction, and to determine coefficient of friction. Solve problems and apply to real life situations.. Apply friction to more complex kinetics and dynamics problems.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Differentiate between static and kinetic friction, but may need assistance with mathematical equations and direction in applying knowledge. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> Integrate the concept of friction into more complex motion problems. 		<ul style="list-style-type: none"> Lab work to compare static to kinetic friction, and to determine coefficient of friction. Solve problems and apply to real-life situations.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will differentiate between the vertical and horizontal components of projectile motion and solve related problems <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Lab work and demonstration to describe and analyze projectile motion. • Solve problems and apply to real-life situations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • differentiating between the vertical and horizontal components of projectile motion, but need assistance solving related problems • <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> • Solving problems involving a series of steps to find the final answer. 		<ul style="list-style-type: none"> • Lab work and demonstration to describe and analyze projectile motion. • Solve simpler problems and recognize applications to real-life situations
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will describe circular motion in terms of force, acceleration and velocity, and solve related problems. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Graph and analyze data to derive equation for centripetal force. • Solve centripetal force and acceleration problems. • Describe and apply centripetal force to real-life situations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Describing circular motion in terms of force, acceleration and velocity, but need assistance solving related problems. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above, with assistance or direction.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

MT Science Content Standard 6: Students understand historical developments in science and technology.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy, Historical Development**

Course: **Physics**

Grades: **11-12**

Score	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
4.0	In addition to score 3.0 performance, in-depth inferences and applications with partial success.		
3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will state Kepler's Laws and relate them to gravity. 		<ul style="list-style-type: none"> Analyze computer simulations and video resources. Applications of gravity to planetary motion.
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content		
2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student will state Kepler's Laws . <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Analyze computer simulations and video resources. Applications of gravity to planetary motion.
1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content		
1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.		
0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will analyze Newton’s equation for gravitational force and solve related problems. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Relate gravitational force, to mass and distance. • Interactive computer simulations. • Solve problems involving real-life situations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Analyzing Newton’s gravitational force equation, but need assistance in solving problems. • <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Review Newton’s Laws • Relate gravitational force, to mass and distance. • Interactive computer simulations.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Interaction of Matter and Energy**

Measurement Topic: **Physical Science**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will apply the Law of Conservation of Momentum to solve problems involving collisions and explosions <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work to derive Law of Conservation of Momentum. Solve related problems involving collisions and explosions using the relationship between changes in momentum and impulse Describe applications of the Law of Conservation of Momentum to real-life situations
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Apply the Law of Conservation of Momentum to solve problems involving collisions and explosions, with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> Properly analyzing the specific physical aspects involved in the problem 		<ul style="list-style-type: none"> Assistance with above tasks.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Forces and Motion**

Measurement Topic: **Physical Science**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will differentiate between force, work and power and solve related problems <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work to compute personal work and power (stairs). Solve related problems involving real-life situations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Differentiating between force, work and power and solve related problems with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Lab work to compute personal work and power (stairs). Solve related problems involving real-life situations.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Forces and Motion**

Measurement Topic: **Physical Science**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will identify, build, describe, measure and analyze examples of the six simple machines and solve related problems involving efficiency, mechanical advantage work input and work output <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work and demonstrations with the six simple machines. Applications of $W = Fd$ Solving related problems for force(s), mechanical advantage and efficiency. Analyze everyday uses of simple machines and complex machines.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Student will identify, build, describe, measure and analyze examples of the six simple machines and solve related problems with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> Identifying effort force and resistance force, effort distance and resistance distance 		<ul style="list-style-type: none"> Lab work and demonstrations with the six simple machines. Applications of $W = Fd$ Solving related problems for force(s), mechanical advantage and efficiency. Analyze everyday uses of simple machines and complex machines.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Interaction of Matter and Energy**

Measurement Topic: **Physical Science**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will differentiate between gravitational potential energy, elastic potential energy and kinetic energy. Student will explain the conservation of kinetic and potential energies in an ideal system, and solve problems involving energy conversions. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Computer simulations and demonstrations to identify Potential-Kinetic Energy conversions. Give examples of presence of elastic potential energy, gravitational potential energy and kinetic energy. Solve real-life problems related to energy conversions.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Differentiating between gravitational potential energy, elastic potential energy and kinetic energy and recognize conservation of kinetic and potential energies in an ideal system, and solve problems involving energy conversions, with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> Characterizing the energy conversions occurring within a system 		<ul style="list-style-type: none"> Same as above, with assistance or direction.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will define thermal energy as the total kinetic energy of particles, describes heat as the transfer of thermal energy, and defines temperature as the average kinetic energy. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Review definitions and applications of thermal energy, heat and temperature. Review heat transfer processes by conduction, convection and radiation.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Defining thermal energy as the total kinetic energy of particles, describing heat as the transfer of thermal energy, and defining temperature as the average kinetic energy. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will describe the process of heat transfer from areas with high thermal energy to areas of low thermal energy, with correlations to specific heat. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work to define specific heat and compute specific heat of water. Lab work to compute specific heat of metal samples. Solve problems related to specific heat and heat transfer.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Describing the process of heat transfer from areas with high thermal energy to areas of low thermal energy, and recognize specific heat as a property of matter. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p> <ul style="list-style-type: none"> Setting up algebraic solutions for specific heat transfer problems 		<ul style="list-style-type: none"> Same as above with assistance or direction.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Students will solve problems and analyze graphs relating to temperature and phase changes of matter. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work to determine heat of fusion for water (ice) and heat of vaporization of water. Analysis of temperature-energy/heat absorbed graphs Identify potential or kinetic energy changes. Solve related problems.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Descriptively and graphically distinguishing between temperature versus phase changes of matter , and solve related problems with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above with assistance.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Sources and Properties of Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will illustrate and describe features of mechanical waves. • Student will describe the transfer of energy through a wave. • Student will differentiate between longitudinal and transverse waves. • Student will describe how wave properties are related to the medium they are transferred through. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstrations and observations of a <i>Slinky</i>, ripple tanks and computer simulations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Student will illustrate and describe features of mechanical waves • Student will describe the transfer of energy through a wave. • Student will differentiate between longitudinal and transverse waves. • Student will describe how wave properties are related to the medium they are transferred through. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Sources and Properties of Energy**

Measurement Topic: **Physical Science**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will apply wave speed, frequency, period and wavelength to solve related problems. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Lab work, demonstrations and observations of a <i>Slinky</i>, ripple tanks and computer simulations. Solving problem relating to real-life situations.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Defining and applying wave speed, frequency, period, wavelength to solve related problems with assistance. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Same as above with direction and assistance. Emphasis vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Sources and Properties of Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students will describe and differentiate reflection, refraction, diffraction and interference using models and lab experiences. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Lab work, demonstrations and observations of <i>Slinky</i>, ripple tanks and computer simulations. • Draw representations and models for vocabulary words.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Defining and describing reflection, refraction, diffraction and interference using models and lab experiences. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above. • Emphasize vocabulary
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Sources and Properties of Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will classify sound as a longitudinal wave and relate wave properties of frequency, amplitude and harmonic content, with human perceptions of pitch, loudness and quality. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Observation and analysis of demonstrations and computer simulations. • Matching human hearing perception to wave properties. • Apply sound properties using Vernier sensors.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Describe sound as a longitudinal wave and relate wave properties of frequency, amplitude and harmonic content, with human perceptions of pitch, loudness and quality, with direction. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Observation and analysis of demonstrations and computer simulations. • Matching perception to wave properties. • Apply sound properties using Vernier sensors. • Emphasize vocabulary and models.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2,5,6:

Discipline: **Physical Science**

Measurement Topic: **Interaction of Matter and Energy Sources and Properties of Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> Student will classify light as a transverse wave and relate wave properties of frequency, speed, wavelength and energy. Students will recognize the wave-particle nature of light. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> Computer simulation and analysis of electromagnetic spectrum. Solve problems for photon energy in relationship to frequency and wavelength (Planck's constant).
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> Describe light as a transverse wave and relate wave properties of frequency, speed, wavelength and energy. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> Computer simulation and analysis of electromagnetic spectrum. Solve problems using $c = f \times \lambda$ Emphasize vocabulary
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Interaction of Energy and Matter**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Students describe how substances are able to absorb and emit electromagnetic radiation <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Computer simulations. • Demonstrations with color box. • Pigment versus light (color wheels). • Gas discharge tubes, such as neon.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Students describe how substances are able to absorb and emit electromagnetic radiation. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Sources and Properties of Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will describe how light can reflect, refract, diffract and interfere. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Demonstration and computer simulation. • Drawing representations and models with ray diagrams. • Lab work with mirrors and lenses.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Describing how light can reflect, refract, diffract and interfere. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above. • Emphasize vocabulary.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	Even with help, no understanding or skill demonstrated.		

MT Science Content Standard 2: Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

Discipline: **Physical Science**

Measurement Topic: **Sources and Properties of Energy**

Course: **Physics**

Grades: **11-12**

Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.		Sample Tasks
	3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<p>The student demonstrates an understanding of important information, such as:</p> <ul style="list-style-type: none"> • Student will identify, measure, calculate and analyze relationships associated with electricity and with magnetism. • Student describes electromagnetic force as a relationship between magnetism and electricity. <p>The student exhibits no major errors or omissions.</p>		<ul style="list-style-type: none"> • Lab work involving static electricity. • Demonstrations and lab work involving the concepts of current, voltage and resistance, and power and appropriate units. • Solve problems related to Ohm’s Law. • Build simple electrical circuits, and analyze with meters. • Lab work involving magnets and electromagnets.
	2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content	
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as:</p> <ul style="list-style-type: none"> • Identifying, measuring, calculating, and analyzing relationships associated with electricity and with magnetism. <p>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</p>		<ul style="list-style-type: none"> • Same as above, with direction and assistance. • Emphasis on vocabulary and appropriate units.
	1.5	Partial knowledge of the 2.0 content but major errors or omissions regarding the 3.0 content	
Score 1.0	<p>With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.</p>		
	0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
Score 0.0	<p>Even with help, no understanding or skill demonstrated.</p>		