Teacher: CORE Science Grade 8	Year: 2010-11
Course: Science Grade 8	Month: All Months

August

Scientific Method

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards

September

LAB SKILLS/INSTRUMENTS

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Experimental Design: Observations and Inferences	Define in writing observations and inferences using real-world examples Identify in writing observations given examples in text form Infer in writing based on a given set of observations	observation inference predict data gather collect				MST.I.01. MATHEM ANALYS identify in and depen variables MST.I.01. SCIENTI INQUIRY independe formulate hypothesis MST.I.01. SCIENTI INQUIRY differentia observatio inferences prediction explanatio MST.I.01. SCIENTI INQUIRY evaluate th hypothesis of the data
	Scientific Method: Designing Controlled	Define in writing independent, dependent, and controlled variables using real-world examples	conclusion definining the problem analyze				MST.I.01. SCIENTI INQUIRY and condu

	Experiments	Define in writing problem from a written experimental example Identify in writing information gathered through research from a written passage Write hypothesis based on a written experimental example Identify in writing independent/dependent variables and variables that need to controlled in an experiment Draw in writing conclusion based on information presented in a written passage or data table	variable independent variable controled variables dependent variable hypothesis evaluate clarify explain error				experimen hypothesis MST.I.01. SCIENTIF INQUIRY prediction experimen MST.I.01. SCIENTIF INQUIRY a simple c experimen MST.I.01. SCIENTIF INQUIRY identify independe variables (manipula dependent (respondi constants simple co experimen MST.I.01. SCIENTIF INQUIRY conduct a investigati
	Graphs: Construction and Interpretion	State in writing the relationship between variables shown on a graph Create a line graph that has an apprpriate title, labeled x and y axis, scaled axis, plotted and	indirect/inverse relationship direct relationship cyclic/static relationship constant extrapolate construct interpolate x-axis y-axis				MST.I.01. SCIENTIF INQUIRY generate a scales, cre legends, a appropriat axes MST.I.01. SCIENTIF INQUIRY interpret g data tables MST.I.01. MATHEM ANALYSI

		connected data points Determine the corresponding value for x or y using a graph Generate additional data from a graph by extend an existing line on a graph Complete a circle graph given percentages for various categories determine the percentage of a missing section from a circle graph					identify relationshi variables i direct, indi cyclic, cor identify no material MST.I.01. SCIENTIF INQUIRY charts, tab graphs and representa observatio convention creative w help them their resea question o hypothesis MST.I.01. SCIENTIF INQUIRY organize re using appr graphs, dia data tables other mod show relat

MEASUREMENT I

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Measurent: Length, Volume, and Mass	Measure with a metric ruler the length, width, height of a object to the nearest tenth of a cm Calculate the volume of a	length volume mass weight metric system meter liter gram water displacement				MST.I.01.P MATHEMA ANALYSIS mathematic and symboli include vari algebraic ex in order to d and compar quantities ar mathematic

			geometric solid using mathematical formulations (l x w x h) Determine the volume of liquids and irregular solids using graduated cylinders Determine the mass of real world objects using balances Define in writing length, mass, and volume using real-world examples Determine the length of an object when starting with a value other than 0 when using appropriate tool Identify in writing metric base units (meter, liter, gram)					relationship MST.I.01.P SCIENTIFI INQUIRY ~ appropriate conventiona techniques t problems ab natural worl including:m observing, c classifying, sequencing MST.I.01.P SCIENTIFI INQUIRY ~ quantitative qualitative c MST.I.01.P SCIENTIFI INQUIRY ~ sources of e the limitatio collected MST.I.02.P INFORMA SYSTEMS the data, usi appropriate, tool MST.I.02.P INFORMA SYSTEMS organize the MST.I.02.P INFORMA SYSTEMS collected da communicat scientific co

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MEASUREMENT II

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Measurement: Density	Calculate in writing the density of an object using the formula D=m/v Label in writing calculated densities with the proper units Describe in writing the relationship between density and bouancy State in writing the relationship between the distance between atoms and changes in density Draw rectangular objects floating at the correct level based on the density of the object contruct a graph of an object's density given mass and volume determine the relationship between the slope of a line and the	relative comparative density bouyancy floating/sinking/neutral buoyancy				MST.I.01 MATHEM ANALYS apply mat knowledg real-worl problems problems from the investigat mathemat using representa such as pi charts, an S.PS.I.04. PHYSICA SETTING observe a describe p of materia as density conductiv solubility 4.3.1h-De be describ amount of that is in a amount of two objec equal volu one has m the one w mass is de 4.3.1i-Buo determine comparati densities.

		density of a substance from a graph identify conditions that cause the density of an object to change given real world examples:changes in state, cutting, compression, expansion						

MATTER I

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Matter: States of Matter	define a solid, liquid, and gas in terms of definite/no definite shape and volume identify the melting, freezing point, boling point of water in Celsius and Fahrenheit Define the following changes in state: melting, freezing, evaporation,	phase/state of matter matter solid liquid atoms motion shape freezing melting condensation boiling evaporation gas water vapor boiling point freezing point contract expand deposition sublimation				4.3.2a-Du physical c substance chemical compositi proper- tie Examples physical c include fr melting, condensat boiling, evaporatio tearing, ar crushing. 4.3.3a-All made up o Atoms are small to se light micr 4.3.3b-Ato molecules perpetuall motion. T the tempe

			boiling, condensation, sublimation, deposition state the relationship between a change in state and whether energy needs to be absorbed or released describe the changes in the speed and distance in the atoms as a substance changes state; soild, liquid, gas construct a graph illustrating changes in state given time and temperature data identify the states of matter and changes in state from a graph of time and temperature explain in					greater the 4.4.2c-Du phase cha energy is a or release is absorbe solid chan liquid and liquid cha gas. Energ released w changes to and when changes to 4.4.2d-Mo substance when heat contract w cooled. W exception, expanding changing 4.3.1d-Ga neither a determine nor a defi volume. G assume th and volum closed con 4.3.1c-The of particle explain th (states) of well as ch from one another. T in which m exists dep the attract among its 4.3.1e-A l definite vo takes the s container. 4.3.1f-A s

		writing why the temperature does not change during a change in state (melting, freezing, boiling) in terms of energy gained/lost.					definite sh volume. P resist a ch position. MST.I.01. SCIENTI INQUIRY and interp and data ta
	Matter: Physical and Chemical Properties and Changes	classify examples of physical and chemical changes given real world examples define physical and chemical properties distinguish between physical and chemical changes identify evidence indicating a physical or chemical change has occurred	color odor temperature physical change chemical change property electrical/thermal conductivity hardness tearing crushing burning rusting chemical reation				4.3. a ch char subs reac char way new subs with phy chen prop Exa chen char incl burn woo cool egg of i sour milk 4.3. Sub have char prop Som

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November

MATTER II

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Star
	Matter: Elements, Compounds, Mixtures	differentiate between an element, compound, and mixture classify substances as either an element, compound, or mixture given real world examples distinguish between a heterogeneous and homogeneous mixture identify various methods for	mixture magnet filtration settling elements atoms compounds periodic table separation homogeneous heterogeneous/solutions molecules particle size				4.3. Cha pro can to i diff mat and a m sub into con For iron rem fro mix mea mag inso sub be s fro solu sub

			separating mixtures given real world examples					suc pro filt sett eva 4.3. Sub are pla cat the sim Exa inc met non and gas 4.3. Mix phy con of n and sep phy mea 4.3. mat mac ato Ato too see ligh mic 4.3. may tog wel mol may arra reg geo patt

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	Matter: Solubility	identify the solute and solvent in a solution define in writing solute, solvent, soluble, insoluble, solubility, dilute	solubility solute solvent insoluble soluble dissolved stirring rate					4.3. Solu be a the the solv temp and The solu be a the

			explain the relationship between temperature and solubilty of a substance contruct a graph of the solubilty of a substance at a different temperatures determine how temperature, stirring, and crushing effects the dissolving rate					part stirr temp and amo solu diss 4.4.2 Tem affe solu som subs wate

December

MATTER III

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standard
	Matter: Acids and Bases	differentiate in writing betweeen acids and bases using real world examples Interpret results from indictators define in writing acids, bases, pH, indicators determine if a solution is an acid or base based on the pH	acid base indicators neutralization pH acid rain				4.2.2r-Su enter the atmosph naturally human a Some of substanc dust fron eruption greenhou such as c dioxide, and wate These su can affec weather, and livin

			value identify in the writing the properties of acids and bases describe the causes and impacts of acid rain explain neutralization and effects on pH					4.3.1a-S have cha propertie of these include c odor, ph room ter density, heat and conducti hardness boiling a freezing S.LE.I.0 LIVING ENVIRO ~ describ effects o environm changes humans populati 4.3.1b-C environm condition affect th of indivi organism particula Small di between and offsp accumul successiv generatio descenda very diff from the ancestor Individu organism certain t more lik survive a offspring individu

								without t traits. 4.7.0-Hu decision activities a profou on the pl and livin environn 4.7.2d-S Industria Revoluti human a have res major po air, wate soil. Poll cumulati ecologic such as a global w or ozone depletion survival things or planet de the cons and prot Earths re
	Matter: Atoms and Periodic Table	identify diferent types of elements using a periodic table define in writting atom, protons, neutron, electrons determine the number of protons, neutrons, and	nonmetals metals noble gases protons neutrons electrons atoms periodic table metalloids synthetic				4.3.2 matt mad atom are f sma with micr 4.3.2 Sub are c plac cate they simi Exa

			electrons using a periodic table Identify the elements using a periodic table as metals, non-metals, noble gases or metalloids.					incl meta non and gase 4.3. may toge well mol may arra regu geo patt 4.3. are 100 Elen com mul way proc com that for a and subs Few are thei form 4.3. peri is o mod clas elen peri can pred prop elen (me non nobl

January

ENERGY I

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Stand
	Energy: Temperature and Heat	Identify how CO2 build-up in our atmosphere has lead to Global Warming. distinguish between conduction, convection, and radiation given real world examples explain the relationship between the temperature of an object and the kintic energy of the particles in a substance compare temepratures in Celsius, Fahrenheit, and Kelvin Calculate the amount of thermal energy lost or gained using mathematical formulas	heat temperature kinetic energy thermal energy thermometer absolute zero celsius fahrenheit kelvin conduction convection plate tectonics radiation calorie global warming greenhouse gases specific heat			Lab: Greenhouse Effect GIZMO: Conduction and Convection	4.7.0 decis activi had a impa physi living envir 4.4.1 Diffe forms energ heat, electr mech sound and c Energ trans many 4.4.1 can b consi be ei kinet which energ motio poten energ depe relati posit 4.4.2 move predi ways from objec coole until

			communicate the relationship between the specific heat and the rate at which a substance heats and cools differentiate between temperature and heat/thermal energy summarize several negative impacts on the environment as a result of global warming label the crust, mantle, inner core, outer core on a diagram of the the earth's interior describe the role convection currents in the mantle have on plate tectonics state several					reach temp 4.4.2 can b trans throu by th collis atom mole (conc throu (radia a liqu curre facili trans (conv 4.4.2 subst expar heate contr coole is an excep expar when to ice 4.4.1 fuels store energ consi nonre resou They majo of en the U State energ movi and b are s exam

			geologic events that are a result of plate tectonics describe the concept of plate tectonics					renev energ resou 4.6.2 majo of at oxyg photo Carb is re from atmo and c relea photo
	Energy: Waves Properties and Light	distinguish between a transverse and longitudinal wave define and label the following parts of a wave; crest, trough, amplitude, wavelength, frequency, rarefaction, compression identify CFCs as the main cause of ozone depletion define reflection,refraction,absorptiom, and transmission determine the angle of reflection from a drawing explain the relationship between the color of the object and the wavelengths of light reflected and absorbed determine the relationship between the type of electromagnetic energy and wavelength, frequency, and the amount of energy carried by the	waves crest trough wavelength amplitude frequency reflection refraction absorption transmission opaque transparent translucent vibration microwaves infrared light visible light UV light gamma rays ozone chlorofluorocarbons compression rarefaction radio waves x-rays				4.4.4c Vibra mater wave- distur that s away sourc waves exam Vibra waves differ in dif mater Sound travel vacuu 4.4.4b passe some somet refrac proce Mater absor reflec and m transm

			type of electromagnetic energy summarize positive and negative effects of each type of electromagnetic wave identify concave and convex mirrors and lenses state negative effects of ozone depletion					To se objec from objec by or from enter 4.4.4a Diffe of electr energ differ wavel Some ples c electr energ micro infrar visibl ultrav light, and g rays. 4.7.2c the In Revol huma activi result major of air and s Pollut cumu ecolo effect acid r globa warm ozone deple surviv living our pl

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F e b r u a r y	ENERGY II							
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Star
		Energy: Sound, Electricity, and Magnets	Describe and identify the three parts of a circuits. construct series and parallel circuits using real world materials or computer simulation identify the difference between static electricity and current electricity understand that vibrational motion produces sound waves comprehend that the reflection of	sound vibrations pitch loudness Doppler effect echo echolocation static electricity electrical current law of electrical charges electrical discharge circuit magnets poles magnetic field electromagnetism			GIZMO: Circuit Builder	4.4. Ele ene pro fro vari ene sou can tra into any for ene 4.4. Ele circ pro mea tra elec ene 4.4. Wit tou the mat has

			sound waves is called an echo and animals can use echos to locate prey and for navigation identify the strongest part of the magnet are the north and south poles understand opposite magnetic poles attract while like magnetic poles repel comprehend properties of magnets such as the ability to attract the metal iron which can be used to separate mixtures containing iron					elec cha attr unc mat may attr rep cha mat 4.4. Wit dire con mag attr cert mat eith or r oth mag attr for mag gre pol 4.4. Vib mat up dist that awa the Sou are exa Vib wav at d spe diff mat Sou trav

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	Energy: Resources and Conversions	Identify pros and cons of different types of renewable and nonrenewable energy resources Describe in the types of nonrenewable energy resources, the three fossil fuels and nuclear Describe renewable energy resources hydroelectric, solar, wind, geothermal, biomass, and tidal. Explain how the energy obtained from most energy resources can be traqced back to the sun.	renewable nonrenewable fossil fuels nuclear solar power wind power hydroelectric power geothermal biomass tidal energy				4.4.5b can ch from to ano althou proces energy alway conve heat. systen transf energy loss o others 4.4.5a canno create destro only c from into a 4.5.0- and m intera forces result chang motio 4.4.3a chemi reacti energy transf or out systen electri

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		Energy: Resources and Conversions	Identify pros and cons of different types of	renewable nonrenewable fossil fuels nuclear				4.4.5b can ch from c to ano

			renewable and nonrenewable energy resources Describe in the types of nonrenewable energy resources, the three fossil fuels and nuclear Describe renewable energy resources hydroelectric, solar, wind, geothermal, biomass, and tidal. Explain how the energy obtained from most energy resources can be traqced back to the sun.	solar power wind power hydroelectric power geothermal biomass tidal energy				althou proces energy alway conve heat. S systen transf energy loss o others 4.4.5a canno create destro only c from c into a 4.5.0- and m intera forces result chang motio 4.4.3a chemi reacti energy transf or out systen electri mecha motio involv such t in add heat. 4.4.1e can be consid be eith energy is the motio

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			Identify pros and cons of different types of renewable and nonrenewable energy resources Describe in the types of nonrenewable energy resources, the three fossil fuels and nuclear	renewable nonrenewable fossil fuels nuclear solar power wind power hydroelectric power geothermal biomass tidal energy				4.4.5b can ch from to ano althou proces energy alway conve heat. S systen transf energy loss o others 4.4.5a canno

			Describe renewable energy resources hydroelectric, solar, wind, geothermal, biomass, and tidal. Explain how the energy obtained from most energy resources can be traqced back to the sun.					create destro only c from c into a 4.5.0- and m intera forces result chang motio 4.4.3a chemi reacti energy transf or out systen electri mecha motio involv such t in add heat. 4.4.1e can be consid be eith energy is the motio potent energy depen relativ positi 4.4.1d forms includ light, mecha sound and ch Energ

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March

ENERGY III

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Sta
	Energy: Potential and Kinetic Energy Conversions	Explain the relationship between potential and kinetic energy using a pendulum Identify the relationship between the weight of an object and the amount of potential energy Identify the relationship between the height above the ground and the amount of potential energy	kinetic energy potential energy energy transformation/conversion			GIZMO: Energy Conversions	4.4 En be co to kin ene wh ene mo pot ene wh dep rel pos 4.4 En ca cre des bu cha fro for an

		Describe the relationship between the mass of an object and the amount of kinetic energy Describe the relationship between the speed of an object and the amount of kinetic energy					4.4 En cha one and alt the sor is a cor hea sys tra ene les hea oth 4.5 obj gra for eve obj Gr for dep ho ma obj and far the Gr one for on obj pro
	Energy: Resources and Conversions						

April

FORCES AND MOTION

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Stan
	Forces: Friction and Gravity	Define friction as resistance to motion using real-world examples	Forces Friction Gravity			Lab: Measuring Forces (friction)	4.5.2 Fric forc oppo mot 4.5.3 obje grav forc ever obje Grav forc on h mas obje and far a are. one forc on o obje proj
	Machines: Simple, Complex	Define simple and complex machines using real-world examples Classify pulley, wheel/axle, lever, inclined plane based on machine definition	lever wheel and axle pulley inclined plane/ramp simple machine complex machine			GIZMO: Simple Machines (Pulleys, Wheel and Axle, Levers, Inclined Plane)	4.4. Ene char one anot alth the som is al conv heat

			Describe in writing the relationship between the distance an object moves and the amount of force exerted by a simple machine					syst tran ener less heat othe 4.5. Mac tran mec ener one ano 4.5. mac be r effi redu frict Som com way redu frict incl lubr wax surf 4.5. Mac char dire amo forc dist spee requ wor 4.5. mac incl leve pull whe axle incl

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	Motion: Newton's Laws	define in writing Newton's law of inertia Describe the relationship between the mass of an object and the amount of force acting on an object that produces acceleration explain Newton's third law action/reaction and how it relates to the motion of objects such as rockets	inertia momentum action/reaction				4.5. ever ther equa opp reac 4.5. is di rela obje and acce The the grea char mot
	Motion: Speed and Acceleration	Define speed as distance divided by time using collected data Calculate the speed of an object given the distance and time in text or graphic form	speed/velocity acceleration/deceleration			Lab: Measuring the Speed of an Object	4. m an al ju re sc ob po id ab m re

			Distinguish between an object traveling at a constant speed, accelerating, and decelerating from a graph of distance and time					m 4. m ar ca de by po di m sp 4. ob m th th co ef fo ac th A ob is su a co m co sp st li ob re re re

May	Review for New York State grade 8 Science Assessment							
	Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Stand
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								Other organ reproc sexua organ reproc sexua asexu 4.4.1b are m metho asexu reproc includ divisi cell in cells, separa part o anima from t result growt anoth indivi 4.4.1c of sex reproc depen the sp metho involv mergi cells t the develo a new indivi many includ and hu eggs a are pr 4.4.1c Fertili and/o

								develo organ be int extern 4.4.2a male s the sp femal is the fertili an egg sperm a ferti 4.4.2b sexua reproc sperm each c half o geneti inform the ne indivi There fertili contai geneti inform from paren 4.4.3a Multi organ exhib compl chang develo which after fertili The fe egg u numer cellul divisi will r

								multic organ each havin genet inform 4.4.3b huma fertili grows tissue develo organ organ before 4.2.2c proba traits expre be det using genet inheri Some of pre are pe charts Punne square 4.3.1a proce sexua reproc and m have to a v traits specie 4.3.1b in enviro condi affect surviv indivi organ

								a part trait. S differ betwe paren offspr accun succe gener that desce very c from t ances Indivi organ certai more surviv have c than i witho traits. 4.3.1c activi as sel breed advan genet engin may a variat specie 4.3.2a enviro organ simila may c with c anoth resou 4.3.2b Extin specie when enviro

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								greate chang motio 4.5.1e every there and o reacti 4.5.2a object gravit force other Gravi force on ho mass object and o apart Gravi of the acting orbiti and p 4.5.2b curren magn exert each 4.5.2c Machi transf mecha energy one o anoth 4.5.2d is a fo oppos motio 4.5.2e machi made efficie reduci

								friction comm of red friction lubric waxin surfac 4.5.2f Machi chang direct amou force, distan speed requir work. 4.5.2g machi includ a pull wheel and ar plane. compl machi combi intera simpl machi a bicy 4.2.1g dynan proces wear a Earths includ weath erosio 4.2.1h proces weath breaks rocks sedim consis

								sedim organ mater and ai 4.2.1i- is the of sed Gravi drivin behin Gravi direct throug such a water, and gl 4.2.1j- circul throug atmos lithos hydro what i as the cycle.
		review performance assessment standards						