**Class Title: Science  
Grade Level: Four**

|  |  |
| --- | --- |
| Nine Weeks: 1  Unit: Methods of Science | |
| Concepts/Content | Desired Outcomes |
| **SCIENTIFIC INQUIRY**  **Technological Design** | Students will be able to Students will perform the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data.  Students will design and perform simple experiments.  Students will be compare observations of individual and group results.  Students will record data, organize it into a more useful form, analyze it to identify patterns, and report and display results.  Students will identify a design problem and identify possible solutions. Assess designs or plans to build a prototype.  Students will assess given test results on a prototype, and nalyze data and rebuild and retest prototype as necessary. |

|  |  |
| --- | --- |
| Nine Weeks: 1  Unit: Voyage of the Mimi | |
| Concepts/Content | Desired Outcomes |
| Identify humpback whales  Ocean Floor  Ocean Currents  Migration  Food Chains  extinction  Water Cycle  Tides and Waves | Students will analyze and write  Students will know the features of the ocean floor  Students will explain the forces that cause ocean currents and explain the impact of ocean currents on weather.  Students will Understand that some characteristics of living things are inherited from parents, such as the color of a flower in a plant, or the number of limbs on an animal. Understand that other features, however, are acquired by an organism through interactions with its environment (or learned) and cannot be passed down to the next generation merely through reproduction, and that some animals survive winter by being fitted for an active life during winter (e.g., penguins), others by hibernation (e.g., certain bears), and others by migration (e.g., monarch butterflies).  Students will understand the concept of food chains/webs and the role of producers, consumers and decomposers, and herbivores, carnivores and omnivores.  Students will explain the impact of human activities on animal populations and the corresponding effects on ecosystems.  Students will identify the steps of the water cycle and explain the importance of the water cycle to life.  Students will explain the forces that cause tides and waves. Students will identify the parts of a wave. |

|  |  |
| --- | --- |
| Nine Weeks: 2  Unit: Cells of Life | |
| Concepts/Content | Desired Outcomes |
| What is life?  Cells  Cells to Organisms  Classifying Orgamisms | Students will state the functions of a living thing and distinguish between living and non-living things.  Students will identify the basic needs of living things.  **12.7.02** Understand that all living things are composed of cells: small parts which function similarly in all living things  **12.7.03** Identify the main differences between plant cells and animal cells, namely that plant cells have chloroplasts and cell walls (which provide rigidity to the plant, since plants have no skeletons). Identify the basic cell organelles and their functions.  Know the parts of a microscope, and how to focus a microscope  Students will understand the roles of cells, tissues and organs in levels of an organism’s organization.  Students will understand how scientists classify organisms. |

|  |  |
| --- | --- |
| Nine Weeks: 2  Unit: Ecosystems | |
| Concepts/Content | Desired Outcomes |
| Kinds of ecosystems  Changing ecosystems | Students will be able to identify and describe many different ecosystems and state how animal adaptations equip animals to live in their ecosystem.  Students will understand ways that ecosystems can change (natural ways, and by human activities) |

|  |  |
| --- | --- |
| Nine Weeks: 2  Unit: Animals: invertebrates and metamorphosis | |
| Concepts/Content | Desired Outcomes |
| Kinds of Invertebrates  Changing Metamorphosis | Students will identify the basic division of animals and their common characteristics, primarily arachnids and insects.  Students will be able to state the difference between complete and incomplete metamorphosis, and list some insects for each form. |

|  |  |
| --- | --- |
| Nine Weeks: 2  Unit: Animals: vertebrates | |
| Concepts/Content | Desired Outcomes |
| Kinds of vertebrates  Organ systems | Students will be able to identify and state the basic divisions of animals and their common characteristics (mammal, fish, bird, reptile, amphibian).  Students will understand that some animals are warm blooded and others are cold blooded.  Students will state the basic life cycle of vertebrates.  Students will understand the component parts of living things. |

|  |  |
| --- | --- |
| Nine Weeks: 3  Unit: Electricity/magnetism | |
| Concepts/Content | Desired Outcomes |
| static electricity  current electricity  Magnetism | Students will understand positive and negative charges and how static charges build.  Students will understand that like charges repel, while opposite charges attract.  Students will be able to wire a complete circuit that includes a batter, switch and light.  Students will be able to identify conductors and insulators.  Students will be able to state the other types of energy that electrical energy can be converted to.  Students will understand that magnets are attracted to objects that contain iron.  Students will understand that magnets are used to create electricity. |

|  |  |
| --- | --- |
| Nine Weeks: 3  Unit: Rocks | |
| Concepts/Content | Desired Outcomes |
| Minerals  Rocks  Changing Earth’s Surface  Fossils  Earthquakes  Soil  Layers | Students will be able to identify physical properties of minerals.  Students will identify the three basic kinds of rocks: metamorphic, igneous, and sedimentary, and the processed that create them.  Students will be able to state the slow ways and fast ways that the earth’s surface changes.  Students will understand that some rocks contain plant and animal fossils and how they were formed.  Students will understand the basics of plate tectonics and state three kinds of earthquake waves and the effect of each.  Students will understand how soil is created and what it consists of.  Students will be able to identify and describe the crust, mantle and core. |

|  |  |
| --- | --- |
| Nine Weeks: 4  Unit: Space | |
| Concepts/Content | Desired Outcomes |
| Universe  Solar System  Seasons  Moon | Students will understand that the sun is an average star.  Students will understand that constellations are a group of stars that appear to form a pattern in the night sky.  Students will understand that our galaxy is the Milky Way and how it appears to us here on Earth.  Students will be able to list the planets in order.  Students will understand the difference between revolve and rotate.  Students will understand the difference between the inner and outer planets.  Students will understand the relationship between mass and weight.  Students will be able to explain what causes seasons on earth.  Students will understand what causes the phases of the moon.  Students will be able to describe the position of the sun, moon, and earth during different types of eclipses. |

|  |  |
| --- | --- |
| Nine Weeks: 4  Unit: Weather | |
| Concepts/Content | Desired Outcomes |
| Atmosphere  Measuring weather  Clouds  Fronts and air masses | Students will understand the layers of the atmosphere and list the main gasses.  Students will be able to describe weather using measurements of wind, temperature, precipitation, humidity ,and air pressure.  Students will be able to identify cumlus, stratus, cirrus, and cumulonimbus clouds based on their characteristics and name the type of weather that typically accompanies each kind of cloud.  Students will identify weather fronts on a surface map and the results of warm and cold fronts.  Students will understand how and where air masses form and how they are characterized. |

|  |  |
| --- | --- |
| Nine Weeks: 4  Unit: Plants | |
| Concepts/Content | Desired Outcomes |
| Adaptations  Parts of a plant  Photosynthesis  Reproduction | Students will understand the different adaptation that help plants survive in their environment.  Students will be able to identify and state the function of roots, stem, and leaves.  Students will understand that energy for life primarily comes from the sun and is transformed into food energy through photosynthesis  Students will identify the parts of a flower and understand how they work together to form seeds.  Students will identify the parts and function of a seed |