

| Science Unit                 | 2 <sup>nd</sup> Grade- Nature of Science  |
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| Engineering Unit             | Nature of Science & Engineering (NSE)<br>How Do Engineers Solve Problems?   |
| Timeline                     | August 10 <sup>th</sup> - September 26 <sup>th</sup>  |
| Science Standards            | <p>SC.2.N.1.1 Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations</p> <p>SC.2.N.1.2 Compare the observations made by different groups using the same tools.</p> <p>SC.2.N.1.3 Ask “how do you know?” in appropriate situations and attempt reasonable answers when asked the same questions when asked the same question by others.</p> <p>SC.2.N1.4 Explain how particular scientific investigations should yield similar conclusions when repeated.</p> <p>SC.2.N.1.5 Explain between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).</p> <p>SC2.N.1.6 Explain how scientists alone or in groups are always investigating new ways to solve problems.</p> <p><b>Standards for Engineering Design</b></p> <p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p> <p>K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</p> |
| Essential Questions          | <ul style="list-style-type: none"> <li>• Why is it important for scientists and engineers to be part of a team?</li> <li>• Why is it important for scientist and engineers to communicate and record their observations?</li> <li>• How do engineers design solutions to problems?</li> <li>• How do scientists and engineers use models and tools to understand the real world?</li> </ul>   |
| Science Vocabulary           | observation, investigation, experiment, explanation, exploration, description, conclusion, prediction, temperature, degrees,  |
| ELA Text                     | <i>The Day you Begin, Dreaming Up, I’m Gonna Like Me, Pierre the Penguin Scientists Ask Questions, The Elephant’s Child</i>   |
| Investigations               | <p>Create Coat of Arms and design a stand that will hold it</p> <p>Teambuilding Challenge with cups, straws, ect.</p> <p>Using science tools to measure length and temperature</p>  |
| Engineering Design Challenge | <i>Design a Prosthetic Device for an animal</i>   |

| Science Unit                        | Physical Science   |  |
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| Engineering Unit                    | Matter-Making sense of the world (Matter)  | Gravitational Force & Resultant Motion (GFRM) Electromagnetic Force & Resultant Motion (EFRM)  |
| Timeline                            | October  | November   |
| <b>Science Standards</b>            | <p>SC.2.N.1.2 Compare the observations made by different groups using the same tools.</p> <p>SC.2.P.8.1 Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking, or floating in water, and attraction and repulsion of magnets. (DOK 1)</p> <p>SC.2.P.8.2 Identify objects and materials as solid, liquid, or gas. (DOK 1)</p> <p>SC.2.P.8.3 Recognize that solids have a definite shape and that liquids and gases take the shape of their container. (DOK 1)</p> <p>SC.2.P.8.4 Observe and describe water in its solid, liquid, and gaseous states. (DOK 1)</p> <p>SC.2.P.8.5 Measure and compare temperatures taken every day at the same time. (DOK 2)</p> <p>SC.2.P.8.6 Measure and compare the volume of liquids using containers of various shapes and sizes. (DOK 2)</p> <p>SC.2.P.9.1 Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration. (DOK 3)</p> | <p>SC.2.P.13.1 Investigate the effect of applying various pushes and pulls on different objects.</p> <p>SC.2.P.13.3 Recognize that objects are pulled toward the ground unless something holds them up.</p> <p>SC.2.P.13.4 Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.</p> <p>SC.2.P.10.1 Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes, and power their cars.</p> <p>SC.2.P.13.2 Demonstrate that magnets can be used to make some things move without touching them.</p> |
| <b>Essential Questions</b>          | <ul style="list-style-type: none"> <li>How can we determine properties of matter by measuring and observing?</li> <li>How do scientists use tools to make sense of the world?</li> <li>How are magnification tools used to see small objects?</li> <li>How does heating and cooling change different objects?</li> <li>How can we observe and measure volume using various containers?</li> </ul>  | <ul style="list-style-type: none"> <li>What is a force?</li> <li>How does gravity act as a force?</li> <li>How does friction, mass, and circumference affect motion?</li> <li>How can magnets cause objects to move?</li> <li>How does electricity impact our lives?</li> </ul>  |
| <b>Science Vocabulary</b>           | Force, gravity, friction, heat, magnet, poles, observation, investigation, electricity   |  |
| <b>Investigations</b>               | <p>Describing matter with different types of crackers</p> <p>Ice Cream in a bag</p> <p>Changes of matter- balloon with baking soda</p> <p>Finding Volume Lab</p> <p>Gravity- Ball drop from various heights</p> <p>Measurement of Temperature</p>  |  |
| <b>Engineering Design Challenge</b> | <p><i>Create a maze for an object to travel using a magnetic force</i></p> <p><i>Design a container that can hold ice cream</i></p>  |  |

| Science Unit        | Earth Science  |
|---------------------|--|
| Engineering Unit    | Natural Resources (NR)<br>Space Exploration (SE)   |
| Timeline            |  |
| Science Standards   | <p><b>SC.2.N.1.1:</b> Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations. (DOK 3)</p> <p><b>SC.2.N.1.2:</b> Compare the observations made by different groups using the same tools. (DOK 2)</p> <p><b>SC.2.N.1.5:</b> Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think). (DOK 2)</p> <p><b>SC.2.N.1.6:</b> Explain how scientists alone or in groups are always investigating new ways to solve problems. (DOK 2)</p> <p><b>SC.2.E.6.1:</b> Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes. (DOK 2)</p> <p><b>SC.2.E.6.2:</b> Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed. (DOK 3)</p> <p><b>SC.2.E.6.3:</b> Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants. (DOK 3)</p> <p><b>SC.2.E.7.1:</b> Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season. (DOK 2)</p> <p><b>SC.2.E.7.2:</b> Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air. (DOK 3)</p> <p><b>SC.2.E.7.3:</b> Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate). (DOK 3)</p> <p><b>SC.2.E.7.4:</b> Investigate that air is all around us and that moving air is wind. (DOK 3)</p> <p><b>SC.2.E.7.5:</b> State the importance of preparing for severe weather, lightning, and other weather related events. (DOK 1)</p> <p><b>SC.2.P.8.1:</b> Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets. (DOK 1)</p> |
| Essential Questions | <p>How can you describe the changing patterns in nature?</p> <p>How does the sun's energy affect water, air, and land?</p> <p>What changes does moving air make?</p> <p>How can we prepare for severe weather?</p> <p>How can soil be classified?</p> <p>What are the properties of rocks?</p> <p>How do engineers prevent beach erosion?</p>  |
| Science Vocabulary  |  |
| Investigations      | <p>Soil investigation</p> <p>Measurement of volume, temperature, ongoing</p> <p>Use of inferred thermometers to measure soil and water temperature and the effect of the sun.</p>  |
| Design Challenge    | <p><i>Design an umbrella</i></p> <p><i>Develop a model to prevent beach erosion</i></p>  |

| Science Unit                 | Life Science   |   |
|------------------------------|--|---|
| Engineering Unit             | Life Processes (LP)  | Ecosystems (ECO)  |
| Timeline                     | March  | April   |
| Science Standards            | SC.2.L.14.1 Distinguish human body parts (brain, heart, lungs, stomach, muscles and skeleton) and their basic functions.<br>SC.2.L.16.1. Observe and describe major life stages in the life cycles of plants and animals, including beans and butterflies.<br>SC.2.L.17.2 Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.<br>SC.2.L.17.1 Compare and contrast the basic needs that all living things, including humans, have for survival. |   |
| Essential Questions          | 1. What do plants and animals need to survive?<br>2. What are the basic needs of humans?<br>3. What is the basic function of human body parts?<br>4. How do animals and plants change and grow?  | 1. How do habitats help animals meet their basic needs? |
| Science Vocabulary           | Life cycle, habitat, survival, brain, heart, lungs, stomach, muscles and skeleton, function, life stage,   |   |
| Investigations               |  |   |
| Engineering Design Challenge | Design a habitat that will support a frog during each stage of its life.<br>Design a habitat that will support a Florida animal.   |   |