

## Embedded Inquiry

**Conceptual Strand** - *Understandings about scientific inquiry and the ability to conduct inquiry are essential for living in the 21<sup>st</sup> century.*

**Guiding Question** - *What tools, skills, knowledge, and dispositions are needed to conduct scientific inquiry?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.Inq.1</p> <p>Explore different scientific phenomena by asking questions, making logical predictions, planning investigations, and recording data.</p>	<p>✓0307.Inq.1</p> <p>Identify specific investigations that could be used to answer a particular question and identify reasons for this choice.</p>	<p>SPI 0307.Inq.1</p> <p>Select an investigation that could be used to answer a specific question.</p>	<p><b>Asking Questions and Defining Problems</b></p> <ul style="list-style-type: none"> <li>• Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.</li> <li>• Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3)</li> <li>• Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4)</li> </ul> <p><b>Planning and Carrying Out Investigations</b></p> <ul style="list-style-type: none"> <li>• Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.</li> <li>• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-PS2-1)</li> <li>• Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. (3-PS2-2)</li> </ul>
<p>GLE 0307.Inq.2</p> <p>Select and use appropriate tools and simple equipment to conduct an investigation.</p>	<p>✓0307.Inq.2</p> <p>Identify tools needed to investigate specific questions.</p>	<p>SPI 0307.Inq.1</p> <p>Select an investigation that could be used to answer a specific question.</p>	<p><b>Scientific Investigations Use a Variety of Methods</b></p> <p>Science investigations use a variety of methods, tools, and techniques. (3-PS2-1)</p> <p><b>Connections to Nature of Science</b></p> <p><b>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</b></p> <p>Science assumes consistent patterns in natural systems. (3-LS4-1)</p> <p><b>Science is a Human Endeavor</b></p> <p>Most scientists and engineers work in teams. (3-LS4-3)</p>



<p>GLE 0307.Inq.3</p> <p>Organize data into appropriate tables, graphs, drawings, or diagrams.</p>	<p>✓0307.Inq.3</p> <p>Maintain a science notebook that includes observations, data, diagrams, and explanations.</p>	<p>SPI 0307.Inq.1</p> <p>Select an investigation that could be used to answer a specific question.</p>	<p><b>Analyzing and Interpreting Data</b></p> <ul style="list-style-type: none"> <li>Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</li> <li>Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1)</li> </ul>
<p>GLE 0307.Inq.4</p> <p>Identify and interpret simple patterns of evidence to communicate the findings of multiple investigations.</p>	<p>✓0307.Inq.4</p> <p>Analyze and communicate findings from multiple investigations of similar phenomena to reach a conclusion.</p>	<p>SPI 0307.Inq.1</p> <p>Select an investigation that could be used to answer a specific question.</p>	<p><b>Science Knowledge is Based on Empirical Evidence</b> Science findings are based on recognizing patterns. (3-PS2-2)</p> <p><b>Developing and Using Models</b></p> <ul style="list-style-type: none"> <li>Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.</li> <li>Develop models to describe phenomena. (3-LS1-1)</li> </ul>
<p>GLE 0307.Inq.5</p> <p>Recognize that people may interpret the same results in different ways.</p>	<p>✓0307.Inq.4</p> <p>Analyze and communicate findings from multiple investigations of similar phenomena to reach a conclusion.</p>	<p>SPI 0307.Inq.1</p> <p>Select an investigation that could be used to answer a specific question.</p>	<p><b>Engaging in Argument from Evidence</b></p> <ul style="list-style-type: none"> <li>Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).</li> <li>Construct an argument with evidence, data, and/or a model. (3-LS2-1)</li> </ul>
<p>GLE 0307.Inq.6</p> <p>Compare the results of an investigation with what scientists already accept about this question.</p>	<p>✓0307.Inq.1</p> <p>Identify specific investigations that could be used to answer a particular question and identify reasons for this choice.</p>	<p>SPI 0307.Inq.1</p> <p>Select an investigation that could be used to answer a specific question.</p>	<p><b>Not addressed</b></p>

## Embedded Technology & Engineering

**Conceptual Strand** - Society benefits when engineers apply scientific discoveries to design materials and processes that develop into enabling technologies.

**Guiding Question** - How do science concepts, engineering skills, and applications of technology improve the quality of life?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.T/E.1</p> <p>Describe how tools, technology, and inventions help to answer questions and solve problems.</p>	<p>✓0307.T/E.1</p> <p>Explain how different inventions and technologies impact people and other living organisms.</p>	<p>SPI 0307.T/E.1</p> <p>Select a tool, technology, or invention that was used to solve a human problem.</p>	<p><b>Connections to Engineering, Technology, and Applications of Science</b>  <b>Interdependence of Science, Engineering, and Technology</b>            Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. (3-PS2-4)</p> <p><b>Science is a Human Endeavor</b>            Science affects everyday life. (3-ESS3-1)</p>
<p>GLE 0307.T/E.2</p> <p>Recognize that new tools, technology, and inventions are always being developed.</p>	<p>✓0307.T/E.2</p> <p>Design a tool or a process that addresses an identified problem caused by human activity.</p>	<p>SPI 0307.T/E.2</p> <p>Recognize the connection between a scientific advance and the development of a new tool or technology.</p>	<p><b>Connections to Engineering, Technology, and Applications of Science</b>  <b>Influence of Engineering, Technology, and Science on Society and the Natural World</b>            Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-ESS3-1)</p>
<p>GLE 0307.T/E.3</p> <p>Identify appropriate materials, tools, and machines that can extend or enhance the ability to solve a specified problem.</p>	<p>✓0307.T/E.3</p> <p>Determine criteria to evaluate the effectiveness of a solution to a specified problem.</p>	<p>SPI 0307.T/E.1</p> <p>Select a tool, technology, or invention that was used to solve a human problem.</p>	<p><b>Science is a Human Endeavor</b>            Science affects everyday life. (3-ESS3-1)</p>
<p>GLE 0307.T/E.4</p> <p>Recognize the connection between scientific advances, new knowledge, and the availability of new tools and technologies.</p>	<p>✓0307.T/E.4</p> <p>Evaluate an invention that solves a problem and determine ways to improve the design.</p>	<p>SPI 0307.T/E.2</p> <p>Recognize the connection between a scientific advance and the development of a new tool or technology.</p>	<p><b>Constructing Explanations and Designing Solutions</b></p> <ul style="list-style-type: none"> <li>Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in</li> </ul>

			designing multiple solutions to design problems. <ul style="list-style-type: none"> <li>• Use evidence (e.g., observations, patterns) to support an explanation. (3-LS3-2)</li> </ul>
GLE 0307.T/E.5  Apply a creative design strategy to solve a particular problem generated by societal needs and wants.	✓0307.T/E.1  Explain how different inventions and technologies impact people and other living organisms.	SPI 0307.T/E.1  Select a tool, technology, or invention that was used to solve a human problem.	<b>Not addressed</b>

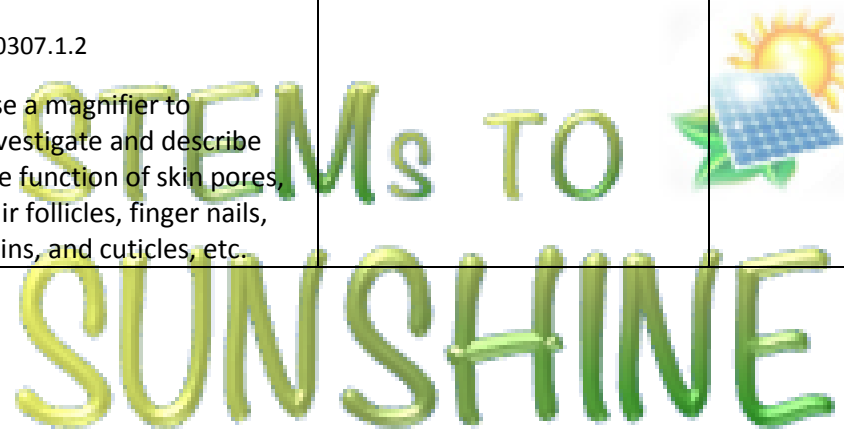
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## Standard 1 – Cells

**Conceptual Strand 1** - All living things are made of cells that perform functions necessary for life.

**Guiding Question 1** - How are plant and animals cells organized to carry on the processes of life?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0307.1.1  Use magnifiers to make observations of specific plant and animal body parts and describe their functions.	✓0307.1.1  Use a magnifier to investigate and describe the function of root hairs, stem cross sections, and leaf veins.  ✓0307.1.2  Use a magnifier to investigate and describe the function of skin pores, hair follicles, finger nails, veins, and cuticles, etc.	SPI 0307.1.1  Identify specific parts of a plant and describe their function.	<b>Not addressed</b>



## Standard 2 – Interdependence

**Conceptual Strand 2** - All life is interdependent and interacts with the environment.

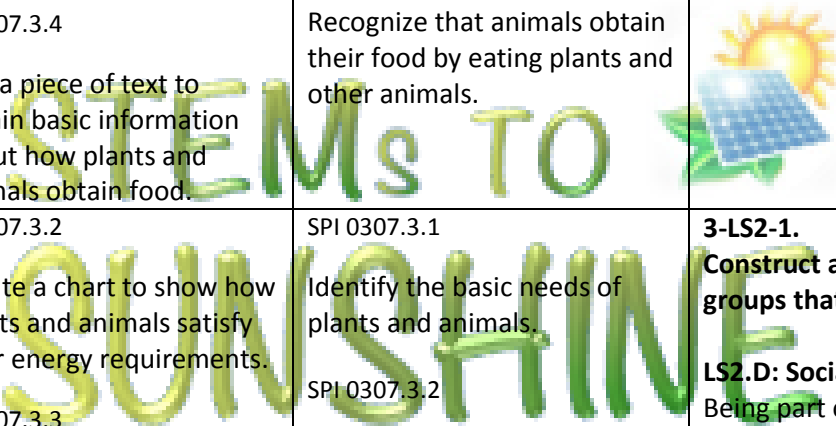
**Guiding Question 2** - How do living things interact with one another and with the non-living elements of their environment?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.2.1</p> <p>Categorize things as living or non-living.</p>	<p>✓0307.2.1</p> <p>Use a T-Chart to compare and contrast the characteristics of living and non-living things.</p>	<p>SPI 0307.2.1</p> <p>Distinguish between living and non-living things.</p>	<p style="text-align: center;"><b>Not addressed</b></p>
<p>GLE 0307.2.2</p> <p>Explain how organisms with similar needs compete with one another for resources.</p>	<p>✓0307.2.2</p> <p>Label a drawing of an environment to illustrate interrelationships among plants and animals.</p> <p>✓0307.2.3</p> <p>Construct a diagram to demonstrate how plants, animals, and the environment interact to provide basic life requirements.</p>	<p>SPI 0307.2.1</p> <p>Determine how plants and animals compete for resources such as food, space, water, air, and shelter.</p>	<p><b>3-LS2-1.</b>  <b>Construct an argument that some animals form groups that help members survive.</b></p> <p><b>LS2.D: Social Interactions and Group Behavior</b>            Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size (Note: Moved from K–2). (3-LS2-1)</p> <p><b>LS2.C: Ecosystem Dynamics, Functioning, and Resilience</b>            When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)</p> <p><b>LS4.D: Biodiversity and Humans</b>            Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)</p>

## Standard 3 – Flow of Matter & Energy

**Conceptual Strand 3** – *Matter and energy flow through the biosphere.*

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Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.3.1</p> <p>Describe how animals use food to obtain energy and materials for growth and repair.</p>	<p>✓0307.3.1</p> <p>Label a diagram to illustrate the food relationships that exist between plant and animals.</p> <p>✓0307.3.4</p> <p>Use a piece of text to obtain basic information about how plants and animals obtain food.</p>	<p>SPI 0307.3.1</p> <p>Identify the basic needs of plants and animals.</p> <p>SPI 0307.3.2</p> <p>Recognize that animals obtain their food by eating plants and other animals.</p>	<p style="text-align: center;">Not addressed</p> 
<p>GLE 0307.3.1</p> <p>Describe how animals use food to obtain energy and materials for growth and repair.</p>	<p>✓0307.3.2</p> <p>Create a chart to show how plants and animals satisfy their energy requirements.</p> <p>✓0307.3.3</p> <p>Identify structures used by different plants and animals to meet their basic energy requirements.</p>	<p>SPI 0307.3.1</p> <p>Identify the basic needs of plants and animals.</p> <p>SPI 0307.3.2</p> <p>Recognize that animals obtain their food by eating plants and other animals.</p>	<p><b>3-LS2-1.</b>  <b>Construct an argument that some animals form groups that help members survive.</b></p> <p><b>LS2.D: Social Interactions and Group Behavior</b>            Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size (Note: Moved from K–2). (3-LS2-1)</p>

## Standard 4 – Heredity

**Conceptual Strand 4** – *Plants and animals reproduce and transmit heredity information.*

**Guiding Question 4** – *What are the principal mechanisms by which living things reproduce and transmit information between parents and offspring?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.4.1</p> <p>Identify the different life stages through which plants and animals pass.</p>	<p>✓0307.4.1 Sequence diagrams that illustrate various stages in the development of an organism.</p> <p>✓0307.4.2 Create a timeline to depict the changes that occur during an organism’s life cycle.</p> <p>✓0307.4.3 Differentiate among the stages in the life cycle of a butterfly, mealworm, frog, and plant.</p>	<p>SPI 0307.4.1</p> <p>Select an illustration that shows how an organism changes as it develops.</p>	<p><b>3-LS1-1.</b> <b>Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.</b></p> <p><b>LS1.B: Growth and Development of Organisms</b> Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)</p>
<p>GLE 0307.4.2</p> <p>Recognize common human characteristics that are transmitted from parents to offspring.</p>	<p>✓0307.4.4 Draw conclusions about the similarities and differences between parents and their offspring.</p> <p>✓0307.4.5 Make a list of human characteristics that are transmitted from parents to their offspring.</p>	<p>SPI 0307.4.2</p> <p>Distinguish between characteristics that are transmitted from parents to offspring and those that are not.</p>	<p><b>3-LS3-1.</b> <b>Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.</b></p> <p><b>3-LS3-2.</b> <b>Use evidence to support the explanation that traits can be influenced by the environment.</b></p> <p><b>LS3.A: Inheritance of Traits</b></p> <ul style="list-style-type: none"> <li>• Many characteristics of organisms are inherited from their parents. (3-LS3-1)</li> <li>• Other characteristics result from individuals’ interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)</li> </ul> <p><b>LS3.B: Variation of Traits</b></p> <ul style="list-style-type: none"> <li>• Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)</li> <li>• The environment also affects the traits that an organism develops. (3-LS3-2)</li> </ul>



## Standard 5 – Biodiversity & Change

**Conceptual Strand 5** – *A rich diversity of complex organisms have developed in response to a continually changing environment.*

**Guiding Question 5** – *How does natural selection explain how organisms have changed over time?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.5.1</p> <p>Explore the relationship between an organism’s characteristics and its ability to survive in a particular environment.</p>	<p>✓0307.5.1 Create representations of animals that have characteristics necessary to survive in a particular environment.</p> <p>✓0307.5.2 Investigate the connection between an organism’s characteristics and its ability to survive in a specific environment.</p> <p>✓0307.5.3 Describe how environmental factors change over place and time.</p> <p>✓0307.5.4 Determine how changes in an environmental variable can affect plants and animals of an area.</p> <p>✓0307.5.5 Construct a diorama that shows plants and animals in an appropriate environment.</p>	<p>SPI 0307.5.1</p> <p>Investigate an organism’s characteristics and evaluate how these features enable it to survive in a particular environment.</p>	<p><b>3-LS2-1.</b> <b>Construct an argument that some animals form groups that help members survive.</b></p> <p><b>LS2.D: Social Interactions and Group Behavior</b> Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size (Note: Moved from K–2). (3-LS2-1)</p> <p><b>3-LS3-2.</b> <b>Use evidence to support the explanation that traits can be influenced by the environment.</b></p> <p>The environment also affects the traits that an organism develops. (3-LS3-2)</p> <p><b>3-LS4-1.</b> <b>Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</b></p> <p><b>3-LS4-2.</b> <b>Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</b></p> <p><b>3-LS4-3.</b> <b>Construct an argument with evidence that in a particular habitat some organisms can survive</b></p>

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well, some survive less well, and some cannot survive at all.

### 3-LS4-4.

**Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.**

### LS2.C: Ecosystem Dynamics, Functioning, and Resilience

When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.

(secondary to 3-LS4-4)

### LS4.A: Evidence of Common Ancestry and Diversity

- Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2) (3-LS4-1)
- Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)

### LS4.B: Natural Selection

Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)

### LS4.C: Adaptation

For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

### LS4.D: Biodiversity and Humans

Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

<p>GLE 0307.5.2</p> <p>Classify organisms as thriving, threatened, endangered, or extinct.</p>	<p>✓0307.5.6 Identify evidence used to determine the previous existence of an organism.</p> <p>✓0307.5.7 Use a data chart or informational text to classify organisms as thriving, threatened, endangered, or extinct.</p>	<p>SPI 0307.5.3</p> <p>Match the organism with evidence of its prior existence.</p> <p>SPI 0307.5.2</p> <p>Investigate populations of different organisms and classify them as thriving, threatened, endangered, or extinct.</p>	<p><b>3-LS4-1.</b> <b>Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.</b></p> <p><b>3-LS4-2.</b> <b>Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</b></p> <p><b>3-LS4-3.</b> <b>Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.</b></p> <p><b>3-LS4-4.</b> <b>Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.</b></p>
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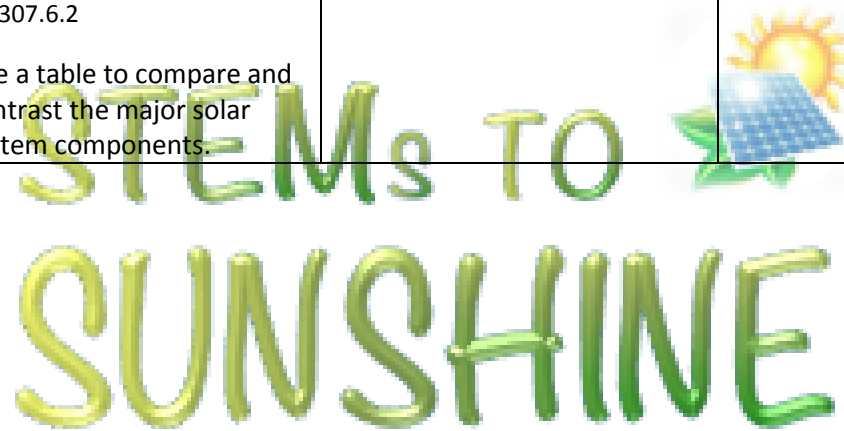
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## Standard 6 – The Universe

**Conceptual Strand 6** – *The cosmos is vast and explored well enough to know basic structures and operational principals.*

**Guiding Question 6** – *What big ideas guide human understanding about the origin and structure of the universe, Earth’s place in the cosmos, and observable motions and patterns in the sky?*


Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0307.6.1  Identify and compare the major components of the solar system.	✓0307.6.1  Create a model of the solar system depicting the major components and their relative positions and sizes.  ✓0307.6.2  Use a table to compare and contrast the major solar system components.	SPI 0307.6.1  Identify the major components of the solar system, i.e., sun, planets and moons.	<b>Not addressed</b>



## Standard 7 – The Earth

**Conceptual Strand 7** - Major geologic events that occur over eons or brief moments in time continually shape and reshape the surface of the Earth, resulting in continuous global change.

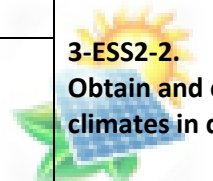
**Guiding Question 7** - How is the earth affected by long-term and short term geological cycles and the influence of man?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0307.7.1 Use information and illustrations to identify the earth’s major landforms and water bodies.	✓0307.7.1 Use a Venn diagram to compare and contrast two different landforms or bodies of water.	SPI 0307.7.1 Classify landforms and bodies of water according to their geological features and identify them on a map.	<b>Not addressed</b>
GLE 0307.7.2 Recognize that rocks can be composed of one or more minerals.	✓0307.7.2 Analyze the physical characteristics of different kinds of rocks.	SPI 0307.7.2 Describe how rocks can be classified according to their physical characteristics.	 <b>Not addressed</b>
GLE 0307.7.3 Distinguish between natural and man-made objects.	✓0307.7.3 Use a magnifier to observe, describe, and compare materials to determine if they are natural or man-made.	SPI 0307.7.3 Identify an object as natural or man-made.	<b>Not addressed</b>
GLE 0307.7.4 Design a simple investigation to demonstrate how earth materials can be conserved or recycled.	✓0307.7.4 Design and evaluate a method for reusing or recycling classroom materials.  ✓0307.7.5 Create a web that demonstrates the link between basic human needs and the earth’s resources.	SPI 0307.7.4 Determine methods for conserving natural resources.	<b>3-ESS3-1.</b> <b>Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</b>  <b>ESS3.B: Natural Hazards</b> A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1)

## Standard 8 - The Atmosphere

**Conceptual Strand 8** - *The earth is surrounded by an active atmosphere and an energy system that controls the distribution life, local weather, climate, and global temperature.*

**Guiding Question 8** - *How do the physical characteristics and the chemical makeup of the atmosphere influence surface processes and life on Earth?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0307.8.1  Recognize that there are a variety of atmospheric conditions that can be measured.	✓0307.8.1  Select appropriate tools used for collecting weather data that correspond to the atmospheric condition being measured.	SPI 0307.8.1  Choose the correct tool for measuring a particular atmospheric condition.	<p><b>3-ESS2-1.</b> <b>Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.</b></p>  <p><b>3-ESS2-2.</b> <b>Obtain and combine information to describe climates in different regions of the world.</b></p> <p><b>ESS2.D: Weather and Climate</b></p> <ul style="list-style-type: none"> <li>• Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)</li> <li>• Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)</li> </ul> <p><b>3-ESS3-1.</b> <b>Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</b></p> <p><b>ESS3.B: Natural Hazards</b> A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1)</p>
GLE 0307.8.2  Use tools such as the barometer, thermometer, anemometer, and rain gauge to measure atmospheric conditions.	✓0307.8.1  Select appropriate tools used for collecting weather data that correspond to the atmospheric condition being measured.	SPI 0307.8.1  Choose the correct tool for measuring a particular atmospheric condition.	
GLE 0307.8.3  Identify cloud types associated with particular atmospheric conditions.	✓0307.8.2  Identify major cloud types and associate them with particular weather conditions.	SPI 0307.8.2  Match major cloud types with specific atmospheric conditions.	
GLE 0307.8.4  Predict the weather based on cloud observations.	✓0307.8.2  Identify major cloud types and associate them with particular weather conditions.	SPI 0307.8.2  Match major cloud types with specific atmospheric conditions.	

## Standard 9 – Matter

**Conceptual Strand 9** - *The composition and structure of matter is known, and it behaves according to principles that are generally understood.*

**Guiding Question 9** - *How does the structure of matter influence its physical and chemical behavior?*

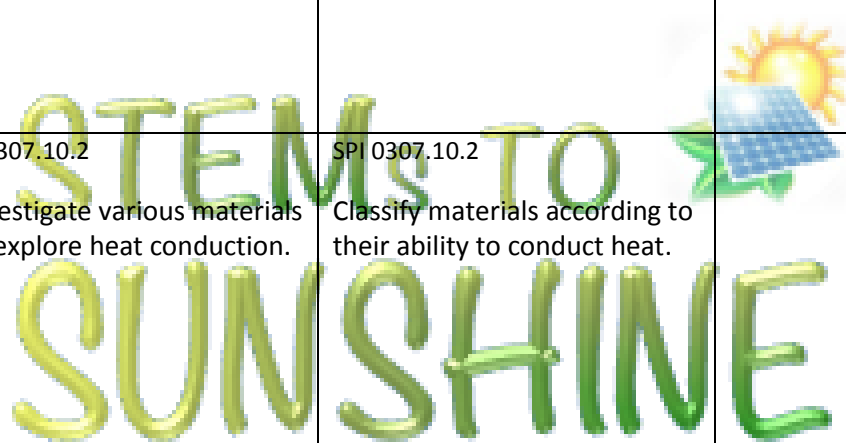
Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.9.1</p> <p>Design a simple experiment to determine how the physical properties of matter can change over time and under different conditions.</p>	<p>✓0307.9.1</p> <p>Use physical properties to compare and contrast substances.</p> <p>✓0307.9.2</p> <p>Compare and contrast events that demonstrate evaporation, crystallization, and melting.</p> <p>✓0307.9.3</p> <p>Make predictions and conduct experiments about conditions needed to change the physical properties of particular substances.</p>	<p>SPI 0307.9.1</p> <p>Describe a substance in terms of its physical properties.</p>	<p><b>Not addressed</b></p>
<p>GLE 0307.9.2</p> <p>Investigate different types of mixtures.</p>	<p>✓0307.9.4</p> <p>Classify combinations of materials according to whether they have retained or lost their individual properties.</p>	<p>SPI 0307.9.1</p> <p>Describe a substance in terms of its physical properties.</p>	<p><b>Not addressed</b></p>
<p>GLE 0307.9.3</p> <p>Describe different methods to separate mixtures.</p>	<p>✓0307.9.5</p> <p>Investigate different ways to separate mixtures such as filtration, evaporation, settling, or using a sieve.</p>	<p>SPI 0307.9.2</p> <p>Identify methods for separating different types of mixtures.</p>	<p><b>Not addressed</b></p>

## Standard 10 - Energy

**Conceptual Strand 10** - Various forms of energy are constantly being transformed into other types without any net loss of energy from the system.

**Guiding Question 10** - What basic energy related ideas are essential for understanding the dependency of the natural and man-made worlds on energy?

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
GLE 0307.10.1  Investigate phenomena that produce heat.	✓0307.10.1  Associate the sun's energy with the melting of an ice cube placed in a window.	SPI 0307.10.1  Use an illustration to identify various sources of heat energy.	<b>Not addressed</b>
GLE 0307.10.2  Design and conduct an experiment to investigate the ability of different materials to conduct heat.	✓0307.10.2  Investigate various materials to explore heat conduction.	SPI 0307.10.2  Classify materials according to their ability to conduct heat.	<b>Not addressed</b>
GLE 0307.10.1  Investigate phenomena that produce heat.	✓0307.10.1  Associate the sun's energy with the melting of an ice cube placed in a window.	SPI 0307.10.1  Use an illustration to identify various sources of heat energy.	<b>Not addressed</b>





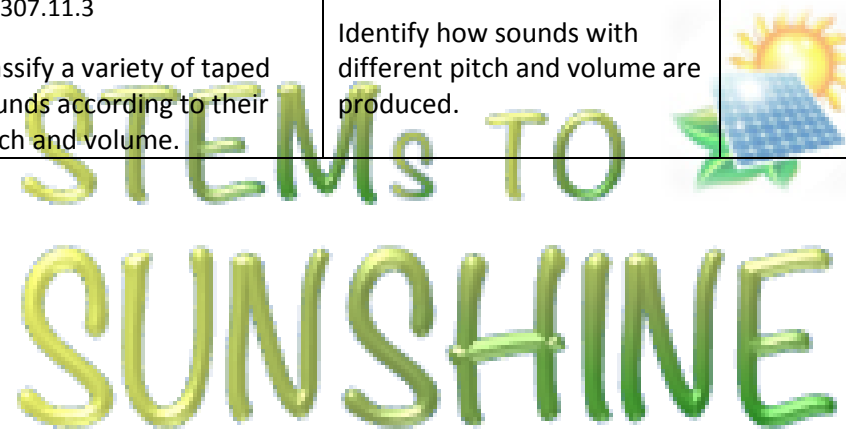
## Standard 11 – Motion

**Conceptual Strand 11** - *Objects move in ways that can be observed, described, predicted, and measured.*

**Guiding Question 11** - *What causes objects to move differently under different circumstances?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.11.1</p> <p>Explore how the direction of a moving object is affected by unbalanced forces.</p>	<p><b>Not addressed</b></p>	<p>SPI 0307.11.1</p> <p>Identify how the direction of a moving object is changed by an applied force.</p>	<p><b>3-PS2-1.</b>  <b>Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.</b></p> <p><b>3-PS2-2.</b>  <b>Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.</b></p>
<p>GLE 0307.11.2</p> <p>Recognize the relationship between the mass of an object and the force needed to move it.</p>	<p>✓0307.11.1</p> <p>Plan an investigation to illustrate how changing the mass affects a balanced system.</p>	<p>SPI 0307.11.2</p> <p>Demonstrate how changing the mass affects a balanced system.</p>	<p><b>PS2.A: Forces and Motion</b></p> <ul style="list-style-type: none"> <li>• Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object’s speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) (3-PS2-1)</li> <li>• The patterns of an object’s motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.) (3-PS2-2)</li> </ul> <p><b>PS2.B: Types of Interactions</b></p> <ul style="list-style-type: none"> <li>• Objects in contact exert forces on each other. (3-PS2-1)</li> <li>• Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each</li> </ul>

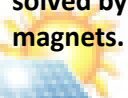
			situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. (3-PS2-3),(3-PS2-4)
GLE 0307.11.3  Investigate how the pitch and volume of a sound can be changed.	✓0307.11.2  Use a variety of materials to produce sounds of different pitch and volume.  ✓0307.11.3  Classify a variety of taped sounds according to their pitch and volume.	SPI 0307.11.3  Distinguish between pitch and volume.  SPI 0307.11.4  Identify how sounds with different pitch and volume are produced.	<b>Not addressed</b>



## Standard 12 - Forces in Nature

**Conceptual Strand 12** - *Everything in the universe exerts a gravitational force on everything else; there is an interplay between magnetic fields and electrical currents.*

**Guiding Question 12** - *What are the scientific principles that explain gravity and electromagnetism?*

Grade Level Expectations (GLE)	Checks For Understanding (CFU)	State Performance Indicator (SPI)	Next Generation Science Standards (NGSS)
<p>GLE 0307.12.1</p> <p>Explore how magnets attract objects made of certain metals.</p>	<p>✓0307.12.1</p> <p>Experiment with magnets to determine how distance affects magnetic attraction.</p> <p>✓0307.12.2</p> <p>Determine that only certain types of objects are attracted to magnets.</p>	<p>SPI 0307.12.1</p> <p>Recognize that magnets can move objects without touching them.</p> <p>SPI 0307.12.2</p> <p>Identify objects that are attracted to magnets.</p>	<p><b>3-PS2-3.</b>  <b>Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.</b></p> <p><b>3-PS2-4.</b>  <b>Define a simple design problem that can be solved by applying scientific ideas about magnets.</b></p> 

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