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Science Standards

GRADE: K

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.K.N.1.1	Collaborate with a partner to collect information. *Remarks/Examples*: Florida Standards Connections: LAFS.KS.1.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. *Cognitive Complexity:* Level 1: Recall
SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses. *Remarks/Examples*: Florida Standards Connections: LAFS.K.W.3.8. With guidance and support from adults, recall information from experiences or gather information experiences or gather information from provided sources to answer a question. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.K.N.1.5	Recognize that learning can come from careful observation. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend precision.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities		
Independent	***Supported***	***Participatory***
SC.K.N.1.In.1 Identify a partner to obtain information. *Date Adopted or Revised*: 02/08	SC.K.N.1.Su.1 Collect a designated item with a partner. *Date Adopted or Revised*: 02/08	SC.K.N.1.Pa.1 Share objects with a partner. *Date Adopted or Revised*: 02/08
SC.K.N.1.In.2 Identify information about objects and actions in the natural world through observation. *Date Adopted or Revised*: 02/08	SC.K.N.1.Su.2 Identify information about objects in the natural world through observation. *Date Adopted or Revised*: 02/08	SC.K.N.1.Pa.2 Recognize common objects in the natural world through observation. *Date Adopted or Revised*: 02/08
SC.K.N.1.In.3 Observe, explore, and create a visual representation of real objects. *Date Adopted or Revised*: 02/08	SC.K.N.1.Su.3 Observe, explore, and match pictures to real objects. *Date Adopted or Revised*: 02/08	

Big Idea 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.
B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.K.P.10.1	Observe that things that make sound vibrate.

Cognitive Complexity: Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities		
Independent	***Supported***	***Participatory***
SC.K.P.10.In.1 Identify objects that create specific sounds. *Date Adopted or Revised*: 02/08	SC.K.P.10.Su.1 Match sounds to specific objects. *Date Adopted or Revised*: 02/08	SC.K.P.10.Pa.1 Recognize and respond to common sounds. *Date Adopted or Revised*: 02/08

Big Idea 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.
B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK

SC.K.P.12.1

Investigate that things move in different ways, such as fast, slow, etc.

Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.K.P.12.In.1 Identify ways that things move, such as fast or slow. *Date Adopted or Revised*: 02/08	SC.K.P.12.Su.1 Recognize that things move. *Date Adopted or Revised*: 02/08	SC.K.P.12.Pa.1 Track objects in motion. *Date Adopted or Revised*: 02/08

Big Idea 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A, B, and C.

Clarification for grades 6-8: The target understanding for students in grades 6-8 should begin to transition the focus to a more specific definition of forces and changes in motion. Net forces create a change in motion. A change in momentum occurs when a net force is applied to an object over a time interval.

Grades 9-12, Standard 12: Motion - A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

BENCHMARK CODE	BENCHMARK

SC.K.P.13.1

Observe that a push or a pull can change the way an object is moving.

Cognitive Complexity: Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.K.P.13.In.1 Demonstrate pushing or pulling of an object to make it move. *Date Adopted or Revised*: 02/08	SC.K.P.13.Su.1 Recognize that pushing or pulling an object makes it move. *Date Adopted or Revised*: 02/08	SC.K.P.13.Pa.1 Track the movement of objects that are pushed or pulled. *Date Adopted or Revised*: 02/08

Big Idea 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.
B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.
C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.K.L.14.1	Recognize the five senses and related body parts. *Remarks/Examples*: Integrate HE.K.C.1.5. Recognize there are body parts inside and outside of the body. Related body parts include: eyes, ears, nose, tongue, and skin. *Cognitive Complexity:* Level 1: Recall
SC.K.L.14.2	Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.K.L.14.3	Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do. *Remarks/Examples*: Introduce comparing and contrasting plants and animals by observable physical characteristics and behaviors. Provide students with opportunities to make observations in classrooms and schoolyard environments. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.K.L.14.In.1 Recognize the senses of sight, hearing, and smell and related body parts. *Date Adopted or Revised*: 02/08	SC.K.L.14.Su.1 Recognize the senses of sight and hearing and related body parts. *Date Adopted or Revised*: 02/08	SC.K.L.14.Pa.1 Recognize and respond to one type of sensory stimuli. *Date Adopted or Revised*: 02/08
SC.K.L.14.In.2 Identify a behavior of an animal or plant in a book or other media that is not real. *Date Adopted or Revised*: 02/08	SC.K.L.14.Su.2 Distinguish a real animal and an animal that is not a living thing, such as a toy animal. *Date Adopted or Revised*: 02/08	SC.K.L.14.Pa.2 Distinguish between a plant and animal. *Date Adopted or Revised*: 02/08
SC.K.L.14.In.3 Identify differences in characteristics of plants and animals. *Date Adopted or Revised*: 02/08	SC.K.L.14.Su.3 Match identical animals and plants. *Date Adopted or Revised*: 02/08	

Big Idea 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.K.E.5.1	Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.K.E.5.2	Recognize the repeating pattern of day and night. *Cognitive Complexity:* Level 1: Recall
SC.K.E.5.3	Recognize that the Sun can only be seen in the daytime. *Cognitive Complexity:* Level 1: Recall
SC.K.E.5.4	Observe that sometimes the Moon can be seen at night and sometimes during the day. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.K.E.5.5	Observe that things can be big and things can be small as seen from Earth. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.K.E.5.6	Observe that some objects are far away and some are nearby as seen from Earth. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.K.E.5.In.1 Identify that objects can fall to the ground unless something stops them. *Date Adopted or Revised*: 02/08	SC.K.E.5.Su.1 Recognize that objects fall to the ground. *Date Adopted or Revised*: 02/08	SC.K.E.5.Pa.1 Track a falling object. *Date Adopted or Revised*: 02/08
SC.K.E.5.In.2 Identify daily activities in a 24-hour period, such as eating breakfast and going to bed, and associate activities with morning and night. *Date Adopted or Revised*: 02/08	SC.K.E.5.Su.2 Identify one common activity that occurs in the day and one that occurs in the night. *Date Adopted or Revised*: 02/08	SC.K.E.5.Pa.2 Recognize one common activity that occurs during the day. *Date Adopted or Revised*: 02/08
SC.K.E.5.In.3 Identify the Sun in the daytime. *Date Adopted or Revised*: 02/08	SC.K.E.5.Su.3 Recognize the Sun in the daytime. *Date Adopted or Revised*: 02/08	SC.K.E.5.Pa.3 Associate the Sun with daytime. *Date Adopted or Revised*: 02/08
SC.K.E.5.In.4 Identify the Moon in the sky at night. *Date Adopted or Revised*: 02/08	SC.K.E.5.Su.4 Recognize the Moon in the sky at night. *Date Adopted or Revised*: 02/08	SC.K.E.5.Pa.4 Associate the Moon with night. *Date Adopted or Revised*: 02/08
SC.K.E.5.In.5 Observe big and small things in the sky.	SC.K.E.5.Su.5 Recognize the size of items as either big or small. *Date Adopted or Revised*: 02/08	SC.K.E.5.Pa.5 Recognize items that are big. *Date Adopted or Revised*: 02/08

	Date Adopted or Revised: 02/08 SC.K.E.5.In.6 Identify an item that is far away and an item that is nearby. *Date Adopted or Revised*: 02/08	SC.K.E.5.Su.6 Recognize familiar objects that are far away or nearby. *Date Adopted or Revised*: 02/08	SC.K.E.5.Pa.6 Recognize items as nearby. *Date Adopted or Revised*: 02/08

Big Idea 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.
B. Objects and substances can be classified by their physical and chemical properties.
Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.
The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.
Clarification for grades K-2: The use of the more familiar term "weight" instead of the term "mass" is recommended for grades K-2.
Clarification for grades 3-5: In grade 3, introduce the term *mass* as compared to the term *weight.* In grade 4, investigate the concept of *weight* versus *mass* of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.

BENCHMARK CODE	BENCHMARK
SC.K.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light) and texture. *Remarks/Examples*: The use of the more familiar term "weight" instead of the term "mass" is recommended for grades K-2. Florida Standards Connections: MAFS.K.MD.2.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. Note: Limit category counts to be less than or equal to 10. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.K.P.8.In.1 Sort objects by observable properties, such as size, shape, or color. *Remarks/Examples*: Remarks/Examples: The use of the more familiar term “weight”	SC.K.P.8.Su.1 Match objects by an observable property, such as size or color. *Date Adopted or Revised*: 02/08	SC.K.P.8.Pa.1 Recognize two common objects that are identical to each other. *Date Adopted or Revised*: 02/08

	instead of the term “mass” is recommended for grades K-2. CCSS Connections: MACC.K.MD.2.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. Note: Limit category counts to be less than or equal to 10. *Date Adopted or Revised*: 02/08		

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.
B. Matter can be changed physically or chemically.
Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A and B.
Clarification for Grades 6-8: The target understanding for students in middle grades should begin to transition the focus to: C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.K.P.9.1	Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.K.P.9.In.1 Recognize that the shape of objects, such as paper, changes when cut, torn, or crumpled. *Date Adopted or Revised*: 02/08	SC.K.P.9.Su.1 Recognize that the shape of objects, such as paper, changes when cut or torn. *Date Adopted or Revised*: 02/08	SC.K.P.9.Pa.1 Recognize a change in an object. *Date Adopted or Revised*: 02/08

GRADE: 1

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.1.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations. *Remarks/Examples*: * Florida Standards Connections: LAFS.1.SL.1.1. Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in groups. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.1.N.1.2	Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others. *Remarks/Examples*: * Florida Standards Connections: LAFS.1.W.3.8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. * Refer to MAFS.K12.MP.5: Use appropriate tools strategically. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations conducted. *Remarks/Examples*: * Florida Standards Connections: MAFS.1.MD.3.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.1.N.1.4	Ask "how do you know?" in appropriate situations. *Remarks/Examples*: * Florida Standards Connections: LAFS.1.RI.2.4. Ask and answer questions to help determine or clarify the meaning of words and phrases in a text. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.N.1.In.1 Request information about the environment. *Date Adopted or Revised*: 02/08	SC.1.N.1.Su.1 Ask questions about common objects in the environment. *Date Adopted or Revised*: 02/08	SC.1.N.1.Pa.1 Recognize common objects in the environment. *Date Adopted or Revised*: 02/08
SC.1.N.1.In.2 Use careful observation to identify objects based on size, shape, color, or texture. *Date Adopted or Revised*:	SC.1.N.1.Su.2 Recognize differences in objects through observation of size, shape, or color *Date Adopted or Revised*:	SC.1.N.1.Pa.2 Recognize common objects as the same. *Date Adopted or Revised*: 02/08

02/08 SC.1.N.1.In.3 Draw pictures about investigations conducted. *Date Adopted or Revised*: 02/08 SC.1.N.1.In.4 Ask a question about a science investigation. *Date Adopted or Revised*: 02/08	02/08 SC.1.N.1.Su.3 Contribute to group recordings of observations. *Date Adopted or Revised*: 02/08	

Big Idea 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.
B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.1.P.12.1	Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.P.12.In.1 Demonstrate and identify that objects can move in different ways, such as up and down, in a straight line, and back and forth. *Date Adopted or Revised*: 02/08	SC.1.P.12.Su.1 Demonstrate that objects can move in different ways, such as up and down. *Date Adopted or Revised*: 02/08	SC.1.P.12.Pa.1 Track objects moving up and down. *Date Adopted or Revised*: 02/08

Big Idea 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A, B, and C.

Clarification for grades 6-8: The target understanding for students in grades 6-8 should begin to transition the focus to a more specific

definition of forces and changes in motion. Net forces create a change in motion. A change in momentum occurs when a net force is applied to an object over a time interval.

Grades 9-12, Standard 12: Motion - A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

BENCHMARK CODE	BENCHMARK
SC.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.P.13.In.1 Identify the effect that a push or pull has on an object, such as changing the way an object moves. *Date Adopted or Revised*: 02/08	SC.1.P.13.Su.1 Demonstrate and recognize that pushing or pulling of an object makes it move. *Date Adopted or Revised*: 02/08	SC.1.P.13.Pa.1 Apply a push to move an object. *Date Adopted or Revised*: 02/08

Big Idea 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.
B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.
C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.1.L.14.1	Make observations of living things and their environment using the five senses. *Remarks/Examples*: Integrate HE.1.C.1.6. Emphasize the correct names of human body parts. *Cognitive Complexity:* Level 1: Recall
SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers. *Cognitive Complexity:* Level 1: Recall
SC.1.L.14.3	Differentiate between living and nonliving things. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.L.14.In.1 Use sight, hearing, and smell to make observations. *Date Adopted or Revised*: 02/08	SC.1.L.14.Su.1 Use sight and hearing to make observations. *Date Adopted or Revised*: 02/08	SC.1.L.14.Pa.1 Recognize and respond to different types of sensory stimuli. *Date Adopted or Revised*: 02/08

	SC.1.L.14.In.2 Identify the leaf, flower, and stem of a plant. *Date Adopted or Revised*: 02/08 SC.1.L.14.In.3 Identify characteristics of living and nonliving things, including whether they need food or water. *Date Adopted or Revised*: 02/08	SC.1.L.14.Su.2 Recognize the leaf and flower of a plant. *Date Adopted or Revised*: 02/08 SC.1.L.14.Su.3 Distinguish common living and nonliving things in the environment. *Date Adopted or Revised*: 02/08	SC.1.L.14.Pa.2 Recognize that plants have leaves. *Date Adopted or Revised*: 02/08 SC.1.L.14.Pa.3 Recognize self and others as living things. *Date Adopted or Revised*: 02/08

Big Idea 16: Heredity and Reproduction

A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.
B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.

BENCHMARK CODE	BENCHMARK
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.L.16.In.1 Match offspring of specific animals to adult animals. *Date Adopted or Revised*: 02/08	SC.1.L.16.Su.1 Recognize that baby plants and animals have parents. *Date Adopted or Revised*: 02/08	SC.1.L.16.Pa.1 Recognize one's own parents. *Date Adopted or Revised*: 02/08

Big Idea 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
B. Both human activities and natural events can have major impacts on the environment.
C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.1.L.17.1	Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*

SC.1.L.17.In.1 Observe and recognize that plants and animals need water and food. *Date Adopted or Revised*: 02/08	SC.1.L.17.Su.1 Observe and recognize that plants and animals need water. *Date Adopted or Revised*: 02/08	SC.1.L.17.Pa.1 Observe and recognize that people need water. *Date Adopted or Revised*: 02/08

Big Idea 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.1.E.5.1	Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.1.E.5.2	Explore the Law of Gravity by demonstrating that Earth's gravity pulls any object on or near Earth toward it even though nothing is touching the object. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.1.E.5.3	Investigate how magnifiers make things appear bigger and help people see things they could not see without them. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.E.5.In.1 Identify that there are many stars in the sky. *Date Adopted or Revised*: 02/08	SC.1.E.5.Su.1 Recognize that there are many stars in the sky. *Date Adopted or Revised*: 02/08	SC.1.E.5.Pa.1 Associate stars with the night sky. *Date Adopted or Revised*: 02/08
SC.1.E.5.In.2 Observe and recognize that an object will fall when it is dropped. *Date Adopted or Revised*: 02/08	SC.1.E.5.Su.2 Indicate the location of an object before and after it falls. *Date Adopted or Revised*: 02/08	SC.1.E.5.Pa.2 Track objects that fall to the ground. *Date Adopted or Revised*: 02/08
SC.1.E.5.In.3 Identify that magnifiers enlarge the appearance of objects. *Date Adopted or Revised*: 02/08	SC.1.E.5.Su.3 Match a magnified item to its original item. *Date Adopted or Revised*: 02/08	SC.1.E.5.Pa.3 Recognize a familiar object enlarged by magnification. *Date Adopted or Revised*: 02/08
SC.1.E.5.In.4 Recognize positive and harmful effects of	SC.1.E.5.Su.4 Recognize a positive effect and a negative	SC.1.E.5.Pa.4 Recognize effects of sunlight, such as warming and giving light. *Date Adopted or Revised*:

	sunlight. *Date Adopted or Revised*: 02/08	effect of sunlight. *Date Adopted or Revised*: 02/08	02/08

Big Idea 6: Earth Structures

Humans continue to explore the composition and structure of the surface of the Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.1.E.6.1	Recognize that water, rocks, soil, and living organisms are found on Earth's surface. *Cognitive Complexity:* Level 1: Recall
SC.1.E.6.2	Describe the need for water and how to be safe around water. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly. *Remarks/Examples*: Fast: volcanic eruptions, flooding, hurricanes. Slow: drought. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.E.6.In.1 Identify rocks, water, and living things in the environment. *Date Adopted or Revised*: 02/08	SC.1.E.6.Su.1 Recognize rocks and living things in the environment. *Date Adopted or Revised*: 02/08	SC.1.E.6.Pa.1 Recognize living things in the environment. *Date Adopted or Revised*: 02/08
SC.1.E.6.In.2 Identify reasons people need water and safe practices around water. *Date Adopted or Revised*: 02/08	SC.1.E.6.Su.2 Identify reasons people need water. *Date Adopted or Revised*: 02/08	SC.1.E.6.Pa.2 Recognize one way people use water. *Date Adopted or Revised*: 02/08
SC.1.E.6.In.3 Distinguish between events that happen slowly and those that happen fast. *Date Adopted or Revised*: 02/08	SC.1.E.6.Su.3 Distinguish between actions that are fast or slow. *Date Adopted or Revised*: 02/08	SC.1.E.6.Pa.3 Recognize an action as fast or slow. *Date Adopted or Revised*: 02/08

Big Idea 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.
B. Objects and substances can be classified by their physical and chemical properties. Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.
The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.
Clarification for grades K-2: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.

Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.

BENCHMARK CODE	BENCHMARK
SC.1.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float.

Remarks/Examples:
The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.1.P.8.In.1 Sort objects by observable properties, such as size, shape, color, or texture. *Date Adopted or Revised*: 02/08	SC.1.P.8.Su.1 Sort objects by an observable property, such as size, shape, or color. *Date Adopted or Revised*: 02/08	SC.1.P.8.Pa.1 Identify common classroom objects by one observable property, such as size or color. *Date Adopted or Revised*: 02/08

GRADE: 2

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
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. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.2.N.1.2	Compare the observations made by different groups using the same tools. *Remarks/Examples*: Compare the observations made by different groups using the same tools. * Florida Standards Connections: LAFS.2.SL.1.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in groups. ** MAFS.K12.MP.5: Use appropriate tools strategically. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others. *Remarks/Examples*: * Florida Standards Connections: LAFS.2.W.3.8. Recall information from experiences or gather information from provided sources to answer a question. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated. *Remarks/Examples*: * Florida Standards Connections: MAFS.2.MD.4.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think). *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems. *Remarks/Examples*: * Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.2.N.1.In.1 Ask questions and make observations about things in the natural world. *Date Adopted or Revised*:	SC.2.N.1.Su.1 Answer yes and no questions and make observations about common objects and actions in the	SC.2.N.1.Pa.1 Request a change or help to solve a problem in the environment. *Date Adopted or Revised*:

	02/08 SC.2.N.1.In.2 Identify information about objects based on observation. *Date Adopted or Revised*: 02/08 SC.2.N.1.In.3 Recognize that the results of a scientific activity should be the same when repeated *Date Adopted or Revised*: 02/08 SC.2.N.1.In.4 Recognize that scientists work to solve problems. *Date Adopted or Revised*: 02/08	natural world. *Date Adopted or Revised*: 02/08 SC.2.N.1.Su.2 Identify characteristics of objects based on observation. *Date Adopted or Revised*: 02/08 SC.2.N.1.Su.3 Recognize that science activities can be repeated. *Date Adopted or Revised*: 02/08 SC.2.N.1.Su.4 Recognize that people work in science. *Date Adopted or Revised*: 02/08	02/08 SC.2.N.1.Pa.2 Use senses to recognize objects. *Date Adopted or Revised*: 02/08 SC.2.N.1.Pa.3 Recognize common objects in different environments. *Date Adopted or Revised*: 02/08

Big Idea 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.
B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
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. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.2.P.10.In.1 Identify ways people use electricity in their lives. *Date Adopted or Revised*: 02/08	SC.2.P.10.Su.1 Recognize a way people use electricity in their lives. *Date Adopted or Revised*: 02/08	SC.2.P.10.Pa.1 Activate a device that uses electricity. *Date Adopted or Revised*: 02/08

Big Idea 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a

distance.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A, B, and C.

Clarification for grades 6-8: The target understanding for students in grades 6-8 should begin to transition the focus to a more specific definition of forces and changes in motion. Net forces create a change in motion. A change in momentum occurs when a net force is applied to an object over a time interval.

Grades 9-12, Standard 12: Motion - A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

BENCHMARK CODE	BENCHMARK
SC.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.2.P.13.2	Demonstrate that magnets can be used to make some things move without touching them. *Cognitive Complexity:* Level 1: Recall
SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up. *Cognitive Complexity:* Level 1: Recall
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. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.2.P.13.In.1 Observe and identify that pushing or pulling an object can change the direction of movement of the object. *Date Adopted or Revised*: 02/08	SC.2.P.13.Su.1 Identify that pushing or pulling an object makes it move. *Date Adopted or Revised*: 02/08	SC.2.P.13.Pa.1 Recognize that pushing and pulling an object makes it move. *Date Adopted or Revised*: 02/08
SC.2.P.13.In.2 Observe and recognize that magnets can move some objects. *Date Adopted or Revised*: 02/08	SC.2.P.13.Su.2 Use magnets to cause objects to move. *Date Adopted or Revised*: 02/08	SC.2.P.13.Pa.2 Indicate that an object has fallen. *Date Adopted or Revised*: 02/08
SC.2.P.13.In.3 Identify and demonstrate that an object will fall to the ground when dropped. *Date Adopted or Revised*: 02/08	SC.2.P.13.Su.3 Recognize that an object will fall to the ground when dropped. *Date Adopted or Revised*: 02/08	
	SC.2.P.13.Su.4 Recognize that pushing or pulling an object with more force will make the	

	SC.2.P.13.In.4 Identify that pushing or pulling an object with more force will make the object go faster or farther. *Date Adopted or Revised*: 02/08	object go faster or farther. *Date Adopted or Revised*: 02/08	

Big Idea 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.
B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.
C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions. *Remarks/Examples*: Integrate HE.2.C.1.6. Recognize the locations and functions of major human organs. HE.2.B.3.2. Name healthy options to health-related issues and problems. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.2.L.14.In.1 Identify major external body parts, such as hands and legs, and their uses. *Date Adopted or Revised*: 02/08	SC.2.L.14.Su.1 Match external body parts, such as a foot, to their uses. *Date Adopted or Revised*: 02/08	SC.2.L.14.Pa.1 Recognize one or more external body parts. *Date Adopted or Revised*: 02/08

Big Idea 16: Heredity and Reproduction

A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.
B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.

BENCHMARK CODE	BENCHMARK
SC.2.L.16.1	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies. *Remarks/Examples*: Other examples for life cycles: peanuts, frogs and meal worms. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*

	SC.2.L.16.In.1 Observe and recognize the major stages in the life cycles of plants and animals. *Date Adopted or Revised*: 02/08	SC.2.L.16.Su.1 Observe and recognize the sequence of stages in the life cycles of common animals. *Date Adopted or Revised*: 02/08	SC.2.L.16.Pa.1 Recognize that offspring can be matched with their parents, such as a human baby with adult humans and a puppy with dogs. *Date Adopted or Revised*: 02/08

Big Idea 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
B. Both human activities and natural events can have major impacts on the environment.
C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
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. *Remarks/Examples*: Build on knowledge from grade 1 (food, air, water, space). Animals need air, food, water, shelter, and plants need air, water, nutrients, light. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.2.L.17.In.1 Identify the basic needs of living things, including water, food, and air. *Date Adopted or Revised*: 02/08	SC.2.L.17.Su.1 Recognize that living things have basic needs, including water and food. *Date Adopted or Revised*: 02/08	SC.2.L.17.Pa.1 Recognize that animals need water. *Date Adopted or Revised*: 02/08
SC.2.L.17.In.2 Recognize that many different kinds of living things are found in different habitats. *Date Adopted or Revised*: 02/08	SC.2.L.17.Su.2 Recognize that many kinds of living things are found in the environment. *Date Adopted or Revised*: 02/08	SC.2.L.17.Pa.2 Recognize common living things in the immediate environment. *Date Adopted or Revised*: 02/08

Big Idea 6: Earth Structures

Humans continue to explore the composition and structure of the surface of Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive

forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.2.E.6.1	Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes. *Remarks/Examples*: Sizes - boulder, stone, pebble, sand, granular. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.2.E.6.2	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. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.6.3	Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.2.E.6.In.1 Sort rocks according to size and shape. *Date Adopted or Revised*: 02/08	SC.2.E.6.Su.1 Sort rocks according to size. *Date Adopted or Revised*: 02/08	SC.2.E.6.Pa.1 Recognize the ground in the environment. *Date Adopted or Revised*: 02/08
SC.2.E.6.In.2 Identify components of soil, such as dead plants and pieces of rock. *Date Adopted or Revised*: 02/08	SC.2.E.6.Su.2 Identify small pieces of rock in the soil. *Date Adopted or Revised*: 02/08	SC.2.E.6.Pa.2 Distinguish examples of soil from other substances. *Date Adopted or Revised*: 02/08
SC.2.E.6.In.3 Recognize soil types based on color (dark or light) and texture (size of particles). *Date Adopted or Revised*: 02/08	SC.2.E.6.Su.3 Sort soil samples according to physical properties, such as color (dark or light) or texture (size of particles). *Date Adopted or Revised*: 02/08	

Big Idea 7: Earth Systems and Patterns

Humans continue to explore the interactions among water, air, and land. Air and water are in constant motion that results in changing conditions that can be observed over time.

BENCHMARK CODE	BENCHMARK
SC.2.E.7.1	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. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.

	Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.7.4	Investigate that air is all around us and that moving air is wind. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.7.5	State the importance of preparing for severe weather, lightning, and other weather related events. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.2.E.7.In.1 Identify common weather patterns associated with each season. *Date Adopted or Revised*: 02/08	SC.2.E.7.Su.1 Recognize types of weather and match to the weather outdoors. *Date Adopted or Revised*: 02/08	SC.2.E.7.Pa.1 Recognize daily outdoor temperature as hot or cold. *Date Adopted or Revised*: 02/08
SC.2.E.7.In.2 Identify that the Sun heats the outside air and water. *Date Adopted or Revised*: 02/08	SC.2.E.7.Su.2 Recognize that items outside are heated by the Sun. *Date Adopted or Revised*: 02/08	SC.2.E.7.Pa.2 Distinguish between items that are wet and items that are dry. *Date Adopted or Revised*: 02/08
SC.2.E.7.In.3 Recognize that water in an open container will disappear (evaporate). *Date Adopted or Revised*: 02/08	SC.2.E.7.Su.3 Recognize that wet things will dry when they are left in the air. *Date Adopted or Revised*: 02/08	SC.2.E.7.Pa.3 Indicate awareness of air moving. *Date Adopted or Revised*: 02/08
SC.2.E.7.In.4 Identify effects of wind. *Date Adopted or Revised*: 02/08	SC.2.E.7.Su.4 Recognize effects of wind. *Date Adopted or Revised*: 02/08	SC.2.E.7.Pa.4 Recognize where to go to avoid severe weather, such as thunder and lightning. *Date Adopted or Revised*: 02/08
SC.2.E.7.In.5 Identify harmful consequences of being outside in severe weather, such as lightning, hurricanes, or tornados. *Date Adopted or Revised*: 02/08	SC.2.E.7.Su.5 Recognize reasons for staying inside during severe weather, such as hurricanes and thunderstorms. *Date Adopted or Revised*: 02/08	

Big Idea 8: Properties of Matter

	A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass. **B. Objects and substances can be classified by their physical and chemical properties.** **Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.** **The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.** **Clarification for grades K-2: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.** **Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.**
BENCHMARK CODE	**BENCHMARK**
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. *Remarks/Examples*: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2. ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 1: Recall
SC.2.P.8.2	Identify objects and materials as solid, liquid, or gas. *Cognitive Complexity:* Level 1: Recall
SC.2.P.8.3	Recognize that solids have a definite shape and that liquids and gases take the shape of their container. *Cognitive Complexity:* Level 1: Recall
SC.2.P.8.4	Observe and describe water in its solid, liquid, and gaseous states. *Cognitive Complexity:* Level 1: Recall
SC.2.P.8.5	Measure and compare temperatures taken every day at the same time. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and sizes. *Remarks/Examples*: Recognize the volume of a sample of liquid is independent of the size and shape of the container. ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities		
Independent	***Supported***	***Participatory***
SC.2.P.8.In.1 Identify objects by observable properties, such as, size, shape, color, *Date Adopted or Revised*: 02/08	SC.2.P.8.Su.1 Identify objects by observable properties, such as size, shape, and color. *Date Adopted or Revised*: 02/08	SC.2.P.8.Pa.1 Match objects by one observable property, such as size or color. *Date Adopted or Revised*: 02/08
SC.2.P.8.In.2 Identify objects and materials as solid or liquid. *Date Adopted or Revised*: 02/08	SC.2.P.8.Su.2 Recognize water in solid or liquid states. *Date Adopted or Revised*: 02/08	SC.2.P.8.Pa.2 Recognize water as a liquid. *Date Adopted or Revised*: 02/08
SC.2.P.8.In.3 Recognize that solids have a definite shape and liquids take the shape of their container. *Date Adopted or Revised*: 02/08	SC.2.P.8.Su.3 Recognize that solids have a definite shape. *Date Adopted or Revised*: 02/08	SC.2.P.8.Pa.3 Recognize different containers that hold liquids. *Date Adopted or Revised*: 02/08
SC.2.P.8.In.4 Describe and compare outside daily temperatures as warm or cold. *Date Adopted or Revised*: 02/08	SC.2.P.8.Su.4 Identify outside temperatures as warm or cold. *Date Adopted or Revised*: 02/08	SC.2.P.8.Pa.4 Recognize common objects or materials as warm or cold. *Date Adopted or Revised*: 02/08
SC.2.P.8.In.5 Compare the volume of liquid in a variety of containers. *Date Adopted or Revised*: 02/08	SC.2.P.8.Su.5 Recognize different volumes of liquids in identical containers. *Date Adopted or Revised*: 02/08	

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A and B.

Clarification for Grades 6-8: The target understanding for students in the middle grades should begin to transition the focus to: C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
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. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.2.P.9.In.1 Explore and identify that observable properties of materials can be changed. *Date Adopted or Revised*: 02/08	SC.2.P.9.Su.1 Recognize changes in observable properties of materials. *Date Adopted or Revised*: 02/08	SC.2.P.9.Pa.1 Recognize that the appearance of an object or material has changed. *Date Adopted or Revised*: 02/08

GRADE: 3

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.3.N.1.1	Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. *Remarks/Examples*: * Florida Standards Connections: LAFS.3.SL.1.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. ** Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.3.N.1.2	Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups. *Remarks/Examples*: * Florida Standards Connections: LAFS.3.SL.1.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

	** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.8: Look for and express regularity in repeated reasoning. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.3.N.1.3	Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.N.1.4	Recognize the importance of communication among scientists. *Remarks/Examples*: * Florida Standards Connections: LAFS.3.RI.1.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.N.1.5	Recognize that scientists question, discuss, and check each other's evidence and explanations. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.N.1.6	Infer based on observation. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.3.N.1.7	Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.3.N.1.In.1 Ask questions, explore, observe, and identify outcomes. *Date Adopted or Revised*: 02/08	SC.3.N.1.Su.1 Ask literal questions, explore, observe, and share information. *Date Adopted or Revised*: 02/08	SC.3.N.1.Pa.1 Explore, observe, and recognize common objects in the natural world. *Date Adopted or Revised*: 02/08
SC.3.N.1.In.2 Work with a group to make observations and identify results. *Date Adopted or Revised*: 02/08	SC.3.N.1.Su.2 Work with a partner to make observations. *Date Adopted or Revised*: 02/08	SC.3.N.1.Pa.2 Assist with investigations with a partner. *Date Adopted or Revised*: 02/08
SC.3.N.1.In.3 Record observations to describe findings using written or visual	SC.3.N.1.Su.3 Record observations to describe findings using dictated words and phrases and pictures.	SC.3.N.1.Pa.3 Recognize that people share information. *Date Adopted or Revised*:

	formats, such as picture stories. *Date Adopted or Revised*: 02/08 SC.3.N.1.In.4 Recognize that scientists share their knowledge and results with each other. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08 SC.3.N.1.Su.4 Recognize that people work in different kinds of jobs related to science. *Date Adopted or Revised*: 02/08	02/08

Big Idea 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.
B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.3.P.10.1	Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical. *Cognitive Complexity:* Level 1: Recall
SC.3.P.10.2	Recognize that energy has the ability to cause motion or create change. *Cognitive Complexity:* Level 1: Recall
SC.3.P.10.3	Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.3.P.10.In.1 Recognize forms of energy, such as light, heat, electrical, and energy of motion. *Date Adopted or Revised*: 02/08	SC.3.P.10.Su.1 Recognize objects that use electricity (television) and the energy of motion (bowling ball). *Date Adopted or Revised*: 02/08	SC.3.P.10.Pa.1 Recognize the change in the motion of an object. *Date Adopted or Revised*: 02/08
SC.3.P.10.In.2 Recognize examples of the use of energy, such as electrical (radio, freezer) and energy of motion (bowling, wind). *Date Adopted or Revised*: 02/08	SC.3.P.10.Su.2 Recognize examples of sources of light, such as the Sun or a flashlight. *Date Adopted or Revised*: 02/08	SC.3.P.10.Pa.2 Distinguish light and dark. *Date Adopted or Revised*: 02/08
SC.3.P.10.In.3 Identify that light may come from different sources, such as the Sun or electric lamp.		

	Date Adopted or Revised: 02/08		

Big Idea 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

Clarification for grades 5-8: The target understanding for Big Idea 11: Energy Transfer and Transformations, is the Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.

BENCHMARK CODE	BENCHMARK
SC.3.P.11.1	Investigate, observe, and explain that things that give off light often also give off heat. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.3.P.11.2	Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.3.P.11.In.1 Identify that objects that give off light often give off heat. *Date Adopted or Revised*: 02/08	SC.3.P.11.Su.1 Recognize objects that give off both heat and light, such as a light bulb. *Date Adopted or Revised*: 02/08	SC.3.P.11.Pa.1 Recognize sources of light. *Date Adopted or Revised*: 02/08
SC.3.P.11.In.2 Observe and identify that heat is produced when objects are rubbed together. *Date Adopted or Revised*: 02/08	SC.3.P.11.Su.2 Observe and recognize that rubbing objects together causes heat. *Date Adopted or Revised*: 02/08	SC.3.P.11.Pa.2 Recognize sources of heat. *Date Adopted or Revised*: 02/08

Big Idea 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.
B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.
C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.L.14.2 and SC.4.L.16.1. Integrate for compare/contrast HE.3.C.1.5. Recognize that body parts and organs work together to form human body systems. n> *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.L.14.2	Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.3.L.14.In.1 Identify the major parts of a plant, including seed, root, stem, leaf, and flower, and their functions. *Date Adopted or Revised*: 02/08 SC.3.L.14.In.2 Identify behaviors of plants that show they are growing. *Date Adopted or Revised*: 02/08	SC.3.L.14.Su.1 Identify the major parts of a plant, such as the root, stem, leaf, and flower. *Date Adopted or Revised*: 02/08 SC.3.L.14.Su.2 Recognize that plants grow toward light and roots grow down in the soil. *Date Adopted or Revised*: 02/08	SC.3.L.14.Pa.1 Recognize the leaf and flower of a plant. *Date Adopted or Revised*: 02/08 SC.3.L.14.Pa.2 Recognize that plants grow. *Date Adopted or Revised*: 02/08

Big Idea 15: Diversity and Evolution of Living Organisms

A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.
B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.

BENCHMARK CODE	BENCHMARK
SC.3.L.15.1	Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.L.15.2	Classify flowering and nonflowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.3.L.15.In.1 Classify animals by a similar physical characteristic, such as fur, feathers, and number of legs.	SC.3.L.15.Su.1 Sort common animals by observable characteristics. *Date Adopted or Revised*:	SC.3.L.15.Pa.1 Match animals that are the same. *Date Adopted or Revised*: 02/08

	Date Adopted or Revised: 02/08 SC.3.L.15.In.2 Classify parts of plants into groups based on physical characteristics, such as classifying leaves by shape. *Date Adopted or Revised*: 02/08	02/08 SC.3.L.15.Su.2 Sort common plants by observable characteristics. *Date Adopted or Revised*: 02/08	SC.3.L.15.Pa.2 Match plants that are the same. *Date Adopted or Revised*: 02/08

Big Idea 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
B. Both human activities and natural events can have major impacts on the environment.
C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.3.L.17.1	Describe how animals and plants respond to changing seasons. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.3.L.17.In.1 Identify changes in the appearance of animals and plants throughout the year. *Date Adopted or Revised*: 02/08	SC.3.L.17.Su.1 Recognize that the appearance of some plants in the environment changes throughout the year. *Date Adopted or Revised*: 02/08	SC.3.L.17.Pa.1 Recognize clothing worn by humans in different weather (seasons). *Date Adopted or Revised*: 02/08
SC.3.L.17.In.2 Recognize that most plants make their own food. *Date Adopted or Revised*: 02/08	SC.3.L.17.Su.2 Recognize that plants need light to grow. *Date Adopted or Revised*: 02/08	SC.3.L.17.Pa.2 Recognize that plants need water. *Date Adopted or Revised*: 02/08

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.3.N.3.1	Recognize that words in science can have different or more specific meanings than their use in everyday language; for example, energy, cell, heat/cold, and evidence.

	Remarks/Examples: * Florida Standards Connections: LAFS.3.RI.2.4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.N.3.2	Recognize that scientists use models to help understand and explain how things work. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 1: Recall
SC.3.N.3.3	Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.3.N.3.In.1 Recognize meanings of words used in science, such as energy, temperature, and gravity. *Date Adopted or Revised*: 02/08	SC.3.N.3.Su.1 Recognize meanings of words used in science, such as telescope, environment, and solid. *Date Adopted or Revised*: 02/08	SC.3.N.3.Pa.1 Recognize common objects related to science by name, such as ice, animal, and plant. *Date Adopted or Revised*: 02/08
SC.3.N.3.In.2 Use models to identify how things work. *Date Adopted or Revised*: 02/08	SC.3.N.3.Su.2 Recognize that models represent real things. *Date Adopted or Revised*: 02/08	SC.3.N.3.Pa.2 Recognize a model of a real object. *Date Adopted or Revised*: 02/08
SC.3.N.3.In.3 Identify that models are representations of things found in the real world. *Date Adopted or Revised*: 02/08		

Big Idea 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.3.E.5.1	Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.3.E.5.2	Identify the Sun as a star that emits energy; some of it in the form of light. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.3.E.5.4	Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.3.E.5.5	Investigate that the number of stars that can be seen through telescopes is dramatically greater than those seen by the unaided eye. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.3.E.5.In.1 Recognize that stars in the sky look different from each other. *Date Adopted or Revised*: 02/08	SC.3.E.5.Su.1 Recognize that all stars except the Sun appear very small. *Date Adopted or Revised*: 02/08	SC.3.E.5.Pa.1 Recognize stars in the sky. *Date Adopted or Revised*: 02/08
SC.3.E.5.In.2 Recognize that the Sun is a star that gives off its own light. *Date Adopted or Revised*: 02/08	SC.3.E.5.Su.2 Recognize that the Sun gives off light. *Date Adopted or Revised*: 02/08	SC.3.E.5.Pa.2 Recognize that the Sun is bright. *Date Adopted or Revised*: 02/08
SC.3.E.5.In.3 Recognize that the Sun is the closest star to Earth. *Date Adopted or Revised*: 02/08	SC.3.E.5.Su.3 Recognize that the Sun is a star. *Date Adopted or Revised*: 02/08	SC.3.E.5.Pa.3 Recognize that an object can be stopped from falling. *Date Adopted or Revised*: 02/08
SC.3.E.5.In.4 Observe and describe ways to keep an object from falling due to gravity. *Date Adopted or Revised*: 02/08	SC.3.E.5.Su.4 Observe and recognize ways to stop a falling object, such as catching a ball. *Date Adopted or Revised*: 02/08	SC.3.E.5.Pa.4 Match a familiar object enlarged by magnification. *Date Adopted or Revised*: 02/08
SC.3.E.5.In.5 Recognize that stars appear larger and closer when seen through a telescope. *Date Adopted or Revised*: 02/08	SC.3.E.5.Su.5 Recognize a telescope as a tool to view stars in space. *Date Adopted or Revised*: 02/08	

Big Idea 6: Earth Structures

Humans continue to explore the composition and structure of the surface of Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive

forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.3.E.6.1	Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.3.E.6.In.1 Identify that energy from the Sun heats objects. *Date Adopted or Revised*: 02/08	SC.3.E.6.Su.1 Recognize that many things will get hot when left in the Sun. *Date Adopted or Revised*: 02/08	SC.3.E.6.Pa.1 Distinguish between hot and cold objects. *Date Adopted or Revised*: 02/08

Big Idea 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties. Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

Clarification for grades K-2: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.

Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.

BENCHMARK CODE	BENCHMARK
SC.3.P.8.1	Measure and compare temperatures of various samples of solids and liquids. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.P.8.2	Measure and compare the mass and volume of solids and liquids. *Remarks/Examples*: Introduce the term mass as compared to the term weight.

	** Florida Standards Connections: MAFS.3.MD.1.2; MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.3.P.8.3	Compare materials and objects according to properties such as size, shape, color, texture, and hardness. *Remarks/Examples*: ** Florida Standards Connections: MAFS.3.MD.2.4; MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.3.P.8.In.1 Observe and identify the colder/hotter temperature measured on a thermometer. *Date Adopted or Revised*: 02/08	SC.3.P.8.Su.1 Recognize that a thermometer measures temperature (cold and hot). *Date Adopted or Revised*: 02/08	SC.3.P.8.Pa.1 Recognize the temperature of items, such as food, as cool or warm. *Date Adopted or Revised*: 02/08
SC.3.P.8.In.2 Measure the weight of solids or liquids. *Date Adopted or Revised*: 02/08	SC.3.P.8.Su.2 Sort solid objects by weight (heavy and light). *Date Adopted or Revised*: 02/08	SC.3.P.8.Pa.2 Recognize the larger of two objects. *Date Adopted or Revised*: 02/08
SC.3.P.8.In.3 Group objects by two observable properties, such as size and shape or color and texture. *Date Adopted or Revised*: 02/08	SC.3.P.8.Su.3 Sort objects by an observable property, such as size, shape, color, and texture. *Date Adopted or Revised*: 02/08	SC.3.P.8.Pa.3 Match objects by an observable property, such as size, shape, and color. *Date Adopted or Revised*: 02/08

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A and B.

Clarification for Grades 6-8: The target understanding for students in the middle grades should begin to transition the focus to: C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.3.P.9.1	Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities		
Independent	***Supported***	***Participatory***
SC.3.P.9.In.1 Describe changes in the state of water as a result of freezing and melting. *Date Adopted or Revised*: 02/08	SC.3.P.9.Su.1 Identify that water can change from solid to liquid state by heating. *Date Adopted or Revised*: 02/08	SC.3.P.9.Pa.1 Recognize that ice can change to water. *Date Adopted or Revised*: 02/08

GRADE: 4

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.4.N.1.1	Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. *Remarks/Examples*: * Florida Standards Connections: LAFS.4.RI.1.3. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. ** Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups. *Remarks/Examples*: * Florida Standards Connections: LAFS.4.SL.1.1. Engage effectively in a range of collaborative discussions with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly. ** Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics; and, MAFS.K12.MP.5: Use appropriate tools strategically.

	Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.3	Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.N.1.4	Attempt reasonable answers to scientific questions and cite evidence in support. *Remarks/Examples*: * Florida Standards Connections: LAFS.4.W.3.8. Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. LAFS.4.W.3.9. Draw evidence from literary or informational texts to support analysis, reflection, and research. ** Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.5	Compare the methods and results of investigations done by other classmates. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.N.1.6	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.7	Recognize and explain that scientists base their explanations on evidence. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.N.1.8	Recognize that science involves creativity in designing experiments. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.4.N.1.In.1 Ask a question about the natural world and use selected reference material to find information, observe, explore, and identify findings. *Date Adopted or Revised*: 02/08	SC.4.N.1.Su.1 Ask a question about the natural world, explore materials, observe, and share information. *Date Adopted or Revised*: 02/08	SC.4.N.1.Pa.1 Explore, observe, and select an object or picture to solve a simple problem. *Date Adopted or Revised*: 02/08
SC.4.N.1.In.2 Compare own observations with observations of others. *Date Adopted or Revised*: 02/08	SC.4.N.1.Su.2 Identify information based on observations of self and others. *Date Adopted or Revised*: 02/08	SC.4.N.1.Pa.2 Recognize differences in objects or pictures. *Date Adopted or Revised*: 02/08

	SC.4.N.1.In.3 Relate findings to predefined science questions. *Date Adopted or Revised*: 02/08 SC.4.N.1.In.4 Communicate observations and findings through the use of pictures, writing, or charts. *Date Adopted or Revised*: 02/08 SC.4.N.1.In.5 Recognize that scientists perform experiments, make observations, and gather evidence. *Date Adopted or Revised*: 02/08	SC.4.N.1.Su.3 Answer questions about objects and actions related to science. *Date Adopted or Revised*: 02/08 SC.4.N.1.Su.4 Record observations using drawings, dictation, or pictures. *Date Adopted or Revised*: 02/08 SC.4.N.1.Su.5 Recognize ways that scientists collect evidence, such as by observations or measuring. *Date Adopted or Revised*: 02/08	SC.4.N.1.Pa.3 Select an object or picture to represent observed events. *Date Adopted or Revised*: 02/08 SC.4.N.1.Pa.4 Recognize that people share information about science. *Date Adopted or Revised*: 02/08

Big Idea 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.
B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.4.P.10.1	Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.P.10.2	Investigate and describe that energy has the ability to cause motion or create change. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.P.10.3	Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.P.10.4	Describe how moving water and air are sources of energy and can be used to move things. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.P.10.In.1 Identify forms of energy, such as light, heat, electrical, and energy of motion. *Date Adopted or Revised*: 02/08 SC.4.P.10.In.2 Describe the	SC.4.P.10.Su.1 Recognize uses of different forms of energy, including electricity (computer, freezer); heat (camp fire, stove); and energy of motion (rollercoaster, pinball machine). *Date Adopted or Revised*: 02/08	SC.4.P.10.Pa.1 Recognize a source of heat energy (fire, heater). *Date Adopted or Revised*: 02/08 SC.4.P.10.Pa.2 Recognize

	results of applying electrical energy (turn on lights, make motors run); heat energy (burn wood, change temperature); and energy of motion (go faster, change direction). *Date Adopted or Revised*: 02/08 SC.4.P.10.In.3 Recognize that vibrations cause sound and identify sounds as high or low (pitch). *Date Adopted or Revised*: 02/08 SC.4.P.10.In.4 Identify machines that use energy from moving water or air, including a windmill and a waterwheel. *Date Adopted or Revised*: 02/08	SC.4.P.10.Su.2 Recognize the results of using electrical energy (turning on television); heat energy (burning wood); and energy of motion (rolling ball). *Date Adopted or Revised*: 02/08 SC.4.P.10.Su.3 Recognize sounds as high or low (pitch). *Date Adopted or Revised*: 02/08 SC.4.P.10.Su.4 Identify objects that use energy from moving air, such as a pinwheel or sailboat. *Date Adopted or Revised*: 02/08	objects that create sounds. *Date Adopted or Revised*: 02/08 SC.4.P.10.Pa.3 Recognize that moving air can move objects. *Date Adopted or Revised*: 02/08

Big Idea 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

Clarification for grades 5-8: The target understanding for Big Idea 11: Energy Transfer and Transformations, is the Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.

BENCHMARK CODE	BENCHMARK
SC.4.P.11.1	Recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature. *Cognitive Complexity:* Level 1: Recall
SC.4.P.11.2	Identify common materials that conduct heat well or poorly. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.P.11.In.1 Identify that a hot object will make a cold object warm when they touch. *Date Adopted or Revised*: 02/08	SC.4.P.11.Su.1 Recognize that a hot object can make a cold object warm when they touch. *Date Adopted or Revised*: 02/08	SC.4.P.11.Pa.1 Recognize a temperature change from cold to warm. *Date Adopted or Revised*: 02/08

	SC.4.P.11.In.2 Identify materials that are strong conductors of heat, such as metal. *Date Adopted or Revised*: 02/08	SC.4.P.11.Su.2 Recognize a common material that is a strong conductor of heat, such as metal. *Date Adopted or Revised*: 02/08	SC.4.P.11.Pa.2 Recognize common objects that conduct heat. *Date Adopted or Revised*: 02/08

Big Idea 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.
B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.4.P.12.1	Recognize that an object in motion always changes its position and may change its direction. *Cognitive Complexity:* Level 1: Recall
SC.4.P.12.2	Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that objects can move at different speeds. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.P.12.In.1 Identify that the position of an object changes when the object is in motion. *Date Adopted or Revised*: 02/08	SC.4.P.12.Su.1 Recognize that movement causes an object to change position. *Date Adopted or Revised*: 02/08	SC.4.P.12.Pa.1 Recognize that an object can move in different directions, such as left to right, straight line, and zigzag. *Date Adopted or Revised*: 02/08
SC.4.P.12.In.2 Identify speed as how long it takes to travel a certain distance. *Date Adopted or Revised*: 02/08	SC.4.P.12.Su.2 Identify objects that move at different speeds. *Date Adopted or Revised*: 02/08	SC.4.P.12.Pa.2 Recognize an object as moving fast or slow. *Date Adopted or Revised*: 02/08

Big Idea 16: Heredity and Reproduction

A. Offspring of plants and animals are similar to, but not exactly like, their parents or each other.

B. Life cycles vary among organisms, but reproduction is a major stage in the life cycle of all organisms.

BENCHMARK CODE	BENCHMARK
SC.4.L.16.1	Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.L.16.2	

	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment. *Remarks/Examples*: Integrate HE.4.C.1.6. Identify the human body parts and organs that work together to form healthy body systems. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.L.16.4	Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.L.16.In.1 Identify that insects spread pollen to help flowering plants make seeds. *Date Adopted or Revised*: 02/08	SC.4.L.16.Su.1 Recognize that many flowering plants grow from their own seeds. *Date Adopted or Revised*: 02/08	SC.4.L.16.Pa.1 Recognize that many plants have flowers and leaves. *Date Adopted or Revised*: 02/08
SC.4.L.16.In.2 Identify behaviors that animals have naturally (inherit) and behaviors that animals learn. *Date Adopted or Revised*: 02/08	SC.4.L.16.Su.2 Recognize behaviors of common animals. *Date Adopted or Revised*: 02/08	SC.4.L.16.Pa.2 Recognize similarities between self and parents. *Date Adopted or Revised*: 02/08
SC.4.L.16.In.3 Identify similarities in the major stages in the life cycles of common Florida plants and animals. *Date Adopted or Revised*: 02/08	SC.4.L.16.Su.2 Recognize behaviors of common animals. *Date Adopted or Revised*: 02/08 SC.4.L.16.Su.3 Recognize the major stages in life cycles of common plants and animals. *Date Adopted or Revised*: 02/08	SC.4.L.16.Pa.3 Match offspring of animals with parents. *Date Adopted or Revised*: 02/08

Big Idea 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
B. Both human activities and natural events can have major impacts on the environment.
C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.4.L.17.1	

	Compare the seasonal changes in Florida plants and animals to those in other regions of the country. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.L.17.2	Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.L.17.3	Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.L.17.2 and SC.4.L.17.2. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment. *Remarks/Examples*: Introduce the impacts of invasive species, such as Brazilian pepper, Cuban anole, Kudzu, Australian pine, non-native pets released into wild (Burmese python). Ocean pollution resulting from discharge of sewage, toxic chemicals, manufacturing wastes, fertilizers, soaps, detergents, runoff and insecticides; population growth causes consumption of limited resources and land use expansion to accommodate for more people; animal extinction (endangered and threatened species). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.4.L.17.In.1 Identify seasonal changes in Florida plants and animals. *Date Adopted or Revised*: 02/08	SC.4.L.17.Su.1 Recognize seasonal changes in some Florida plants, such as the presence of flowers and change in leaf color. *Date Adopted or Revised*: 02/08	SC.4.L.17.Pa.1 Recognize a seasonal change in the appearance of a common plant. *Date Adopted or Revised*: 02/08
SC.4.L.17.In.2 Recognize that animals cannot make their own food and they must eat plants or other animals to survive. *Date Adopted or Revised*: 02/08	SC.4.L.17.Su.2 Recognize that animals (consumers) eat plants or other animals for their food. *Date Adopted or Revised*: 02/08	SC.4.L.17.Pa.2 Recognize that animals eat food. *Date Adopted or Revised*: 02/08
SC.4.L.17.In.3 Recognize that plants (producers) use energy from the Sun to make their food and animals (consumers) eat plants or other animals for their food. *Date Adopted or Revised*: 02/08	SC.4.L.17.Su.3 Recognize ways that people can help improve the environment, such as cleaning up trash. *Date Adopted or Revised*: 02/08	SC.4.L.17.Pa.3 Recognize ways that people can help improve the immediate environment, such as cleaning up trash. *Date Adopted or Revised*: 02/08
SC.4.L.17.In.4 Recognize things that people do to help or hurt the environment, such as recycling and pollution. *Date Adopted or Revised*: 02/08		

Big Idea 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.
B: Scientific knowledge is durable and robust, but open to change.
C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.4.N.2.1	Explain that science focuses solely on the natural world. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.N.2.In.1 Identify that science focuses on the natural world. *Date Adopted or Revised*: 02/08	SC.4.N.2.Su.1 Recognize that science focuses on the natural world. *Date Adopted or Revised*: 02/08	SC.4.N.2.Pa.1 Associate science with the natural world in the local environment. *Date Adopted or Revised*: 02/08

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.4.N.3.1	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively; and, MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.N.3.In.1 Identify different types of models, such as a replica, a picture, or an animation. *Date Adopted or Revised*: 02/08	SC.4.N.3.Su.1 Recognize different types of models, such as a replica or a picture. *Date Adopted or Revised*: 02/08	SC.4.N.3.Pa.1 Match a model that is a replica to a real object. *Date Adopted or Revised*: 02/08

Big Idea 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.4.E.5.1	Observe that the patterns of stars in the sky stay the same although they appear to shift across the sky nightly, and different stars can be seen in different seasons. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.E.5.2	Describe the changes in the observable shape of the moon over the course of about a month. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.E.5.3	Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day. *Remarks/Examples*: ** Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.E.5.4	Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.4.E.5.1, SC.4.E.5.2, and SC.4.E.5.3. Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.4.E.5.5	Investigate and report the effects of space research and exploration on the economy and culture of Florida. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.E.5.In.1 Identify that there are many stars in the sky with some that create patterns. *Date Adopted or Revised*: 02/08	SC.4.E.5.Su.1 Recognize a pattern of stars in the sky, such as the Big Dipper. *Date Adopted or Revised*: 02/08	SC.4.E.5.Pa.1 Recognize that there are many stars in the sky. *Date Adopted or Revised*: 02/08
SC.4.E.5.In.2 Label three phases of the moon, including full, half (quarter), and crescent. *Date Adopted or Revised*: 02/08	SC.4.E.5.Su.2 Identify a full moon and a half (quarter) moon. *Date Adopted or Revised*: 02/08	SC.4.E.5.Pa.2 Recognize a full moon as a circle. *Date Adopted or Revised*: 02/08
SC.4.E.5.In.3 Recognize that Earth revolves around the Sun. *Date Adopted or Revised*:	SC.4.E.5.Su.3 Recognize that Earth is always turning (rotating).	SC.4.E.5.Pa.3 Identify morning, noon, and night. *Date Adopted or Revised*: 02/08

	02/08 SC.4.E.5.In.4 Recognize that the Sun appears to rise and set because of Earth's rotation in a 24-hour day. *Date Adopted or Revised*: 02/08 SC.4.E.5.In.5 Identify objects and people related to the space program in Florida. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08 SC.4.E.5.Su.4 Recognize that the side of Earth facing the Sun has daylight. *Date Adopted or Revised*: 02/08 SC.4.E.5.Su.5 Recognize an object or person related to the space program in Florida. *Date Adopted or Revised*: 02/08	SC.4.E.5.Pa.4 Recognize a space-related object. *Date Adopted or Revised*: 02/08

Big Idea 6: Earth Structures

Humans continue to explore the composition and structure of the surface of Earth. External sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's water and natural resources.

BENCHMARK CODE	BENCHMARK
SC.4.E.6.1	Identify the three categories of rocks: igneous, (formed from molten rock); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure). *Cognitive Complexity:* Level 1: Recall
SC.4.E.6.2	Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.4.E.6.1. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.E.6.3	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.4.E.6.1. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.E.6.4	Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice). *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.E.6.5	Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things. *Remarks/Examples*: MAFS.K12.MP.5: Use appropriate tools strategically.

	Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy). *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.4.E.6.In.1 Recognize that rocks are classified by the way they are formed, such as sedimentary. *Date Adopted or Revised*: 02/08	SC.4.E.6.Su.1 Sort rocks according to observable characteristics, including color, shape, and size. *Date Adopted or Revised*: 02/08	SC.4.E.6.Pa.1 Distinguish rocks from other substances found on the Earth's surface. *Date Adopted or Revised*: 02/08
SC.4.E.6.In.2 Identify physical properties (hardness, streak color, and luster) of common minerals, such as rock salt, talc, gold, and silver. *Date Adopted or Revised*: 02/08	SC.4.E.6.Su.2 Sort common minerals, such as rock salt, talc, gold, and silver, by their physical properties (luster and color). *Date Adopted or Revised*: 02/08	SC.4.E.6.Pa.2 Recognize common minerals, such as rock salt, talc, gold, and silver. *Date Adopted or Revised*: 02/08
SC.4.E.6.In.3 Recognize that some natural resources used by humans are non-renewable, such as oil. *Date Adopted or Revised*: 02/08	SC.4.E.6.Su.3 Recognize that some natural resources can run out (non-renewable). *Date Adopted or Revised*: 02/08	SC.4.E.6.Pa.3 Recognize the universal symbol for recycling. *Date Adopted or Revised*: 02/08
SC.4.E.6.In.4 Identify that wind and water cause physical weathering and erosion of rocks. *Date Adopted or Revised*: 02/08	SC.4.E.6.Su.4 Recognize examples of weathering or erosion in the environment. *Date Adopted or Revised*: 02/08	SC.4.E.6.Pa.4 Recognize the effect of weathering on an object. *Date Adopted or Revised*: 02/08
SC.4.E.6.In.5 Identify tools used to observe things that are far away and things that are very small. *Date Adopted or Revised*: 02/08	SC.4.E.6.Su.5 Recognize tools that will make things look larger, such as a telescope and a magnifier. *Date Adopted or Revised*: 02/08	SC.4.E.6.Pa.5 Recognize that something has been magnified. *Date Adopted or Revised*: 02/08
SC.4.E.6.In.6 Identify natural resources found in Florida, including solar energy, water, and limestone. *Date Adopted or Revised*: 02/08	SC.4.E.6.Su.6 Recognize natural resources found in Florida, such as solar energy and water. *Date Adopted or Revised*: 02/08	SC.4.E.6.Pa.6 Recognize water as a resource in Florida. *Date Adopted or Revised*: 02/08

Big Idea 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties. Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

Clarification for grades K-2: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.

Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.

BENCHMARK CODE	BENCHMARK
SC.4.P.8.1	Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets. *Remarks/Examples*: Investigate the concept of weight versus mass of objects. Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.P.8.2	Identify properties and common uses of water in each of its states. *Cognitive Complexity:* Level 1: Recall
SC.4.P.8.3	Explore the Law of Conservation of Mass by demonstrating that the mass of a whole object is always the same as the sum of the masses of its parts. *Remarks/Examples*: Investigate the concept of weight versus mass of objects. Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.4.P.8.4	Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.P.8.In.1 Compare	SC.4.P.8.Su.1 Sort objects by	SC.4.P.8.Pa.1 Match objects

	objects and materials based on physical properties, such as size, shape, color, texture, weight, hardness, odor, taste, and temperature. *Date Adopted or Revised*: 02/08 SC.4.P.8.In.2 Identify properties and uses of water in solid and liquid states. *Date Adopted or Revised*: 02/08 SC.4.P.8.In.3 Identify that a whole object weighs the same as all of its parts together. *Date Adopted or Revised*: 02/08 SC.4.P.8.In.4 Identify objects a magnet will attract. *Date Adopted or Revised*: 02/08	physical properties, such as size, shape, color, texture, weight (heavy or light), and temperature (hot or cold). *Date Adopted or Revised*: 02/08 SC.4.P.8.Su.2 Identify uses of water in solid or liquid states. *Date Adopted or Revised*: 02/08 SC.4.P.8.Su.3 Recognize that the parts of an object can be put together to make a whole. *Date Adopted or Revised*: 02/08 SC.4.P.8.Su.4 Demonstrate that magnets can attract other magnets. *Date Adopted or Revised*: 02/08	with similar observable properties, such as size, shape, color, or texture. *Date Adopted or Revised*: 02/08 SC.4.P.8.Pa.2 Identify ice as a solid. *Date Adopted or Revised*: 02/08 SC.4.P.8.Pa.3 Recognize that some objects have parts. *Date Adopted or Revised*: 02/08 SC.4.P.8.Pa.4 Recognize that objects can stick together. *Date Adopted or Revised*: 02/08

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A and B.

Clarification for Grades 6-8: The target understanding for students in the middle grades should begin to transition the focus to: C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.4.P.9.1	Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.4.P.9.In.1 Observe and describe properties of materials that have been changed into other materials, such as	SC.4.P.9.Su.1 Indicate differences in materials that have been changed into other materials, such as rust on a	SC.4.P.9.Pa.1 Recognize changes in observable properties of materials. *Date Adopted or Revised*:

	decayed leaves of a plant. *Date Adopted or Revised*: 02/08	can. *Date Adopted or Revised*: 02/08	02/08

GRADE: 5

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.5.N.1.1	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. *Remarks/Examples*: Design and evaluate a written procedure or experimental setup. Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.N.1.1, SC.4.N.1.1, SC.4.N.1.6, SC.5.N.1.2, and SC.5.N.1.4. Florida Standards Connections: LAFS.5.RI.1.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. LAFS.5.W.3.8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. MAFS.5.MD.2.2. Represent and interpret data. MAFS.5.G.1. Graph points on the coordinate plane to solve real-world and mathematical problems. Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation. *Remarks/Examples*: Explain that an investigation is observing the natural world, without interference, and an experiment involves variables (independent/test and dependent/ outcome) and establishes cause-effect relationships (Schwartz, 2007). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.

	Remarks/Examples: Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.N.1.4	Identify a control group and explain its importance in an experiment. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method." *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.5.N.1.In.1 Ask a question about the natural world, use selected reference materials to find information, work with others to carry out a simple experiment, and share results. *Date Adopted or Revised*: 02/08	SC.5.N.1.Su.1 Ask questions about the natural world, use selected materials to find information, observe, and identify answers to the question. *Date Adopted or Revised*: 02/08	SC.5.N.1.Pa.1 Explore, observe, and select an object or picture to respond to a question about the natural world. *Date Adopted or Revised*: 02/08
SC.5.N.1.In.2 Identify the basic purpose of an experiment. *Date Adopted or Revised*: 02/08	SC.5.N.1.Su.2 Identify the result of a simple experiment. *Date Adopted or Revised*: 02/08	SC.5.N.1.Pa.2 Recognize that people use observation and actions to get answers to questions about the natural world. *Date Adopted or Revised*: 02/08
SC.5.N.1.In.3 Recognize that experiments may include activities that are repeated. *Date Adopted or Revised*: 02/08	SC.5.N.1.Su.3 Recognize that experiments can be repeated with other groups. *Date Adopted or Revised*: 02/08	
SC.5.N.1.In.4 Recognize that scientists use various methods to perform investigations, such as reviewing work of other scientists, making observations, and conducting experiments. *Date Adopted or Revised*: 02/08	SC.5.N.1.Su.4 Recognize ways that scientific evidence can be collected, such as by observing or measuring. *Date Adopted or Revised*: 02/08	
SC.5.N.1.In.5 Determine	SC.5.N.1.Su.5 Recognize facts about a scientific observation.	

	whether descriptions of observations are based on fact or personal belief. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08	

Big Idea 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.
B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.5.P.10.1	Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.P.10.1, SC.3.P.10.3, SC.3.P.10.4, SC.3.P.11.1, SC.3.P.11.2, SC.4.P.10.1, and SC.4.P.10.3. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.P.10.2	Investigate and explain that energy has the ability to cause motion or create change. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.P.10.2, SC.4.P.10.2, and SC.4.P.10.4. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.5.P.10.3	Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.5.P.10.4	Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.E.6.1, SC.4.P.11.1, SC.4.P.11.2, SC.5.P.10.3, SC.5.P.11.1, and SC.5.P.11.2. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.5.P.10.In.1 Identify forms of energy, including heat, light, sound, electrical, and mechanical. *Date Adopted or Revised*: 02/08	SC.5.P.10.Su.1 Recognize uses of electrical energy (popcorn popper, vacuum cleaner), heat energy (grill, heater), light energy (sunlight, flashlight), and mechanical energy (bicycle). *Date Adopted or Revised*: 02/08	SC.5.P.10.Pa.1 Recognize a source of light energy (Sun, light bulb). *Date Adopted or Revised*: 02/08
SC.5.P.10.In.2 Identify ways energy can cause things to move or create changes. *Date Adopted or Revised*: 02/08	SC.5.P.10.Su.2 Recognize that energy is required to cause motion. *Date Adopted or Revised*:	SC.5.P.10.Pa.2 Initiate a change in the motion of an object. *Date Adopted or Revised*: 02/08
		SC.5.P.10.Pa.3

SC.5.P.10.In.3 Identify that electrically charged materials will pull (attract) other materials. *Date Adopted or Revised*: 02/08	02/08 SC.5.P.10.Su.3 Recognize that electrically charged materials will pull (attract) other materials. *Date Adopted or Revised*: 02/08	Demonstrate pushing away (repulsion) and pulling (attraction). *Date Adopted or Revised*: 02/08 SC.5.P.10.Pa.4 Identify one source of sound, heat, or light that uses electricity. *Date Adopted or Revised*: 02/08
SC.5.P.10.In.4 Demonstrate that electricity can produce heat, light, and sound. *Date Adopted or Revised*: 02/08	SC.5.P.10.Su.4 Recognize examples of electricity as a producer of heat, light, and sound. *Date Adopted or Revised*: 02/08	

Big Idea 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.

B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.

Clarification for grades 5-8: The target understanding for Big Idea 11: Energy Transfer and Transformations, is the Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.

BENCHMARK CODE	BENCHMARK
SC.5.P.11.1	Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.5.P.11.In.1 Identify the power source and wires (conductors) in an electrical circuit. *Date Adopted or Revised*: 02/08	SC.5.P.11.Su.1 Recognize the power source in an electrical circuit. *Date Adopted or Revised*: 02/08	SC.5.P.11.Pa.1 Recognize that electrical systems must be turned on (closed) in order to work. *Date Adopted or Revised*: 02/08
SC.5.P.11.In.2 Identify materials that conduct electricity. *Date Adopted or Revised*: 02/08	SC.5.P.11.Su.2 Recognize a material that conducts electricity. *Date Adopted or Revised*: 02/08	

Big Idea 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A, B, and C.

Clarification for grades 6-8: The target understanding for students in grades 6-8 should begin to transition the focus to a more specific definition of forces and changes in motion. Net forces create a change in motion. A change in momentum occurs when a net force is applied to an object over a time interval.

Grades 9-12, Standard 12: Motion - A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

BENCHMARK CODE	BENCHMARK
SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.E.5.4 and SC.4.P.8.4. *Cognitive Complexity:* Level 1: Recall
SC.5.P.13.2	Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.4.P.12.1, SC.4.P.12.2, SC.5.P.13.3, and SC.5.P.13.4. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.P.13.3	Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.P.13.4	Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.5.P.13.In.1 Distinguish between movement of an object	SC.5.P.13.Su.1 Recognize that gravity causes an object to	SC.5.P.13.Pa.1 Recognize that pushing or pulling makes

	caused by gravity and movement caused by pushes and pulls. *Date Adopted or Revised*: 02/08 SC.5.P.13.In.2 Identify that heavier objects take more force to move than lighter ones. *Date Adopted or Revised*: 02/08 SC.5.P.13.In.3 Identify that an opposing force (push or pull) is needed to prevent an object from moving. *Date Adopted or Revised*: 02/08	move. *Date Adopted or Revised*: 02/08 SC.5.P.13.Su.2 Recognize that a heavier object is harder to move than a light one. *Date Adopted or Revised*: 02/08 SC.5.P.13.Su.3 Recognize the source of a force (push or pull) used to stop an object from moving. *Date Adopted or Revised*: 02/08	an object move. *Date Adopted or Revised*: 02/08 SC.5.P.13.Pa.2 Recognize a way to stop an object from moving. *Date Adopted or Revised*: 02/08

Big Idea 14: Organization and Development of Living Organisms

A. All plants and animals, including humans, are alike in some ways and different in others.
B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.
C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.5.L.14.1	Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs. *Remarks/Examples*: Muscles and skeleton are not organs in the human body and should be referred to as the muscular and skeletal systems and the function of the muscles and skeleton. Integrate HE.5.C.1.6.Explain how human body parts and organs work together in healthy body systems, including the endocrine and reproductive systems. Annually assessed on Grade 5 Science FCAT 2.0 (human body systems are not assessed through this benchmark). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.L.15.1 and SC.3.L.15.2. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.5.L.14.In.1 Distinguish major	SC.5.L.14.Su.1 Identify major	SC.5.L.14.Pa.1 Recognize

	external and internal body parts, including skin, brain, heart, lungs, stomach, muscles and skeleton, reproductive organs, and sensory organs. *Date Adopted or Revised*: 02/08 SC.5.L.14.In.2 Identify functions of plant and animal structures; for example, plant stem transports food to leaves, and heart pumps blood to parts of the body. *Date Adopted or Revised*: 02/08	external and internal body parts, including skin, brain, heart, lungs, stomach, and sensory organs. *Date Adopted or Revised*: 02/08 SC.5.L.14.Su.2 Recognize the functions of the major parts of plants and animals. *Date Adopted or Revised*: 02/08	body parts related to movement and the five senses. *Date Adopted or Revised*: 02/08 SC.5.L.14.Pa.2 Observe plants and animals and recognize how they are alike in the way they look. *Date Adopted or Revised*: 02/08

Big Idea 15: Diversity and Evolution of Living Organisms

A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.
B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.

BENCHMARK CODE	BENCHMARK
SC.5.L.15.1	Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.5.L.15.In.1 Identify ways that plants and animals can be affected by changes in their habitats, such as lack of food or water, disease, or reduced space. *Date Adopted or Revised*: 02/08	SC.5.L.15.Su.1 Recognize ways that plants and animals can be affected by changes in their habitats, such as lack of food or water. *Date Adopted or Revised*: 02/08	SC.5.L.15.Pa.1 Recognize what happens when plants don't get water. *Date Adopted or Revised*: 02/08

Big Idea 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
B. Both human activities and natural events can have major impacts on the environment.
C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.5.L.17.1	Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical

characteristics.

Remarks/Examples:
Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.L.17.1, SC.4.L.16.2, SC.4.L.16.3, SC.4.L.17.1, SC.4.L.17.4, and SC.5.L.15.1.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.5.L.17.In.1 Identify features of common plants and animals that enable them to survive in different habitats (environments). *Date Adopted or Revised*: 02/08	SC.5.L.17.Su.1 Recognize that many different kinds of living things are found in different habitats. *Date Adopted or Revised*: 02/08	SC.5.L.17.Pa.1 Match common living things with their habitats. *Date Adopted or Revised*: 02/08

Big Idea 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.
B: Scientific knowledge is durable and robust, but open to change.
C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.5.N.2.1	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.N.1.7, SC.4.N.1.3, SC.4.N.1.7, SC.5.N.1.5, and SC.5.N.1.6. Florida Standards Connections: LAFS.5.W.3.9. Draw evidence from literary or informational texts to support analysis, reflection, and research. Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.2: Reason abstractly and quantitatively; and, MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.N.2.2	Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others. *Remarks/Examples*: Remarks/Examples: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.N.1.2, SC.3.N.1.5, SC.4.N.1.2, SC.4.N.1.5, and SC.5.N.1.3. Florida Standards Connections: LAFS.5.SL.1.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly. Florida Standards Connections: MAFS.K12.MP.6: Attend to precision.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.5.N.2.In.1 Identify that science knowledge is based on observations and evidence. *Date Adopted or Revised*: 02/08	SC.5.N.2.Su.1 Recognize that science knowledge is based on careful observations. *Date Adopted or Revised*: 02/08	SC.5.N.2.Pa.1 Recognize the importance of making careful observations. *Date Adopted or Revised*: 02/08
SC.5.N.2.In.2 Recognize that experiments involve procedures that can be repeated the same way by others. *Date Adopted or Revised*: 02/08	SC.5.N.2.Su.2 Recognize the importance of following correct procedures when carrying out science experiments. *Date Adopted or Revised*: 02/08	SC.5.N.2.Pa.2 Recognize that a common activity can be repeated. *Date Adopted or Revised*: 02/08

Big Idea 5: Earth in Space and Time

Humans continue to explore Earth's place in space. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the Solar System, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of our Solar System.

BENCHMARK CODE	BENCHMARK
SC.5.E.5.1	Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.E.5.1, SC.3.E.5.2, and SC.3.E.5.3. *Cognitive Complexity:* Level 1: Recall
SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.E.5.3	Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.5.E.5.2. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.5.E.5.In.1 Identify that a galaxy is made of a very large number of stars and the planets that orbit them. *Date Adopted or Revised*: 02/08	SC.5.E.5.Su.1 Recognize that a galaxy is a group of stars. *Date Adopted or Revised*: 02/08	SC.5.E.5.Pa.1 Recognize that stars are very far away from Earth. *Date Adopted or Revised*: 02/08
	SC.5.E.5.Su.2	

	SC.5.E.5.In.2 Recognize major differences in the characteristics of the planets in the Solar System. *Date Adopted or Revised*: 02/08 SC.5.E.5.In.3 Identify that the Solar System includes the Sun, Earth, Moon, and other planets and their moons. *Date Adopted or Revised*: 02/08	Recognize that surface of planet Earth is covered by water and land. *Date Adopted or Revised*: 02/08 SC.5.E.5.Su.3 Identify that the Sun, Earth, and Moon are part of the Solar System. *Date Adopted or Revised*: 02/08	SC.5.E.5.Pa.2 Recognize Earth as the planet where we live. *Date Adopted or Revised*: 02/08

Big Idea 7: Earth Systems and Patterns

Humans continue to explore the interactions among water, air, and land. Air and water are in constant motion that results in changing conditions that can be observed over time.

BENCHMARK CODE	BENCHMARK
SC.5.E.7.1	Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.5.E.7.2. Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.E.7.3	Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.5.E.7.4, SC.5.E.7.5, and SC.5.E.7.6. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.E.7.4	Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.5.E.7.5	Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.E.7.6	Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.5.E.7.7	Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.5.E.7.In.1 Label the state of water in each stage of the water cycle. *Date Adopted or Revised*: 02/08	SC.5.E.7.Su.1 Match different states of water (liquid and solid) to changes in temperature. *Date Adopted or Revised*: 02/08	SC.5.E.7.Pa.1 Distinguish between water as a liquid and ice as a solid. *Date Adopted or Revised*: 02/08
SC.5.E.7.In.2 Recognize that water evaporates from the ocean, falls as precipitation, and then goes back into the ocean. *Date Adopted or Revised*: 02/08	SC.5.E.7.Su.2 Observe and recognize that water evaporates over time. *Date Adopted or Revised*: 02/08	SC.5.E.7.Pa.2 Recognize that wet things will dry when they are left in the air. *Date Adopted or Revised*: 02/08
SC.5.E.7.In.3 Identify elements that make up weather, including temperature, precipitation, and wind speed and direction. *Date Adopted or Revised*: 02/08	SC.5.E.7.Su.3 Recognize elements of weather, including temperature, precipitation, and wind. *Date Adopted or Revised*: 02/08	SC.5.E.7.Pa.3 Recognize the weather conditions including hot/cold and raining/not raining during the day. *Date Adopted or Revised*: 02/08
SC.5.E.7.In.4 Describe types of precipitation, including rain, snow, and hail. *Date Adopted or Revised*: 02/08	SC.5.E.7.Su.4 Identify different types of precipitation, including rain and snow. *Date Adopted or Revised*: 02/08	SC.5.E.7.Pa.4 Recognize examples of severe weather conditions. *Date Adopted or Revised*: 02/08
SC.5.E.7.In.5 Recognize weather-related differences in environments, such as swamps and deserts. *Date Adopted or Revised*: 02/08	SC.5.E.7.Su.5 Match specific weather conditions with different locations. *Date Adopted or Revised*: 02/08	
SC.5.E.7.In.6 Identify features of weather in different climate zones, such as tropical and polar. *Date Adopted or Revised*: 02/08	SC.5.E.7.Su.6 Identify what to do in severe weather. *Date Adopted or Revised*: 02/08	
SC.5.E.7.In.7 Identify emergency plans and procedures for severe weather. *Date Adopted or Revised*: 02/08		

Big Idea 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass.

B. Objects and substances can be classified by their physical and chemical properties. Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately.

Clarification for grades K-2: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.

Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.

BENCHMARK CODE	BENCHMARK
SC.5.P.8.1	Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature. *Remarks/Examples*: Investigate the concept of weight versus mass of an object. Discuss why mass (not weight) is used to compare properties of solids, liquids and gases. Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.P.8.1, SC.3.P.8.2, SC.3.P.8.3, and SC.4.P.8.1. MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.P.8.2	Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.5.P.8.3	Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction. *Remarks/Examples*: Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.5.P.8.2. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.5.P.8.4	Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification. *Remarks/Examples*: Recognize that matter is composed of atoms.

Cognitive Complexity: Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities		
Independent	***Supported***	***Participatory***
SC.5.P.8.In.1 Identify basic properties of solids, liquids, and gases, such as color, texture, and temperature. *Date Adopted or Revised*: 02/08	SC.5.P.8.Su.1 Identify the basic properties of solids and liquids, such as color, texture, and temperature. *Date Adopted or Revised*: 02/08	SC.5.P.8.Pa.1 Distinguish between water as a solid or liquid. *Date Adopted or Revised*: 02/08
SC.5.P.8.In.2 Identify examples of materials that will dissolve in water and those that will not. *Date Adopted or Revised*: 02/08	SC.5.P.8.Su.2 Recognize examples of materials that will dissolve in water. *Date Adopted or Revised*: 02/08	SC.5.P.8.Pa.2 Recognize a common substance that dissolves in water. *Date Adopted or Revised*: 02/08
SC.5.P.8.In.3 Identify the observable properties of the parts of a mixture, such as the particle size, shape, and color. *Date Adopted or Revised*: 02/08	SC.5.P.8.Su.3 Identify the separate parts of a mixture by color or shape. *Date Adopted or Revised*: 02/08	SC.5.P.8.Pa.3 Separate a group of objects into its parts. *Date Adopted or Revised*: 02/08
SC.5.P.8.In.4 Recognize that materials are made of very small parts that cannot be seen without a magnifying glass or a microscope. *Date Adopted or Revised*: 02/08	SC.5.P.8.Su.4 Use a magnifying tool to see small parts of an object. *Date Adopted or Revised*: 02/08	

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A and B.

Clarification for Grades 6-8: The target understanding for students in the middle grades should begin to transition the focus to: C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.5.P.9.1	Investigate and describe that many physical and chemical changes are affected by temperature.

Remarks/Examples:
Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.P.9.1 and SC.4.P.9.1.

Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities		
Independent	***Supported***	***Participatory***
SC.5.P.9.In.1 Observe and identify that heating and cooling can change the properties of materials. *Date Adopted or Revised*: 02/08	SC.5.P.9.Su.1 Recognize changes in properties of materials caused by heating or cooling. *Date Adopted or Revised*: 02/08	SC.5.P.9.Pa.1 Recognize that freezing changes water to ice. *Date Adopted or Revised*: 02/08

GRADE: 6

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. *Remarks/Examples*: Florida Standards Connections: LAFS.68.RST.1.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.2	Explain why scientific investigations should be replicable. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each. *Remarks/Examples*: Explain that an investigation is observing or studying the natural world, without interference or manipulation, and an experiment is an investigation that involves variables (independent/manipulated and dependent/ outcome) and establishes cause-and-effect relationships (Schwartz, 2007).

	Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence. *Remarks/Examples*: Florida Standards Connections: LAFS.68.RST.3.7; LAFS.68.WHST.1.2; and, LAFS.68.WHST.3.9. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.6.N.1.In.1 Identify a problem from the sixth grade curriculum, use reference materials to gather information, carry out an experiment, collect and record data, and report results. *Date Adopted or Revised*: 02/08	SC.6.N.1.Su.1 Recognize a problem from the sixth grade curriculum, use materials to gather information, carry out a simple experiment, and record and share results. *Date Adopted or Revised*: 02/08	SC.6.N.1.Pa.1 Recognize a problem related to the sixth grade curriculum, observe and explore objects or activities, and recognize a solution. *Date Adopted or Revised*: 02/08
SC.6.N.1.In.2 Identify that scientific investigations can be repeated the same way by others. *Date Adopted or Revised*: 02/08	SC.6.N.1.Su.2 Recognize that experiments involve procedures that can be repeated the same way by others. *Date Adopted or Revised*: 02/08	SC.6.N.1.Pa.2 Recognize that when a common activity is repeated, it has the same result. *Date Adopted or Revised*: 02/08
SC.6.N.1.In.3 Identify that scientists can use different kinds of experiments, methods, and explanations to find answers to scientific questions. *Date Adopted or Revised*: 02/08	SC.6.N.1.Su.3 Recognize that scientists perform experiments, make observations, and gather evidence to answer scientific questions. *Date Adopted or Revised*: 02/08	SC.6.N.1.Pa.3 Recognize that people conduct activities and share information about science. *Date Adopted or Revised*: 02/08
SC.6.N.1.In.4 Compare results of observations and experiments of self and others. *Date Adopted or Revised*: 02/08	SC.6.N.1.Su.4 Identify information based on observations and experiments of self and others. *Date Adopted or Revised*: 02/08	

Big Idea 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.
B. Water and sound waves transfer energy through a material.

C. Light waves can travel through a vacuum and through matter.
D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.

BENCHMARK CODE	BENCHMARK
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.P.11.In.1 Identify energy as stored (potential) or expressed in motion (kinetic). *Date Adopted or Revised*: 02/08	SC.6.P.11.Su.1 Recognize examples of stored energy, such as in a roller coaster. *Date Adopted or Revised*: 02/08	SC.6.P.11.Pa.1 Distinguish between objects in motion (kinetic energy) and at rest. *Date Adopted or Revised*: 02/08

Big Idea 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.
B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.P.12.In.1 Identify that speed describes the distance and time in which an object is moving, such as miles per hour. *Date Adopted or Revised*: 02/08	SC.6.P.12.Su.1 Recognize that speed describes how far an object travels in a given amount of time. *Date Adopted or Revised*: 02/08	SC.6.P.12.Pa.1 Recognize that traveling longer distances takes more time, such as going to the cafeteria takes longer than going across the classroom. *Date Adopted or Revised*: 02/08

Big Idea 13: Forces and Changes in Motion

A. It takes energy to change the motion of objects.

B. Energy change is understood in terms of forces--pushes or pulls.

C. Some forces act through physical contact, while others act at a distance.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A, B, and C.

Clarification for grades 6-8: The target understanding for students in grades 6-8 should begin to transition the focus to a more specific definition of forces and changes in motion. Net forces create a change in motion. A change in momentum occurs when a net force is applied to an object over a time interval.

Grades 9-12, Standard 12: Motion - A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

BENCHMARK CODE	BENCHMARK
SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.P.13.2	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are. *Cognitive Complexity:* Level 1: Recall
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.P.13.In.1 Identify examples of gravitational and contact forces, such as falling objects or push and pull. *Date Adopted or Revised*: 02/08	SC.6.P.13.Su.1 Distinguish between pushing and pulling forces (contact) and falling (gravitational force) of an object. *Date Adopted or Revised*: 02/08	SC.6.P.13.Pa.1 Recognize that pushing or pulling makes an object move (contact force). *Date Adopted or Revised*: 02/08
SC.6.P.13.In.2 Demonstrate and describe how forces can change the speed and direction of objects in motion. *Date Adopted or Revised*: 02/08	SC.6.P.13.Su.2 Recognize that force can change the speed and direction of an object in motion. *Date Adopted or Revised*: 02/08	SC.6.P.13.Pa.2 Recognize that objects fall unless supported by something. *Date Adopted or Revised*: 02/08
		SC.6.P.13.Pa.3 Recognize the speed (fast or slow) of a moving object. *Date Adopted or Revised*: 02/08

Big Idea 14: Organization and Development of Living Organisms

A. All living things share certain characteristics.
B. The scientific theory of cells, also called cell theory, is a fundamental organizing principle of life on Earth.
C. Life can be organized in a functional and structural hierarchy.
D. Life is maintained by various physiological functions essential for growth, reproduction, and homeostasis.

BENCHMARK CODE	BENCHMARK
SC.6.L.14.1	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 1: Recall
SC.6.L.14.2	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.L.14.3	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.L.14.4	Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.L.14.5	Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites. *Remarks/Examples*: Integrate HE.6.C.1.8. Explain how body systems are impacted by hereditary factors and infectious agents. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.L.14.In.1 Identify how the major structures of plants and organs of animals work as parts of larger systems, such as the heart is part of the circulatory system that pumps blood. *Date Adopted or Revised*: 02/08 SC.6.L.14.In.2 Identify that the	SC.6.L.14.Su.1 Identify the major internal organs of animals and external structures of plants and their functions. *Date Adopted or Revised*: 02/08 SC.6.L.14.Su.2 Recognize that there are smaller parts in all	SC.6.L.14.Pa.1 Recognize that the human body is made up of various parts. *Date Adopted or Revised*: 02/08 SC.6.L.14.Pa.1 Recognize that the human body is made up of various parts. *Date Adopted or Revised*:

	cell is the smallest basic unit of life and most living things are composed of many cells. *Date Adopted or Revised*: 02/08 SC.6.L.14.In.3 Identify that cells carry out important functions within an organism, such as using energy from food. *Date Adopted or Revised*: 02/08 SC.6.L.14.In.4 Recognize that plant and animal cells have different parts and each part has a function. *Date Adopted or Revised*: 02/08 SC.6.L.14.In.5 Recognize that bacteria and viruses can infect the human body. *Date Adopted or Revised*: 02/08	living things, too small to be seen without magnification, called cells. *Date Adopted or Revised*: 02/08 SC.6.L.14.Su.3 Recognize that animals, including humans, use energy from food. *Date Adopted or Revised*: 02/08 SC.6.L.14.Su.4 Identify ways to prevent infection from bacteria and viruses, such as hand washing. *Date Adopted or Revised*: 02/08	02/08 SC.6.L.14.Pa.2 Identify basic needs of plants and animals. *Date Adopted or Revised*: 02/08 SC.6.L.14.Pa.3 Recognize body parts related to basic needs, such as mouth for eating. *Date Adopted or Revised*: 02/08 SC.6.L.14.Pa.4 Recognize practices that keep the body free from infection, such as hand washing. *Date Adopted or Revised*: 02/08

Big Idea 15: Diversity and Evolution of Living Organisms

A. The scientific theory of evolution is the organizing principle of life science.
B. The scientific theory of evolution is supported by multiple forms of evidence.
C. Natural Selection is a primary mechanism leading to change over time in organisms.

BENCHMARK CODE	BENCHMARK
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.L.15.In.1 Classify animals into major groups, such as insects, fish, reptiles, mammals, and birds. *Date Adopted or Revised*: 02/08	SC.6.L.15.Su.1 Sort common animals by their physical characteristics. *Date Adopted or Revised*: 02/08	SC.6.L.15.Pa.1 Match animals based on a given shared characteristic. *Date Adopted or Revised*: 02/08

Big Idea 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.
B: Scientific knowledge is durable and robust, but open to change.
C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.6.N.2.1	Distinguish science from other activities involving thought. *Remarks/Examples*: Thought refers to any mental or intellectual activity involving an individual's subjective consciousness. Science is a systematic process that pursues, builds and organizes knowledge in the form of testable explanations and predictions about the natural world. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.N.2.In.1 Identify familiar topics included in the study of science. *Date Adopted or Revised*: 02/08	SC.6.N.2.Su.1 Recognize familiar topics in the study of science. *Date Adopted or Revised*: 02/08	SC.6.N.2.Pa.1 Recognize objects and pictures related to science. *Date Adopted or Revised*: 02/08
SC.6.N.2.In.2 Identify that scientific knowledge changes with new evidence or new interpretations. *Date Adopted or Revised*: 02/08	SC.6.N.2.Su.2 Recognize that scientific knowledge changes when new things are discovered. *Date Adopted or Revised*: 02/08	SC.6.N.2.Pa.2 Recognize a scientist as a person who works with science. *Date Adopted or Revised*: 02/08
	SC.6.N.2.Su.3 Recognize contributions of well-known scientists. *Date Adopted or Revised*: 02/08	

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.N.3.3	Give several examples of scientific laws. *Cognitive Complexity:* Level 1: Recall
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.N.3.In.1 Identify that a scientific theory is an explanation of nature supported by evidence. *Date Adopted or Revised*: 02/08	SC.6.N.3.Su.1 Recognize that a scientific theory is an explanation of nature. *Date Adopted or Revised*: 02/08	SC.6.N.3.Pa.1 Observe and recognize a predictable cause-effect relationship related to a science topic. *Date Adopted or Revised*: 02/08
SC.6.N.3.In.2 Identify examples of scientific laws (proven descriptions of nature), such as the law of gravity. *Date Adopted or Revised*: 02/08	SC.6.N.3.Su.2 Recognize events that are based on scientific laws, such as the law of gravity. *Date Adopted or Revised*: 02/08	SC.6.N.3.Pa.2 Associate a model with an activity used in the context of sixth grade science access points. *Date Adopted or Revised*: 02/08
SC.6.N.3.In.3 Identify models used in the context of sixth grade science access points. *Date Adopted or Revised*: 02/08	SC.6.N.3.Su.3 Recognize models used in the context of sixth grade science access points. *Date Adopted or Revised*: 02/08	

Big Idea 6: Earth Structures

Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.

BENCHMARK CODE	BENCHMARK
SC.6.E.6.1	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.E.6.2	Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.E.6.In.1 Describe how weathering and erosion reshape the Earth's surface. *Date Adopted or Revised*: 02/08	SC.6.E.6.Su.1 Recognize that wind and water cause physical weathering and erosion. *Date Adopted or Revised*: 02/08	SC.6.E.6.Pa.1 Recognize that water can move soil. *Date Adopted or Revised*: 02/08
SC.6.E.6.In.2 Identify various landforms in Florida, including coastlines, rivers, lakes, and dunes. *Date Adopted or Revised*: 02/08	SC.6.E.6.Su.2 Recognize different landforms in Florida, including beaches (coastlines), rivers, and lakes. *Date Adopted or Revised*: 02/08	SC.6.E.6.Pa.2 Recognize a landform in Florida, such as a beach (coastline), river, or lake. *Date Adopted or Revised*: 02/08

Big Idea 7: Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

BENCHMARK CODE	BENCHMARK
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; MAFS.K12.MP.6: Attend to precision; and, MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.6	Differentiate between weather and climate. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.6.E.7.In.1 Recognize that heat is a flow of energy that moves through Earth's land, air, and water in different ways, including conduction, convection, and radiation. *Date Adopted or Revised*: 02/08	SC.6.E.7.Su.1 Recognize that heat can transfer from the Sun to the water, land, and air. Recognize that heat can transfer from the Sun to the water, land, and air. *Date Adopted or Revised*: 02/08	SC.6.E.7.Pa.1 Recognize that the Sun is a source of heat. *Date Adopted or Revised*: 02/08
SC.6.E.7.In.2 Identify components in the water cycle, including evaporation, condensation, precipitation, ground water, and runoff. *Date Adopted or Revised*: 02/08	SC.6.E.7.Su.2 Recognize parts of the water cycle such as clouds (condensation), rain (precipitation), and evaporation. *Date Adopted or Revised*: 02/08	SC.6.E.7.Pa.2 Recognize that rain comes from clouds. *Date Adopted or Revised*: 02/08
SC.6.E.7.In.3 Identify the way elements of weather are measured, including temperature, humidity, wind speed and direction, and precipitation. *Date Adopted or Revised*: 02/08	SC.6.E.7.Su.3 Recognize the way temperature and wind speed are measured. *Date Adopted or Revised*: 02/08	SC.6.E.7.Pa.3 Recognize different types of weather conditions, including hot/cold, raining/not raining, and windy/calm. *Date Adopted or Revised*: 02/08
SC.6.E.7.In.4 Recognize that Earth consists of different parts,	SC.6.E.7.Su.4 Recognize where living things are found (biosphere) and where the air is found (atmosphere) on Earth.	SC.6.E.7.Pa.4 Recognize that air covers Earth (atmosphere). *Date Adopted or Revised*: 02/08 SC.6.E.7.Pa.5 Recognize

including air that is over the Earth (atmosphere), water that covers much of the Earth (hydrosphere), and the parts that support all living things on Earth (biosphere). *Date Adopted or Revised*: 02/08 SC.6.E.7.In.5 Recognize that there are general patterns of weather that move around Earth, and in North America the patterns typically move from west to east. *Date Adopted or Revised*: 02/08 SC.6.E.7.In.6 Identify climate as the expected weather patterns in a region. *Date Adopted or Revised*: 02/08 SC.6.E.7.In.7 Identify possible effects of hurricanes and other natural disasters on humans in Florida. *Date Adopted or Revised*: 02/08 SC.6.E.7.In.8 Identify ways humans get ready for severe storms and protect themselves from sun exposure. *Date Adopted or Revised*: 02/08 SC.6.E.7.In.9 Identify that the atmosphere protects Earth from radiation from the Sun and regulates the temperature. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08 SC.6.E.7.Su.5 Recognize that there are patterns of weather that move. *Date Adopted or Revised*: 02/08 SC.6.E.7.Su.6 Identify the major characteristics of climate in Florida, including temperature and precipitation. *Date Adopted or Revised*: 02/08 SC.6.E.7.Su.7 Recognize possible effects of severe storms, hurricanes, or other natural disasters in Florida. *Date Adopted or Revised*: 02/08 SC.6.E.7.Su.8 Recognize ways people prepare for severe storms and protect themselves from sun exposure. *Date Adopted or Revised*: 02/08 SC.6.E.7.Su.9 Recognize that the air that surrounds Earth (atmosphere) protects living things from the intense heat of the Sun. *Date Adopted or Revised*: 02/08	where to go in severe weather situations or drills at school and at home. *Date Adopted or Revised*: 02/08

GRADE: 7

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. *Remarks/Examples*: Florida Standards Connections: LAFS.68.RST.1.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment. *Cognitive Complexity:* Level 1: Recall
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.N.1.In.1 Identify a problem from the seventh grade curriculum, use reference materials to gather information, carry out an	SC.7.N.1.Su.1 Recognize a problem from the seventh grade curriculum, use materials to gather information, conduct a simple	SC.7.N.1.Pa.1 Recognize a problem related to the seventh grade curriculum, observe and explore objects and activities, and recognize

	experiment, collect and record data, and report results. *Date Adopted or Revised*: 02/08 SC.7.N.1.In.2 Recognize the relationship between the end product (dependent variable) and in the input (independent variable) in an experiment. *Date Adopted or Revised*: 02/08 SC.7.N.1.In.3 Identify questions that can be answered by scientific investigation, such as can a plant grow without sunlight? *Date Adopted or Revised*: 02/08 SC.7.N.1.In.4 Identify ways that science can be used to study different areas, such as life science, earth and space science, and physical science. *Date Adopted or Revised*: 02/08 SC.7.N.1.In.5 Identify that scientific knowledge is based on a large body of evidence and observations. *Date Adopted or Revised*: 02/08	experiment, and record and share results. *Date Adopted or Revised*: 02/08 SC.7.N.1.Su.2 Recognize what is tested in a simple experiment (dependent variable). *Date Adopted or Revised*: 02/08 SC.7.N.1.Su.3 Recognize a question that can be answered by scientific investigation, such as can a plant grow without sunlight? *Date Adopted or Revised*: 02/08 SC.7.N.1.Su.4 Recognize that science includes different areas, such as life science, earth and space science, and physical science. *Date Adopted or Revised*: 02/08 SC.7.N.1.Su.5 Recognize that scientific knowledge is based on evidence and observations. *Date Adopted or Revised*: 02/08	a solution. *Date Adopted or Revised*: 02/08 SC.7.N.1.Pa.2 Recognize observable changes in a simple experiment, such as plant growth. *Date Adopted or Revised*: 02/08 SC.7.N.1.Pa.3 Associate objects and activities with science. *Date Adopted or Revised*: 02/08 SC.7.N.1.Pa.3 Associate objects and activities with science. *Date Adopted or Revised*: 02/08

Big Idea 10: Forms of Energy

A. Energy is involved in all physical processes and is a unifying concept in many areas of science.
B. Energy exists in many forms and has the ability to do work or cause a change.

BENCHMARK CODE	BENCHMARK
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors. *Cognitive Complexity:* Level 1: Recall
SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.P.10.3	

Recognize that light waves, sound waves, and other waves move at different speeds in different materials.

Cognitive Complexity: Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.P.10.In.1 Identify that white (visible) light has many colors, such as when viewed with a prism. *Date Adopted or Revised*: 02/08	SC.7.P.10.Su.1 Recognize that white (visible) light contains many colors, such as viewed with a prism or rainbow. *Date Adopted or Revised*: 02/08	SC.7.P.10.Pa.1 Recognize primary colors of a rainbow. *Date Adopted or Revised*: 02/08
SC.7.P.10.In.2 Recognize that light can be reflected or absorbed. *Date Adopted or Revised*: 02/08	SC.7.P.10.Su.2 Recognize that light can be reflected. *Date Adopted or Revised*: 02/08	SC.7.P.10.Pa.2 Recognize reflections of objects. *Date Adopted or Revised*: 02/08
SC.7.P.10.In.3 Identify that light and sound travel in wave patterns. *Date Adopted or Revised*: 02/08	SC.7.P.10.Su.3 Recognize that sound and light travel. *Date Adopted or Revised*: 02/08	SC.7.P.10.Pa.3 Match light and sound to their sources. *Date Adopted or Revised*: 02/08

Big Idea 11: Energy Transfer and Transformations

A. Waves involve a transfer of energy without a transfer of matter.
B. Water and sound waves transfer energy through a material.
C. Light waves can travel through a vacuum and through matter.
D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.

BENCHMARK CODE	BENCHMARK
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state. *Cognitive Complexity:* Level 1: Recall
SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.P.11.In.1 Identify that when heat is added or taken	SC.7.P.11.Su.1 Recognize what happens to the	SC.7.P.11.Pa.1 Recognize that a hot object can make a

	away, a temperature change occurs. *Date Adopted or Revised*: 02/08 SC.7.P.11.In.2 Recognize that one form of energy can change to other forms of energy, such as solar panels change light into electricity. *Date Adopted or Revised*: 02/08 SC.7.P.11.In.3 Identify examples of the predictable movement of heat, such as hot air rises and heat transfers from hot to cold objects. *Date Adopted or Revised*: 02/08	temperature when heat is added. *Date Adopted or Revised*: 02/08 SC.7.P.11.Su.2 Recognize that energy can change forms, such as electricity produces light and heat in a lamp. *Date Adopted or Revised*: 02/08 SC.7.P.11.Su.3 Identify that heat rises. *Date Adopted or Revised*: 02/08	cold object warm when they touch. *Date Adopted or Revised*: 02/08 SC.7.P.11.Pa.2 Recognize that electrical devices need energy to work. *Date Adopted or Revised*: 02/08

Big Idea 15: Diversity and Evolution of Living Organisms

A. The scientific theory of evolution is the organizing principle of life science.
B. The scientific theory of evolution is supported by multiple forms of evidence.
C. Natural Selection is a primary mechanism leading to change over time in organisms.

BENCHMARK CODE	BENCHMARK
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.L.15.2	Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.L.15.3	Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.L.15.In.1 Recognize that fossils help people learn about living things that lived a very long time ago. *Date Adopted or Revised*: 02/08 SC.7.L.15.In.2	SC.7.L.15.Su.1 Identify fossils as parts of animals and plants that are no longer alive. *Date Adopted or Revised*: 02/08 SC.7.L.15.Su.2 Recognize that	SC.7.L.15.Pa.1 Recognize that living things can die. *Date Adopted or Revised*: 02/08 SC.7.L.15.Pa.2 Recognize a personal characteristic, such

	Recognize that physical characteristics of living things are adapted to deal with the conditions of the environment, such as skin color or gills on a fish. *Date Adopted or Revised*: 02/08	common plants or animals have special features that enable them to live in their environment, such as a as a fish has gills so it can live underwater. *Date Adopted or Revised*: 02/08	as hair color, that is different from the parents. *Date Adopted or Revised*: 02/08
	SC.7.L.15.In.3 Explain extinction and give examples. *Date Adopted or Revised*: 02/08	SC.7.L.15.Su.3 Recognize that some plants and animals no longer exist (are extinct). *Date Adopted or Revised*: 02/08	

Big Idea 16: Heredity and Reproduction

A. Reproduction is characteristic of living things and is essential for the survival of species.
B. Genetic information is passed from generation to generation by DNA; DNA controls the traits of an organism.
C. Changes in the DNA of an organism can cause changes in traits, and manipulation of DNA in organisms has led to genetically modified organisms.

BENCHMARK CODE	BENCHMARK
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another. *Remarks/Examples*: Integrate HE.7.C.1.4. Describe how heredity can affect personal health. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment. *Remarks/Examples*: Integrate HE.7.C.1.4. Describe how heredity can affect personal health. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.L.16.In.1 Explain that some characteristics are passed from parent to child (inherited).	SC.7.L.16.Su.1 Recognize that offspring have similar characteristics to parents. *Date Adopted or Revised*:	SC.7.L.16.Pa.1 Recognize a characteristic passed from parents to self, such as eye color.

	Date Adopted or Revised: 02/08 SC.7.L.16.In.2 Recognize that it is possible to predict whether a person is likely to inherit a particular trait from parents. *Date Adopted or Revised*: 02/08 SC.7.L.16.In.3 Explain that offspring receive half their genes from each parent in sexual reproduction. *Date Adopted or Revised*: 02/08 SC.7.L.16.In.4 Recognize that science processes (biotechnology) have been used to develop new foods and medicines. *Date Adopted or Revised*: 02/08	02/08 SC.7.L.16.Su.2 Recognize that animals, including humans, inherit some characteristics from one parent and some from the other. *Date Adopted or Revised*: 02/08 SC.7.L.16.Su.3 Recognize that science (biotechnology) has been used to develop new products for use in daily life. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08 SC.7.L.16.Pa.2 Recognize that children are born from two parents. *Date Adopted or Revised*: 02/08 SC.7.L.16.Pa.3 Recognize common products, such as medicine, developed through science. *Date Adopted or Revised*: 02/08

Big Idea 17: Interdependence

A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
B. Both human activities and natural events can have major impacts on the environment.
C. Energy flows from the sun through producers to consumers.

BENCHMARK CODE	BENCHMARK
SC.7.L.17.1	Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.L.17.3	Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.L.17.In.1 Identify that in a simple food chain, energy transfers from the Sun to plants (producers), to animals	SC.7.L.17.Su.1 Identify different types of consumers in a food chain, including animals that eat plants, animals that eat	SC.7.L.17.Pa.1 Recognize that humans eat vegetables and fruits (plants) and meat (animals).

	(consumers), and to organisms that cause decay (decomposers). *Date Adopted or Revised*: 02/08 SC.7.L.17.In.2 Describe how organisms interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at the expense of the other (parasitism). *Date Adopted or Revised*: 02/08 SC.7.L.17.In.3 Recognize that living things compete with each other to get the things they need to live in their local environment. *Date Adopted or Revised*: 02/08	other animals, and animals that eat plants and animals. *Date Adopted or Revised*: 02/08 SC.7.L.17.Su.2 Recognize how living things affect each other in their habitat (ecosystem). *Date Adopted or Revised*: 02/08 SC.7.L.17.Su.3 Identify how a lack of food, water, or shelter affects plants and animals in their habitats. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08 SC.7.L.17.Pa.2 Recognize a mutual relationship between people and other living things. *Date Adopted or Revised*: 02/08 SC.7.L.17.Pa.3 Recognize what happens when animals don't get food and water. *Date Adopted or Revised*: 02/08

Big Idea 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.
B: Scientific knowledge is durable and robust, but open to change.
C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.N.2.In.1 Identify an example of a change in scientific knowledge based on new evidence or new interpretations. *Date Adopted or Revised*: 02/08	SC.7.N.2.Su.1 Recognize an example of a change in scientific knowledge based on new evidence. *Date Adopted or Revised*: 02/08	SC.7.N.2.Pa.1 Recognize information related to science. *Date Adopted or Revised*: 02/08

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.7.N.3.In.1 Identify that scientific theories are explanations and laws describe relationships, and both are supported by evidence. *Date Adopted or Revised*: 02/08	SC.7.N.3.Su.1 Recognize that scientific theories and laws are supported by evidence. *Date Adopted or Revised*: 02/08	SC.7.N.3.Pa.1 Recognize that people use science to solve problems. *Date Adopted or Revised*: 02/08
SC.7.N.3.In.2 Identify a benefit of using a model to explain how things work. *Date Adopted or Revised*: 02/08	SC.7.N.3.Su.2 Recognize a benefit of using a model to explain how things work. *Date Adopted or Revised*: 02/08	SC.7.N.3.Pa.2 Recognize a model of a common activity. *Date Adopted or Revised*: 02/08

Big Idea 6: Earth Structures

Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.

BENCHMARK CODE	BENCHMARK
SC.7.E.6.1	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building). *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.E.6.3	

	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.7.E.6.In.1 Identify that Earth has three layers (crust, mantle, and core) and describe the inside (core) as the hottest layer. *Date Adopted or Revised*: 02/08	SC.7.E.6.Su.1 Recognize that the surface of Earth is called the crust. *Date Adopted or Revised*: 02/08	SC.7.E.6.Pa.1 Recognize the ground as the outer surface (crust) of Earth. *Date Adopted or Revised*: 02/08
SC.7.E.6.In.2 Recognize that slow changes, such as mountain-building, and fast changes, such as volcanic eruptions, are caused by shifts below Earth's surface. *Date Adopted or Revised*: 02/08	SC.7.E.6.Su.2 Recognize that mountains change size and shape over a long period of time. *Date Adopted or Revised*: 02/08	SC.7.E.6.Pa.2 Discriminate between surface features of ground on Earth, such as rocky/sandy, flat/hilly, rough/smooth, or solid/liquid. *Date Adopted or Revised*: 02/08
SC.7.E.6.In.3 Demonstrate how older rock layers are deposited at the bottom before younger layers (Law of Superposition). *Date Adopted or Revised*: 02/08	SC.7.E.6.Su.3 Recognize that fossils are remains or imprints of living things from long ago. *Date Adopted or Revised*: 02/08	SC.7.E.6.Pa.3 Recognize that ground on the Earth's surface changes over time. *Date Adopted or Revised*: 02/08
SC.7.E.6.In.4 Identify physical evidence, such as fossils and sedimentary rock, which show how Earth has changed over a very long period of time. *Date Adopted or Revised*: 02/08	SC.7.E.6.Su.4 Recognize the effects of earthquakes and volcanoes. *Date Adopted or Revised*: 02/08 SC.7.E.6.Su.5 Recognize that polluting the air and water can harm Earth. *Date Adopted or Revised*: 02/08	SC.7.E.6.Pa.4 Distinguish between clean and dirty water. *Date Adopted or Revised*: 02/08

	SC.7.E.6.In.5 Recognize that humans have had an impact on Earth, such as polluting the air and water and expanding urban areas and road systems. *Date Adopted or Revised*: 02/08		

GRADE: 8

Big Idea 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.1.2	Design and conduct a study using repeated trials and replication. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities		
Independent	***Supported***	***Participatory***
SC.8.N.1.In.1 Identify a problem from the eighth grade curriculum, use reference materials to gather information, carry out an experiment, collect and record data, and report results. *Date Adopted or Revised*: 02/08	SC.8.N.1.Su.1 Recognize a problem from the eighth grade curriculum, use materials to gather information, conduct a simple experiment, and record and share results. *Date Adopted or Revised*: 02/08	SC.8.N.1.Pa.1 Recognize a problem related to the eighth grade curriculum, observe and explore objects and activities, and recognize a solution. *Date Adopted or Revised*: 02/08
SC.8.N.1.In.2 Identify a possible explanation (hypothesis) for a science problem. *Date Adopted or Revised*: 02/08	SC.8.N.1.Su.2 Recognize a possible explanation (hypothesis) for a science problem. *Date Adopted or Revised*: 02/08	SC.8.N.1.Pa.2 Recognize science as a way to solve problems about the natural world. *Date Adopted or Revised*: 02/08
SC.8.N.1.In.3 Identify methods used in different areas of science, such as life science, earth and space science, and physical science. *Date Adopted or Revised*: 02/08	SC.8.N.1.Su.3 Recognize methods used in different areas of science, such as life science, earth and space science, and physical science. *Date Adopted or Revised*: 02/08	
SC.8.N.1.In.4 Identify that the process used in scientific investigations involves asking a research question, forming a hypothesis, reviewing what is already known, collecting evidence through observations or experiments, determining results, and reaching conclusions. *Date Adopted or Revised*: 02/08	SC.8.N.1.Su.4 Recognize that the basic process used in scientific investigations involves questioning, observing, and recording and sharing results. *Date Adopted or Revised*: 02/08	

Big Idea 18: Matter and Energy Transformations

A. Living things all share basic needs for life.
B. Living organisms acquire the energy they need for life processes through various metabolic pathways (photosynthesis and cellular respiration).
C. Matter and energy are recycled through cycles such as the carbon cycle.

BENCHMARK CODE	BENCHMARK
SC.8.L.18.1	

	Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.8.L.18.In.1 Identify structures in plants that enable them to use the energy from the Sun to make their own food through a process called photosynthesis. *Date Adopted or Revised*: 02/08	SC.8.L.18.Su.1 Recognize that plants make their own food through a process called photosynthesis. *Date Adopted or Revised*: 02/08	SC.8.L.18.Pa.1 Recognize that plants need water and light to grow. *Date Adopted or Revised*: 02/08
SC.8.L.18.In.2 Recognize that cells break down food to release energy. *Date Adopted or Revised*: 02/08	SC.8.L.18.Su.2 Recognize that plants and animals get energy from food. *Date Adopted or Revised*: 02/08	SC.8.L.18.Pa.2 Recognize that food provides energy. *Date Adopted or Revised*: 02/08
SC.8.L.18.In.3 Illustrate a model that shows how carbon is cycled between plants and animals. *Date Adopted or Revised*: 02/08	SC.8.L.18.Su.3 Recognize that plants use the carbon dioxide that animals breathe out. *Date Adopted or Revised*: 02/08	
SC.8.L.18.In.4 Identify the flow of energy from the Sun as it is transferred along a food chain. *Date Adopted or Revised*: 02/08	SC.8.L.18.Su.4 Recognize that plants get energy from the Sun and that energy is transferred to the animals that eat the plants. *Date Adopted or Revised*: 02/08	

Big Idea 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a

limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.
B: Scientific knowledge is durable and robust, but open to change.
C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas. *Remarks/Examples*: Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations (e.g. astrology is pseudoscience). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.N.2.2	Discuss what characterizes science and its methods. *Remarks/Examples*: Science is the systematic, organized inquiry that is derived from observations and experimentation that can be verified through testing to explain natural phenomena. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.8.N.2.In.1 Identify that scientific knowledge must be supported by evidence. *Date Adopted or Revised*: 02/08	SC.8.N.2.Su.1 Recognize examples of evidence that supports scientific knowledge. *Date Adopted or Revised*: 02/08	SC.8.N.2.Pa.1 Recognize an example of observable evidence related to science. *Date Adopted or Revised*: 02/08

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example; "theory," "law," "hypothesis," and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.8.N.3.1	Select models useful in relating the results of their own investigations. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.8.N.3.In.1 Identify models used in the context of one's own study of science. *Date Adopted or Revised*: 02/08	SC.8.N.3.Su.1 Recognize models used in the context of one's own study of science. *Date Adopted or Revised*: 02/08 SC.8.N.3.Su.2	SC.8.N.3.Pa.1 Associate a model with an activity used in the context of one's own study of science. *Date Adopted or Revised*: 02/08

SC.8.N.3.In.2 Identify that scientific theories can change. *Date Adopted or Revised*: 02/08	Recognize that scientific theories can change. *Date Adopted or Revised*: 02/08	SC.8.N.3.Pa.2 Observe and recognize a cause-effect relationship related to a science topic. *Date Adopted or Revised*: 02/08

Big Idea 4: Science and Society

As tomorrows citizens, students should be able to identify issues about which society could provide input, formulate scientifically investigable questions about those issues, construct investigations of their questions, collect and evaluate data from their investigations, and develop scientific recommendations based upon their findings.

BENCHMARK CODE	BENCHMARK
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	*Supported*	*Participatory*
SC.8.N.4.In.1 Identify ways that science processes can be used to make informed decisions in the community, state, and nation. *Date Adopted or Revised*: 02/08	SC.8.N.4.Su.1 Recognize that science processes can be used to help people in the community and state make wise choices. *Date Adopted or Revised*: 02/08	SC.8.N.4.Pa.1 Recognize a way science is used in the community. *Date Adopted or Revised*: 02/08

Big Idea 5: Earth in Space and Time

The origin and eventual fate of the Universe still remains one of the greatest questions in science. Gravity and energy influence the formation of galaxies, including our own Milky Way Galaxy, stars, the planetary systems, and Earth. Humankind's need to explore continues to lead to the development of knowledge and understanding of the nature of the Universe.

BENCHMARK CODE	BENCHMARK
SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and,

	MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.11	Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.12	Summarize the effects of space exploration on the economy and culture of Florida. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars. *Cognitive Complexity:* Level 1: Recall
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics; and MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 1: Recall
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.E.5.9	Explain the impact of objects in space on each other including: 1. the Sun on the Earth including seasons and gravitational attraction 2. the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.8.E.5.In.1 Compare the distances of the Moon, the Sun, and other stars from the Earth. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.1 Identify the relative positions of the Sun and the Moon from Earth. *Date Adopted or Revised*: 02/08	SC.8.E.5.Pa.1 Recognize that the Moon is closer to Earth than the Sun. *Date Adopted or Revised*: 02/08

	SC.8.E.5.In.10 Recognize that the Moon's revolution around the Earth takes about thirty days. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.2 Recognize that the Solar System is part of a galaxy. *Date Adopted or Revised*: 02/08	SC.8.E.5.Pa.2 Recognize the Sun and stars as objects in space. *Date Adopted or Revised*: 02/08
	SC.8.E.5.In.11 Identify technology used by scientists to locate, view, and study objects in space. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.3 Identify that there are planets and moons in the Solar System. *Date Adopted or Revised*: 02/08	SC.8.E.5.Pa.3 Recognize the four seasons. *Date Adopted or Revised*: 02/08
	SC.8.E.5.In.12 Recognize that technology allows special cameras and satellites to take pictures of objects in space. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.4 Recognize that the Sun is the closest star to Earth and appears large and bright. *Date Adopted or Revised*: 02/08	SC.8.E.5.Pa.4 Recognize a technology tool created for space exploration and adapted for personal use, such as computers, telescopes, or satellites. *Date Adopted or Revised*: 02/08
	SC.8.E.5.In.13 Identify effects of space research and exploration on Florida's economy. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.5 Recognize that the Sun is made of gases that are on fire. *Date Adopted or Revised*: 02/08	
	SC.8.E.5.In.2 Identify that the Earth and Sun are a part of the Milky Way galaxy. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.6 Recognize that conditions on other planets in the Solar System are different than those on Earth. *Date Adopted or Revised*: 02/08	
	SC.8.E.5.In.3 Identify Earth's position in the Solar System, and its size relative to the Moon and Sun. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.7 Recognize that Earth revolves around the Sun creating the four seasons. *Date Adopted or Revised*: 02/08	
	SC.8.E.5.In.4 Identify gravity as the force that holds orbiting planets in place in the Solar System. *Date Adopted or Revised*: 02/08	SC.8.E.5.Su.8 Recognize that scientists use special tools to examine objects in space. *Date Adopted or Revised*: 02/08	
	SC.8.E.5.In.5 Identify	SC.8.E.5.Su.9 Identify an effect space exploration has had on Florida's economy.	

differences in physical properties of stars, such as brightness, color, and size. *Date Adopted or Revised*: 02/08 SC.8.E.5.In.6 Describe the Sun as a mass of hot, burning gases that produces very high temperatures. *Date Adopted or Revised*: 02/08 SC.8.E.5.In.7 Compare conditions on other planets in the Solar System to those on Earth, such as gravity, temperature, and atmosphere. *Date Adopted or Revised*: 02/08 SC.8.E.5.In.8 Identify that long ago people thought the Sun traveled around Earth (geocentric model) until scientists proved otherwise. *Date Adopted or Revised*: 02/08 SC.8.E.5.In.9 Recognize that the four seasons are related to Earth's position as it travels (revolves) around the Sun. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08	

Big Idea 8: Properties of Matter

A. All objects and substances in the world are made of matter. Matter has two fundamental properties: matter takes up space and matter has mass which gives it inertia.

B. Objects and substances can be classified by their physical and chemical properties. Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.

The concepts of mass and weight are complicated and potentially confusing to elementary students. Hence, the more familiar term of "weight" is recommended for use to stand for both mass and weight in

	grades K-5. By grades 6-8, students are expected to understand the distinction between mass and weight, and use them appropriately. **Clarification for grades K-2: The use of the more familiar term 'weight' instead of the term "mass" is recommended for grades K-2.** **Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.**
BENCHMARK CODE	**BENCHMARK**
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases. *Remarks/Examples*: Recognize that matter is composed of discrete units called atoms and atoms are composed of sub-atomic particles called protons, neutrons, and electrons. Solid is the state in which intermolecular attractions keep the molecules in fixed spatial relationships. Liquid is the state in which intermolecular attractions keep molecules in proximity, but not in fixed relationships. Gas is the state in which molecules are comparatively separated and intermolecular attractions have relatively little effect on their respective motions. Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter. *Remarks/Examples*: Demonstrate with atomic models how atoms can combine in many ways. Explain why there are many, but limited, combinations. Use models to demonstrate the conservation of mass in modeled chemical reactions. *Cognitive Complexity:* Level 1: Recall
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties. *Cognitive Complexity:* Level 1: Recall

SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons). *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 1: Recall
SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances. *Remarks/Examples*: Pure substances include elements and compounds. Mixtures are classified as heterogeneous (mixtures) or homogeneous (solutions). Methods for separating mixtures include: distillation, chromatography, reverse osmosis, diffusion through semi-permeable membranes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.8.P.8.In.1 Compare properties of solids, liquids, and gases. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.1 Recognize three states of matter, including solids, liquids, and gases. *Date Adopted or Revised*: 02/08	SC.8.P.8.Pa.1 Recognize examples of the gaseous state of matter, such as steam or smoke. *Date Adopted or Revised*: 02/08
SC.8.P.8.In.2 Recognize that the weight of an object is related to the pull of gravity. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.2 Compare the weight of different sized objects. *Date Adopted or Revised*: 02/08	SC.8.P.8.Pa.2 Recognize the heavier of two objects. *Date Adopted or Revised*: 02/08
SC.8.P.8.In.3 Observe and compare the density of various materials. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.3 Recognize that smaller objects can weigh more than bigger objects because of density. *Date Adopted or Revised*: 02/08	SC.8.P.8.Pa.3 Recognize substances by physical properties, such as weight (heavy and light), size (big and small), and temperature (hot and cold). *Date Adopted or Revised*: 02/08
SC.8.P.8.In.4 Observe and compare substances based on their physical properties, such as thermal and electrical conductivity, solubility, or magnetic properties. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.4 Observe and compare substances by physical properties, such as weight, size, boiling and melting points, and magnetic properties. *Date Adopted or Revised*: 02/08	SC.8.P.8.Pa.4 Recognize common acids as safe or harmful. *Date Adopted or Revised*: 02/08
SC.8.P.8.In.5 Recognize that common elements combine in different ways to make up all living and nonliving things. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.5 Recognize that parts of matter can be separated in tiny particles. *Date Adopted or Revised*: 02/08	SC.8.P.8.Pa.5 Separate a mixture into its parts. *Date Adopted or Revised*: 02/08

SC.8.P.8.In.6 Identify common elements, such as oxygen, iron, and carbon. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.6 Recognize examples of common elements, such as carbon or iron. *Date Adopted or Revised*: 02/08	
SC.8.P.8.In.7 Identify that matter is made of small particles called atoms. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.7 Recognize common acids, such as vinegar, and bases, such as ammonia, and their hazardous properties. *Date Adopted or Revised*: 02/08	
SC.8.P.8.In.8 Identify common acids, such as lemon juice and vinegar, and bases, such as baking soda and ammonia, and their hazardous properties. *Date Adopted or Revised*: 02/08	SC.8.P.8.Su.8 Recognize examples of pure substances and mixtures. *Date Adopted or Revised*: 02/08	
SC.8.P.8.In.9 Identify common materials as pure substances or mixtures. *Date Adopted or Revised*: 02/08		

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. When matter is changed physically, generally no changes occur in the structure of the atoms or molecules composing the matter.

C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

Clarification for grades K-5: The target understanding for students in the elementary grades should focus on Big Ideas A and B.

Clarification for Grades 6-8: The target understanding for students in the middle grades should begin to transition the focus to: C. When matter changes chemically, a rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.

	Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.8.P.9.2	Differentiate between physical changes and chemical changes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.8.P.9.In.1 Observe and classify changes in matter as physical (reversible) or chemical (irreversible). *Date Adopted or Revised*: 02/08 SC.8.P.9.In.2 Observe and identify how temperature influences chemical changes. *Date Adopted or Revised*: 02/08	SC.8.P.9.Su.1 Observe and recognize physical changes in matter as able to change back (reversible), such as water to ice, and chemical changes of matter as unable to change back (irreversible), such as cake to cake batter. *Date Adopted or Revised*: 02/08 SC.8.P.9.Su.2 Observe and recognize changes caused by heat on substances. *Date Adopted or Revised*: 02/08	SC.8.P.9.Pa.1 Recognize an example of a physical change, such as ice changing to water. *Date Adopted or Revised*: 02/08 SC.8.P.9.Pa.2 Recognize that heat influences changes (chemical) in matter, such as cooking. *Date Adopted or Revised*: 02/08 SC.8.P.9.Pa.2 Recognize that heat influences changes (chemical) in matter, such as cooking. *Date Adopted or Revised*: 02/08

GRADE: 912

Body of Knowledge: LIFE SCIENCE

Standard 14: Organization and Development of Living Organisms

A. Cells have characteristic structures and functions that make them distinctive.
B. Processes in a cell can be classified broadly as growth, maintenance, reproduction, and homeostasis.
C. Life can be organized in a functional and structural hierarchy ranging from cells to the biosphere.
D. Most multicellular organisms are composed of organ systems whose structures reflect their particular function.

BENCHMARK CODE	BENCHMARK
SC.912.L.14.1	Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science. *Remarks/Examples*: Describe how continuous investigations and/or new scientific information influenced

	the development of the cell theory. Recognize the contributions of scientists in the development of the cell theory. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.10	Discuss the relationship between the evolution of land plants and their anatomy. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.14.11	Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.12	Describe the anatomy and histology of bone tissue. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.13	Distinguish between bones of the axial skeleton and the appendicular skeleton. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.14	Identify the major bones of the axial and appendicular skeleton. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.15	Identify major markings (such as foramina, fossae, tubercles, etc.) on a skeleton. Explain why these markings are important. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.16	Describe the anatomy and histology, including ultrastructure, of muscle tissue. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.17	List the steps involved in the sliding filament of muscle contraction. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.18	Describe signal transmission across a myoneural junction. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.19	Explain the physiology of skeletal muscle. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.2	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.20	Identify the major muscles of the human on a model or diagram. *Remarks/Examples*: Refer to MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.21	Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.22	Describe the physiology of nerve conduction, including the generator potential, action potential, and the synapse. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.23	Identify the parts of a reflex arc. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.24	Identify the general parts of a synapse and describe the physiology of signal transmission across a synapse. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.25	

	Identify the major parts of a cross section through the spinal cord. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.26	Identify the major parts of the brain on diagrams or models. *Remarks/Examples*: Annually Assessed on Biology EOC. Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.27	Identify the functions of the major parts of the brain, including the meninges, medulla, pons, midbrain, hypothalamus, thalamus, cerebellum and cerebrum. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.28	Identify the major functions of the spinal cord. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.29	Define the terms endocrine and exocrine. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.3	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells. *Remarks/Examples*: Annually Assessed on Biology EOC. Also assesses SC.912.L.14.2. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.30	Compare endocrine and neural controls of physiology. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.31	Describe the physiology of hormones including the different types and the mechanisms of their action. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.32	Describe the anatomy and physiology of the endocrine system. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.33	Describe the basic anatomy and physiology of the reproductive system. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.34	Describe the composition and physiology of blood, including that of the plasma and the formed elements. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.35	Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.36	Describe the factors affecting blood flow through the cardiovascular system. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.37	Explain the components of an electrocardiogram. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.38	Describe normal heart sounds and what they mean. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.39	

	Describe hypertension and some of the factors that produce it. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.4	Compare and contrast structure and function of various types of microscopes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.40	Describe the histology of the major arteries and veins of systemic, pulmonary, hepatic portal, and coronary circulation. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.41	Describe fetal circulation and changes that occur to the circulatory system at birth. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.42	Describe the anatomy and the physiology of the lymph system. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.43	Describe the histology of the respiratory system. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.44	Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport and the mechanisms that control the rate of ventilation. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.45	Describe the histology of the alimentary canal and its associated accessory organs. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.46	Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption and the neural and hormonal mechanisms of control. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.47	Describe the physiology of urine formation by the kidney. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.48	Describe the anatomy, histology, and physiology of the ureters, the urinary bladder and the urethra. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.49	Identify the major functions associated with the sympathetic and parasympathetic nervous systems. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.5	Explain the evidence supporting the scientific theory of the origin of eukaryotic cells (endosymbiosis). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.14.50	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.51	Describe the function of the vertebrate integumentary system. *Cognitive Complexity:* Level 1: Recall
SC.912.L.14.52	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. *Remarks/Examples*: Annually Assessed on Biology EOC. Also assesses SC.912.L.14.6; HE.912.C.1.7; and HE.912.C.1.5. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.53	

	Discuss basic classification and characteristics of plants. Identify bryophytes, pteridophytes, gymnosperms, and angiosperms. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.6	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.14.7	Relate the structure of each of the major plant organs and tissues to physiological processes. *Remarks/Examples*: Annually Assessed on Biology EOC. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.8	Explain alternation of generations in plants. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.14.9	Relate the major structure of fungi to their functions. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.L.14.In.1 Identify that all living things are made of cells and cells function in similar ways (cell theory). *Date Adopted or Revised*: 02/08	SC.912.L.14.Su.1 Identify that the cell is the smallest basic unit of life and that all living things are made of cells. *Date Adopted or Revised*: 02/08	SC.912.L.14.Pa.1 Match parts of common living things to their functions. *Date Adopted or Revised*: 02/08
SC.912.L.14.In.2 Identify the major parts of plant and animal cells, including the cell membrane, nucleus, and cytoplasm, and their basic functions. *Date Adopted or Revised*: 02/08	SC.912.L.14.Su.2 Recognize that cells have different parts and each has a function. *Date Adopted or Revised*: 02/08	SC.912.L.14.Pa.2 Recognize that small parts of a living thing can work together. *Date Adopted or Revised*: 02/08
SC.912.L.14.In.3 Identify that parts of cells (organelles) can combine to work together. *Date Adopted or Revised*: 02/08	SC.912.L.14.Su.3 Recognize common human health issues. *Date Adopted or Revised*: 02/08	SC.912.L.14.Pa.3 Identify ways to prevent infection from bacteria and viruses, such as hand washing and first aid. *Date Adopted or Revised*: 02/08
SC.912.L.14.In.4 Describe common human health issues. *Date Adopted or Revised*: 02/08	SC.912.L.14.Su.4 Relate parts of plants, such as leaf, stem, root, seed, and flower, to the functions of food production, support, water transport, and reproduction. *Date Adopted or Revised*: 02/08	SC.912.L.14.Pa.4 Recognize major plant parts, such as root, stem, leaf, and flower. *Date Adopted or Revised*: 02/08
SC.912.L.14.In.5 Describe the general processes of food production, support, water transport, and reproduction in		

	the major parts of plants. *Date Adopted or Revised*: 02/08		

Standard 15: Diversity and Evolution of Living Organisms

A. The scientific theory of evolution is the fundamental concept underlying all of biology.
B. The scientific theory of evolution is supported by multiple forms of scientific evidence.
C. Organisms are classified based on their evolutionary history.
D. Natural selection is a primary mechanism leading to evolutionary change.

BENCHMARK CODE	BENCHMARK
SC.912.L.15.1	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. *Remarks/Examples*: Annually Assessed on Biology EOC. Also assesses SC.912.L.15.10; SC.912.N.1.3; SC.912.N.1.4; SC.912.N.1.6; SC.912.N.2.1; SC.912.N.3.1; and SC.912.N.3.4. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.10	Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.11	Discuss specific fossil hominids and what they show about human evolution. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.12	List the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature. Use the Hardy-Weinberg equation to predict genotypes in a population from observed phenotypes. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.13	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.L.15.14, SC.912.L.15.15, and SC.912.N.1.3. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.14	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.15	Describe how mutation and genetic recombination increase genetic variation. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.2	Discuss the use of molecular clocks to estimate how long ago various groups of organisms diverged evolutionarily from one another. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

SC.912.L.15.3	Describe how biological diversity is increased by the origin of new species and how it is decreased by the natural process of extinction. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.4	Describe how and why organisms are hierarchically classified and based on evolutionary relationships. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.5	Explain the reasons for changes in how organisms are classified. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms. *Remarks/Examples*: Annually Assessed on Biology EOC. Also assesses SC.912.L.15.4; SC.912.L.15.5; SC.912.N.1.3; and SC.912.N.1.6. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.7	Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.8	Describe the scientific explanations of the origin of life on Earth. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.N.1.3, SC.912.N.1.4, and SC.912.N.2.1. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.15.9	Explain the role of reproductive isolation in the process of speciation. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.L.15.In.1 Identify that prehistoric plants and animals changed over time (evolved) or became extinct. *Date Adopted or Revised*: 02/08	SC.912.L.15.Su.1 Match fossils to related species. *Date Adopted or Revised*: 02/08	SC.912.L.15.Pa.1 Recognize that plants and animals change as they age. *Date Adopted or Revised*: 02/08
SC.912.L.15.In.1 Identify that prehistoric plants and animals changed over time (evolved) or became extinct. *Date Adopted or Revised*: 02/08	SC.912.L.15.Su.2 Match organisms to the animal, plant, and fungus kingdoms. *Date Adopted or Revised*: 02/08	SC.912.L.15.Pa.2 Sort common living things into plant and animal kingdoms. *Date Adopted or Revised*: 02/08
SC.912.L.15.In.2 Classify living organisms into their kingdoms. *Date Adopted or Revised*: 02/08	SC.912.L.15.Su.3 Recognize that there are scientific explanations of how life began. *Date Adopted or Revised*: 02/08	SC.912.L.15.Pa.3 Recognize that animals produce offspring. *Date Adopted or Revised*: 02/08
SC.912.L.15.In.3	SC.912.L.15.Su.4 Recognize that humans have changed in	SC.912.L.15.Pa.4 Recognize

	Identify that there are scientific explanations of the origin of life on Earth. *Date Adopted or Revised*: 02/08 SC.912.L.15.In.4 Recognize ways that the appearance of humans, their language, and their tools have changed over time. *Date Adopted or Revised*: 02/08 SC.912.L.15.In.5 Recognize that some living things produce very large numbers of offspring to ensure that enough survive to continue the species (a condition for natural selection). *Date Adopted or Revised*: 02/08 SC.912.L.15.In.6 Recognize that changes in the genes of a species can affect the characteristics of their offspring. *Date Adopted or Revised*: 02/08	appearance over a very long period of time. *Date Adopted or Revised*: 02/08 SC.912.L.15.Su.5 Recognize that some living things, such as fish and turtles, produce very large numbers of offspring because most will die as a result of dangers in the environment before they grow up. *Date Adopted or Revised*: 02/08 SC.912.L.15.Su.6 Recognize that characteristics of the offspring of living things are sometimes different from their parents. *Date Adopted or Revised*: 02/08	differences in physical characteristics within a species of animals, such as different types of dogs. *Date Adopted or Revised*: 02/08

Standard 16: Heredity and Reproduction

A. DNA stores and transmits genetic information. Genes are sets of instructions encoded in the structure of DNA.
B. Genetic information is passed from generation to generation by DNA in all organisms and accounts for similarities in related individuals.
C. Manipulation of DNA in organisms has led to commercial production of biological molecules on a large scale and genetically modified organisms.
D. Reproduction is characteristic of living things and is essential for the survival of species.

BENCHMARK CODE	BENCHMARK
SC.912.L.16.1	Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.L.16.2. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.10	

	Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues. *Remarks/Examples*: Annually assessed on Biology EOC. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.11	Discuss the technologies associated with forensic medicine and DNA identification, including restriction fragment length polymorphism (RFLP) analysis. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.12	Describe how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, polymerase chain reaction, ligation, and transformation) is used to construct recombinant DNA molecules (DNA cloning). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.16.13	Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy. *Remarks/Examples*: Annually assessed on Biology EOC. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.16.14	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.16.15	Compare and contrast binary fission and mitotic cell division. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.16.16	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.16.17	Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.L.16.8; SC.912.L.16.14; SC.912.L.16.16. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.2	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.3	Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information. *Remarks/Examples*: Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health. Annually assessed on Biology EOC. Also assesses SC.912.L.16.4; SC.912.L.16.5; SC.912.L.16.9. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

SC.912.L.16.4	Explain how mutations in the DNA sequence may or may not result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.5	Explain the basic processes of transcription and translation, and how they result in the expression of genes. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.6	Discuss the mechanisms for regulation of gene expression in prokaryotes and eukaryotes at transcription and translation level. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.7	Describe how viruses and bacteria transfer genetic material between cells and the role of this process in biotechnology. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.8	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer. *Remarks/Examples*: Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.16.9	Explain how and why the genetic code is universal and is common to almost all organisms. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.L.16.In.1 Identify that genes are sets of instructions that determine which characteristics are passed from parent to offspring. *Date Adopted or Revised*: 02/08	SC.912.L.16.Su.1 Recognize characteristics (traits) that offspring inherit from parents. *Date Adopted or Revised*: 02/08	SC.912.L.16.Pa.1 Recognize similar characteristics (traits) between a child and parents, such as hair, eye, and skin color, or height. *Date Adopted or Revised*: 02/08
SC.912.L.16.In.2 Identify traits that plants and animals, including humans, inherit. *Date Adopted or Revised*: 02/08	SC.912.L.16.Su.2 Recognize that all organisms have a substance called DNA with unique information. *Date Adopted or Revised*: 02/08	SC.912.L.16.Pa.2 Recognize similarities in characteristics of plants and animals of the same type (species). *Date Adopted or Revised*: 02/08
SC.912.L.16.In.3 Recognize that a substance called DNA carries genetic information in all organisms, and changes (mutations) in DNA can be helpful or harmful to an organism. *Date Adopted or Revised*: 02/08	SC.912.L.16.Su.3 Recognize that cancer may result when cells change or grow too fast. *Date Adopted or Revised*: 02/08	SC.912.L.16.Pa.3 Recognize that illness can result when parts of our bodies are not working properly. *Date Adopted or Revised*: 02/08
SC.912.L.16.In.4 Identify that cancer can result when cells	SC.912.L.16.Su.4 Recognize that new medicines and foods can be developed by science (biotechnology). *Date Adopted or Revised*: 02/08	SC.912.L.16.Pa.4 Recognize a food. *Date Adopted or Revised*: 02/08

	change or grow uncontrollably. *Date Adopted or Revised*: 02/08 SC.912.L.16.In.5 Identify ways that biotechnology has impacted society and the environment, such as the development of new medicines and farming techniques. *Date Adopted or Revised*: 02/08 SC.912.L.16.In.6 Describe the basic process of human development from fertilization to birth. *Date Adopted or Revised*: 02/08 SC.912.L.16.In.7 Recognize that cells reproduce by dividing to produce new cells that are identical (mitosis) or new cells that are different (meiosis). *Date Adopted or Revised*: 02/08	SC.912.L.16.Su.5 Recognize major phases in the process of human development from fertilization to birth. *Date Adopted or Revised*: 02/08 SC.912.L.16.Su.6 Recognize that cells reproduce by dividing. *Date Adopted or Revised*: 02/08	SC.912.L.16.Pa.5 Recognize the sequence of human development from baby to child to adult. *Date Adopted or Revised*: 02/08 SC.912.L.16.Pa.6 Recognize that living things produce offspring (reproduce). *Date Adopted or Revised*: 02/08

Standard 17: Interdependence

A. The distribution and abundance of organisms is determined by the interactions between organisms, and between organisms and the non-living environment.
B. Energy and nutrients move within and between biotic and abiotic components of ecosystems via physical, chemical and biological processes.
C. Human activities and natural events can have profound effects on populations, biodiversity and ecosystem processes.

BENCHMARK CODE	BENCHMARK
SC.912.L.17.1	Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution. *Remarks/Examples*: Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.10	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.11	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.

	Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.12	Discuss the political, social, and environmental consequences of sustainable use of land. *Remarks/Examples*: Integrate HE.912.C.1.3. Evaluate how environment and personal health are interrelated. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.13	Discuss the need for adequate monitoring of environmental parameters when making policy decisions. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.14	Assess the need for adequate waste management strategies. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.15	Discuss the effects of technology on environmental quality. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.16	Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution. *Remarks/Examples*: Integrate HE.912.C.1.3. Evaluate how environment and personal health are interrelated; and, HE.912.C.1.5. Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.17	Assess the effectiveness of innovative methods of protecting the environment. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.18	Describe how human population size and resource use relate to environmental quality. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.19	Describe how different natural resources are produced and how their rates of use and renewal limit availability. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.2	Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.20	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.L.17.11, SC.912.L.17.13, SC.912.N.1.3. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.3	Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.4	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.

	Cognitive Complexity: Level 2: Basic Application of Skills & Concepts
SC.912.L.17.5	Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.L.17.2; SC.912.L.17.4; SC.912.L.17.8; SC.912.N.1.4. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.6	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.7	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.17.8	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.9	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.E.7.1. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.L.17.In.1 Recognize that living things in oceans and fresh water are affected by the location, availability of light, depth of the water, and temperature. *Date Adopted or Revised*: 02/08	SC.912.L.17.Su.1 Recognize that living things in bodies of water are affected by the location and depth of the water. *Date Adopted or Revised*: 02/08	SC.912.L.17.Pa.1 Recognize common living things in bodies of water. *Date Adopted or Revised*: 02/08
SC.912.L.17.In.2 Identify that living things in an ecosystem are affected by changes in the environment, such as changes to the food supply, climate change, or the introduction of predators. *Date Adopted or Revised*: 02/08	SC.912.L.17.Su.2 Recognize how animals and plants in an ecosystem may be affected by changes to the food supply or climate. *Date Adopted or Revised*: 02/08	SC.912.L.17.Pa.2 Recognize what happens to plants and animals when they don't get enough food or water. *Date Adopted or Revised*: 02/08
SC.912.L.17.In.3 Identify relationships among organisms, including helping each other (mutualism); obtaining food (predation); benefiting at the	SC.912.L.17.Su.3 Recognize that organisms can interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at expense of the other (parasitism). *Date Adopted or Revised*:	SC.912.L.17.Pa.3 Recognize examples of mutual relationships between people and other living things. *Date Adopted or Revised*: 02/08 SC.912.L.17.Pa.4 Recognize

expense of the other (parasitism); and competing with each other for food, space, or shelter (competition). *Date Adopted or Revised*: 02/08 SC.912.L.17.In.4 Recognize possible changes in an ecosystem (biodiversity) that can result from natural catastrophic events, changes in climate, and human activity. *Date Adopted or Revised*: 02/08 SC.912.L.17.In.5 Identify the components of a food web, including sunlight, producers, consumers, and decomposers, and trace the flow of energy from the Sun. *Date Adopted or Revised*: 02/08 SC.912.L.17.In.6 Identify the contributions of non-living elements, such as carbon and oxygen, to maintaining life in an ecosystem. *Date Adopted or Revised*: 02/08 SC.912.L.17.In.7 Identify types of renewable and nonrenewable natural resources and explain the need for conservation. *Date Adopted or Revised*: 02/08 SC.912.L.17.In.8 Describe ways the lifestyles of individuals and groups can help or hurt the environment. *Date Adopted or Revised*: 02/08	02/08 SC.912.L.17.Su.4 Recognize changes in living things (biodiversity) that can result from natural catastrophic events and human activity. *Date Adopted or Revised*: 02/08 SC.912.L.17.Su.5 Identify producers, consumers, and decomposers in a simple food chain. *Date Adopted or Revised*: 02/08 SC.912.L.17.Su.6 Identify that clean water and air are important for supporting life in an ecosystem. *Date Adopted or Revised*: 02/08 SC.912.L.17.Su.7 Identify a way to conserve a familiar, nonrenewable, natural resource. *Date Adopted or Revised*: 02/08 SC.912.L.17.Su.8 Identify ways individuals can help the environment. *Date Adopted or Revised*: 02/08	actions that are harmful to living things. *Date Adopted or Revised*: 02/08 SC.912.L.17.Pa.5 Recognize that animals (consumers) eat animals and plants for food. *Date Adopted or Revised*: 02/08 SC.912.L.17.Pa.6 Recognize the importance of clean water for living things. *Date Adopted or Revised*: 02/08 SC.912.L.17.Pa.7 Recognize a way to help the local environment. *Date Adopted or Revised*: 02/08

Standard 18: Matter and Energy Transformations

A. All living things are composed of four basic categories of macromolecules and share the same basic needs for life.

	B. Living organisms acquire the energy they need for life processes through various metabolic pathways (primarily photosynthesis and cellular respiration). C. Chemical reactions in living things follow basic rules of chemistry and are usually regulated by enzymes. D. The unique chemical properties of carbon and water make life on Earth possible.
BENCHMARK CODE	**BENCHMARK**
SC.912.L.18.1	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. *Remarks/Examples*: Annually assessed on Biology EOC. Also assesses SC.912.L.18.11. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.10	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.18.11	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.12	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. *Remarks/Examples*: Annually assessed on Biology EOC. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.2	Describe the important structural characteristics of monosaccharides, disaccharides, and polysaccharides and explain the functions of carbohydrates in living things. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.3	Describe the structures of fatty acids, triglycerides, phospholipids, and steroids. Explain the functions of lipids in living organisms. Identify some reactions that fatty acids undergo. Relate the structure and function of cell membranes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.4	Describe the structures of proteins and amino acids. Explain the functions of proteins in living organisms. Identify some reactions that amino acids undergo. Relate the structure and function of enzymes. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.5	Discuss the use of chemiosmotic gradients for ATP production in chloroplasts and mitochondria. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.6	Discuss the role of anaerobic respiration in living things and in human society. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.7	Identify the reactants, products, and basic functions of photosynthesis. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.8	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.L.18.9	Explain the interrelated nature of photosynthesis and cellular respiration.

Remarks/Examples:

Annually assessed on Biology EOC. Also assesses SC.912.L.18.7; SC.912.L.18.8; SC.912.L.18.10.

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.L.18.In.1 Identify that carbohydrates, fats, proteins, and nucleic acids (macromolecules) are important for human organisms. *Date Adopted or Revised*: 02/08	SC.912.L.18.Su.1 Recognize that humans use proteins, carbohydrates, and fats. *Date Adopted or Revised*: 02/08	SC.912.L.18.Pa.1 Recognize that humans need different kinds of food. *Date Adopted or Revised*: 02/08
SC.912.L.18.In.2 Identify the products and function of photosynthesis. *Date Adopted or Revised*: 02/08	SC.912.L.18.Su.2 Recognize that the function of photosynthesis is to produce food for plants. *Date Adopted or Revised*: 02/08	SC.912.L.18.Pa.2 Recognize that plants need water, light, and air to grow. *Date Adopted or Revised*: 02/08
SC.912.L.18.In.3 Identify that cells release energy from food so the organism can use it (cellular respiration). *Date Adopted or Revised*: 02/08	SC.912.L.18.Su.3 Recognize that cells get energy from food. *Date Adopted or Revised*: 02/08	SC.912.L.18.Pa.3 Identify that food is a source of energy. *Date Adopted or Revised*: 02/08
SC.912.L.18.In.4 Recognize that plants give off oxygen that is used by animals and animals give off carbon dioxide that is used by plants. *Date Adopted or Revised*: 02/08	SC.912.L.18.Su.4 Recognize that people and animals breathe in the oxygen that plants give off. *Date Adopted or Revised*: 02/08	SC.912.L.18.Pa.4 Recognize that saliva helps people eat when they chew. *Date Adopted or Revised*: 02/08
SC.912.L.18.In.5 Recognize that energy is stored in cells. *Date Adopted or Revised*: 02/08	SC.912.L.18.Su.5 Recognize that food is broken down in digestion (use of enzymes). *Date Adopted or Revised*: 02/08	SC.912.L.18.Pa.5 Recognize that plants and animals use water to live. *Date Adopted or Revised*: 02/08
SC.912.L.18.In.6 Recognize that enzymes break down food molecules during the digestive process. *Date Adopted or Revised*: 02/08	SC.912.L.18.Su.6 Identify the important role of water in sustaining life of plants and animals. *Date Adopted or Revised*: 02/08	
SC.912.L.18.In.7 Identify that special properties of water, such		

	as the ability to moderate temperature and dissolve substances, help to sustain living things on Earth. *Date Adopted or Revised*: 02/08		

Body of Knowledge: PHYSICAL SCIENCE

Standard 10: Energy

A. Energy is involved in all physical and chemical processes. It is conserved, and can be transformed from one form to another and into work. At the atomic and nuclear levels energy is not continuous but exists in discrete amounts. Energy and mass are related through Einstein's equation $E=mc^2$.
B. The properties of atomic nuclei are responsible for energy-related phenomena such as radioactivity, fission and fusion.
C. Changes in entropy and energy that accompany chemical reactions influence reaction paths. Chemical reactions result in the release or absorption of energy.

D. The theory of electromagnetism explains that electricity and magnetism are closely related. Electric charges are the source of electric fields. Moving charges generate magnetic fields.

E. Waves are the propagation of a disturbance. They transport energy and momentum but do not transport matter.

BENCHMARK CODE	BENCHMARK
SC.912.P.10.1	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. *Remarks/Examples*: Differentiate between kinetic and potential energy. Recognize that energy cannot be created or destroyed, only transformed. Identify examples of transformation of energy: Heat to light in incandescent electric light bulbs; Light to heat in laser drills; Electrical to sound in radios; Sound to electrical in microphones; Electrical to chemical in battery rechargers; Chemical to electrical in dry cells; Mechanical to electrical in generators [power plants]; Nuclear to heat in nuclear reactors; Gravitational potential energy of a falling object is converted to kinetic energy then to heat and sound energy when the object hits the ground. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.10	Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear). *Remarks/Examples*: Recognize and discuss the effect of each force on the structure of matter and the evidence for it. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.11	Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues.

	Remarks/Examples: Identify the three main types of radioactive decay (alpha, beta, and gamma) and compare their properties (composition, mass, charge, and penetrating power). Explain the concept of half-life for an isotope (e.g. C-14 is used to determine the age of objects) and calculate the amount of a radioactive substance remaining after an integral number of half-lives have passed. Recognize that the energy release per gram of material is much larger in nuclear fusion or fission reactions than in chemical reactions due to the large amount of energy related to small amounts of mass by equation E=mc^2. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.12	Differentiate between chemical and nuclear reactions. *Remarks/Examples*: Describe how chemical reactions involve the rearranging of atoms to form new substances, while nuclear reactions involve the change of atomic nuclei into entirely new atoms. Identify real-world examples where chemical and nuclear reactions occur every day. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.13	Relate the configuration of static charges to the electric field, electric force, electric potential, and electric potential energy. *Remarks/Examples*: Using Coulomb's law, determine the force on a stationary charge due to other stationary charges, and explain that this force is many times greater than the gravitational force. Recognize the relationship between forces and their associated potential energies and that the electric field is directly related to the rate of change of the electric potential from point to point in space. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.14	Differentiate among conductors, semiconductors, and insulators. *Remarks/Examples*: Describe band structure, valence electrons, and how the charges flow or rearrange themselves between conductors and insulators. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.15	Investigate and explain the relationships among current, voltage, resistance, and power. *Remarks/Examples*: Use Ohm's and Kirchhoff's laws to explain the relationships among circuits. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.16	Explain the relationship between moving charges and magnetic fields, as well as changing magnetic fields and electric fields, and their application to modern technologies. *Remarks/Examples*: Explain that moving electric charges produce magnetic forces and moving magnets produce electric forces. Recognize the Lorentz force is the force on a point charge due to electromagnetic fields and occurs in many devices, including mass spectrometers.

	Cognitive Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.17	Explore the theory of electromagnetism by explaining electromagnetic waves in terms of oscillating electric and magnetic fields. *Remarks/Examples*: Recognize that an oscillating charge creates an oscillating electric field which gives rise to electromagnetic waves. Recognize a changing magnetic field makes an electric field, and a changing electric field makes a magnetic field, and these phenomena are expressed mathematically through the Faraday law and the Ampere-Maxwell law. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.18	Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications. *Remarks/Examples*: Describe the electromagnetic spectrum (i.e., radio waves, microwaves, infrared, visible light, ultraviolet, X-rays and gamma rays) in terms of frequency, wavelength and energy. Solve problems involving wavelength, frequency, and energy. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.19	Explain that all objects emit and absorb electromagnetic radiation and distinguish between objects that are blackbody radiators and those that are not. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.2	Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity. *Remarks/Examples*: Use calorimetry to illustrate conservation of energy. Differentiate between the different types of systems and solve problems involving conservation of energy in simple systems (Physics).Explain how conservation of energy is important in chemical reactions with bond formation and bond breaking (Chemistry). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.20	Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another. *Remarks/Examples*: Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period, reflection and refraction) and explain the relationships among them. Recognize that the source of all waves is a vibration and waves carry energy from one place to another. Distinguish between transverse and longitudinal waves in mechanical media, such as springs and ropes, and on the earth (seismic waves). Describe sound as a longitudinal wave whose speed depends on the properties of the medium in which it propagates. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.21	Qualitatively describe the shift in frequency in sound or electromagnetic waves due to the relative motion of a source or a receiver. *Remarks/Examples*:

	Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler effect). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.22	Construct ray diagrams and use thin lens and mirror equations to locate the images formed by lenses and mirrors. *Remarks/Examples*: Use examples such as converging/diverging lenses and convex/concave mirrors. Use a ray diagram to determine the approximate location and size of the image, and the mirror equation to obtain numerical information about image distance and image size. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.3	Compare and contrast work and power qualitatively and quantitatively. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.4	Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.5	Relate temperature to the average molecular kinetic energy. *Remarks/Examples*: Recognize that the internal energy of an object includes the energy of random motion of the object's atoms and molecules, often referred to as thermal energy. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.6	Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum. *Remarks/Examples*: Construct and interpret potential energy diagrams for endothermic and exothermic chemical reactions, and for rising or falling objects. Describe the transformation of energy as a pendulum swings. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.7	Distinguish between endothermic and exothermic chemical processes. *Remarks/Examples*: Classify chemical reactions and phase changes as exothermic (release thermal energy) or endothermic (absorb thermal energy). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.10.8	Explain entropy's role in determining the efficiency of processes that convert energy to work. *Remarks/Examples*: Recognize that there is a natural tendency for systems to move in a direction of disorder or randomness (entropy). Describe entropy as a quantity that measures the order or disorder of a system and that this quantity is larger for a more disordered system. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.9	Describe the quantization of energy at the atomic level.

Remarks/Examples:

Explain that when electrons transition to higher energy levels they absorb energy, and when they transition to lower energy levels they emit energy. Recognize that spectral lines are the result of transitions of electrons between energy levels that correspond to photons of light with an energy and frequency related to the energy spacing between levels (Planck's relationship E = hv).

Cognitive Complexity: Level 2: Basic Application of Skills & Concepts

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.P.10.In.1 Identify examples of energy being transformed from one form to another (conserved quantity). *Date Adopted or Revised*: 02/08	SC.912.P.10.Su.1 Recognize energy transformations that occur in everyday life, such as solar energy to electricity. *Date Adopted or Revised*: 02/08	SC.912.P.10.Pa.1 Observe and recognize examples of the transformation of electrical energy to light and heat. *Date Adopted or Revised*: 02/08
SC.912.P.10.In.2 Identify power as work done in a certain amount of time using measurable terms, such as watts or horsepower. *Date Adopted or Revised*: 02/08	SC.912.P.10.Su.10 Recognize examples of electromagnetic waves moving through different media, such as microwave ovens, radios, and x-rays. *Date Adopted or Revised*: 02/08	SC.912.P.10.Pa.10 Recognize primary and secondary colors in visible light. *Date Adopted or Revised*: 02/08
SC.912.P.10.In.3 Relate the transfer of heat to the states of matter, including gases result from heating, liquids result from cooling a gas, and solids result from further cooling a liquid. *Date Adopted or Revised*: 02/08	SC.912.P.10.Su.2 Recognize the relationship between work and power, such as power is how fast a person or machine does work. *Date Adopted or Revised*: 02/08	SC.912.P.10.Pa.2 Recognize that work requires energy. *Date Adopted or Revised*: 02/08
SC.912.P.10.In.4 Describe a process that gives off heat (exothermic), such as burning, and a process that absorbs heat (endothermic), such as water coming to a boil. *Date Adopted or Revised*: 02/08	SC.912.P.10.Su.3 Observe and recognize ways that heat travels, such as through space (radiation), through solids (conduction), and through liquids and gases (convection). *Date Adopted or Revised*: 02/08	SC.912.P.10.Pa.3 Recognize the source and recipient of heat transfer. *Date Adopted or Revised*: 02/08
SC.912.P.10.In.5 Identify fundamental forces, including gravitational and electromagnetic. *Date Adopted or Revised*: 02/08	SC.912.P.10.Su.4 Recognize common processes that give off heat (exothermic), such as burning, and processes that absorb heat (endothermic), such as water coming to a boil. *Date Adopted or Revised*: 02/08	SC.912.P.10.Pa.4 Identify materials that provide protection (insulation) from heat. *Date Adopted or Revised*: 02/08
	SC.912.P.10.Su.5	SC.912.P.10.Pa.5 Recognize the universal symbols for radioactive and other hazardous materials. *Date Adopted or Revised*: 02/08
		SC.912.P.10.Pa.6 Recognize that an object falls unless stopped (gravity).

SC.912.P.10.In.6 Identify that atoms can be changed to release energy, such as in nuclear power plants, and recognize one related safety issue. *Date Adopted or Revised*: 02/08 SC.912.P.10.In.7 Identify common conductors and insulators of electricity. *Date Adopted or Revised*: 02/08 SC.912.P.10.In.8 Identify that some electrical devices use different types of power sources and explain what might happen if incorrect electrical components are used. *Date Adopted or Revised*: 02/08 SC.912.P.10.In.9 Identify common applications of electromagnetic waves moving through different media, such as radio waves, microwaves, x-rays, or infrared. *Date Adopted or Revised*: 02/08	SC.912.P.10.Su.5 Recognize that nuclear power plants generate electricity and can be dangerous. *Date Adopted or Revised*: 02/08 SC.912.P.10.Su.6 Recognize fundamental forces, such as gravitational. *Date Adopted or Revised*: 02/08 SC.912.P.10.Su.7 Recognize common objects that conduct electricity (conductors) and objects that do not conduct electricity (insulators). *Date Adopted or Revised*: 02/08 SC.912.P.10.Su.8 Recognize that some electrical devices use different types of power sources. *Date Adopted or Revised*: 02/08 SC.912.P.10.Su.9 Observe and identify the effects of magnetic attraction on iron. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08 SC.912.P.10.Pa.7 Recognize safe and unsafe practices related to the use of electricity, such as keeping foreign objects out of electrical sockets and not using electrical devices around water. *Date Adopted or Revised*: 02/08 SC.912.P.10.Pa.8 Demonstrate opening and closing an electrical circuit to turn an electrical device on and off. *Date Adopted or Revised*: 02/08 SC.912.P.10.Pa.9 Recognize how magnets are used in real-world situations. *Date Adopted or Revised*: 02/08

Standard 12: Motion

A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. When objects travel at speeds comparable to the speed of light, Einstein's special theory of relativity applies.
B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.
C. The Law of Universal Gravitation states that gravitational forces act on all objects irrespective of their size and position.
D. Gases consist of great numbers of molecules moving in all directions. The behavior of gases can be modeled by the kinetic molecular theory.
E. Chemical reaction rates change with conditions under which they occur. Chemical equilibrium is a dynamic state in which forward and reverse processes occur at the same rates.

	BENCHMARK CODE	BENCHMARK
	SC.912.P.12.1	Distinguish between scalar and vector quantities and assess which should be used to describe an event. *Remarks/Examples*: Distinguish between vector quantities (e.g., displacement, velocity, acceleration, force, and linear momentum) and scalar quantities (e.g., distance, speed, energy, mass, work). MAFS.912.N-VM.1.3 (+) Solve problems involving velocity and other quantities that can be represented by vectors. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
	SC.912.P.12.10	Interpret the behavior of ideal gases in terms of kinetic molecular theory. *Remarks/Examples*: Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and number of particles in a gas sample (Avogadro's hypothesis). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
	SC.912.P.12.11	Describe phase transitions in terms of kinetic molecular theory. *Remarks/Examples*: Explain, at the molecular level, the behavior of matter as it undergoes phase transitions. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
	SC.912.P.12.12	Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction. *Remarks/Examples*: Various factors could include: temperature, pressure, solvent and/or solute concentration, sterics, surface area, and catalysts. The rate of reaction is determined by the activation energy, and the pathway of the reaction can be shorter in the presence of enzymes or catalysts. Examples may include: decomposition of hydrogen peroxide using manganese (IV) oxide; nitration of benzene using concentrated sulfuric acid; hydrogenation of a C=C double bond using nickel. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
	SC.912.P.12.13	Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates. *Remarks/Examples*: Identify and explain the factors that affect the rate of dissolving (e.g., temperature, concentration, surface area, pressure, mixing). Explain that equilibrium is established when forward and reverse-reaction rates are equal. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
	SC.912.P.12.2	Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time. *Remarks/Examples*:

	Solve problems involving distance, velocity, speed, and acceleration. Create and interpret graphs of 1-dimensional motion, such as position versus time, distance versus time, speed versus time, velocity versus time, and acceleration versus time where acceleration is constant. Florida Standards Connections: MAFS.912.N-VM.1.3 (+) Solve problems involving velocity and other quantities that can be represented by vectors. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.3	Interpret and apply Newton's three laws of motion. *Remarks/Examples*: Explain that when the net force on an object is zero, no acceleration occurs; thus, a moving object continues to move at a constant speed in the same direction, or, if at rest, it remains at rest (Newton's first law). Explain that when a net force is applied to an object its motion will change, or accelerate (according to Newton's second law, F = ma). Predict and explain how when one object exerts a force on a second object, the second object always exerts a force of equal magnitude but of opposite direction and force back on the first: F1 on 2 = –F1 on 1 (Newton's third law). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.4	Describe how the gravitational force between two objects depends on their masses and the distance between them. *Remarks/Examples*: Describe Newton's law of universal gravitation in terms of the attraction between two objects, their masses, and the inverse square of the distance between them. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.12.5	Apply the law of conservation of linear momentum to interactions, such as collisions between objects. *Remarks/Examples*: (e.g. elastic and completely inelastic collisions). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.6	Qualitatively apply the concept of angular momentum. *Remarks/Examples*: Explain that angular momentum is rotational analogy to linear momentum (e.g. Because angular momentum is conserved, a change in the distribution of mass about the axis of rotation will cause a change in the rotational speed [ice skater spinning]). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.7	Recognize that nothing travels faster than the speed of light in vacuum which is the same for all observers no matter how they or the light source are moving. *Remarks/Examples*: Recognize that regardless of the speed of an observer or source, *in a vacuum* the speed of light is always *c*. *Cognitive Complexity:* Level 1: Recall
SC.912.P.12.8	Recognize that Newton's Laws are a limiting case of Einstein's Special Theory of Relativity at speeds that are much smaller than the speed of light.

	Remarks/Examples: Recognize that the speed of light in any reference frame is the central postulate of the Special Theory of Relativity. As speeds approach zero, Special Relativity tends towards equivalence with Newton's Laws of Motion. *Cognitive Complexity:* Level 1: Recall
SC.912.P.12.9	Recognize that time, length, and energy depend on the frame of reference. *Remarks/Examples*: The energy *E* and the momentum *p* depend on the frame of reference in which they are measured (e.g. Lorentz contraction). *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.P.12.In.1 Recognize that scalar quantities describe the magnitude of the measurement, such as size, weight, volume, area, temperature, or speed. *Date Adopted or Revised*: 02/08	SC.912.P.12.Su.1 Recognize that speed is expressed as distance moved in a certain time, such as miles per hour or feet per second. *Date Adopted or Revised*: 02/08	SC.912.P.12.Pa.1 Recognize that objects travel at different speeds. *Date Adopted or Revised*: 02/08
		SC.912.P.12.Pa.2 Identify the speed and direction of a moving object, including fast and slow, up and down, round and round, straight line. *Date Adopted or Revised*: 02/08
SC.912.P.12.In.2 Identify acceleration as a change in speed or direction. *Date Adopted or Revised*: 02/08	SC.912.P.12.Su.2 Recognize that acceleration generally involves a change in speed. *Date Adopted or Revised*: 02/08	
SC.912.P.12.In.3 Recognize various situations that show Newton's third law of motion: for every action there is an equal and opposite reaction. *Date Adopted or Revised*: 02/08	SC.912.P.12.Su.3 Recognize the action and reaction in a situation that show Newton's third law of motion: for every action there is an equal and opposite reaction. *Date Adopted or Revised*: 02/08	SC.912.P.12.Pa.3 Identify the source of the force moving an object. *Date Adopted or Revised*: 02/08
SC.912.P.12.In.4 Identify examples of how gravity attracts other objects, such as people to Earth or orbits of planets in the Solar System. *Date Adopted or Revised*: 02/08	SC.912.P.12.Su.4 Identify that gravity is a force that attracts objects. *Date Adopted or Revised*: 02/08	SC.912.P.12.Pa.4 Recognize that things fall down toward Earth unless stopped or held up (gravity). *Date Adopted or Revised*: 02/08
SC.912.P.12.In.5 Recognize that the speed of light is always the same. *Date Adopted or Revised*: 02/08	SC.912.P.12.Su.5 Recognize that light travels very fast. *Date Adopted or Revised*: 02/08	SC.912.P.12.Pa.5 Recognize ways to stop light from traveling, such as closing a door. *Date Adopted or Revised*: 02/08
SC.912.P.12.In.6	SC.912.P.12.Su.6 Recognize that a gas can exert pressure, such as in balloons, car tires, or	SC.912.P.12.Pa.6 Recognize that some objects contain air, such as balloons, tires, and

	Identify that gases exert pressure in a closed surface, such as pressure inside a basketball or a hot air balloon. *Date Adopted or Revised*: 02/08	pool floats. *Date Adopted or Revised*: 02/08	balls. *Date Adopted or Revised*: 02/08

Standard 8: Matter

A. A working definition of matter is that it takes up space, has mass, and has measurable properties. Matter is comprised of atomic, subatomic, and elementary particles.
B. Electrons are key to defining chemical and some physical properties, reactivity, and molecular structures. Repeating (periodic) patterns of physical and chemical properties occur among elements that define groups of elements with similar properties. The periodic table displays the repeating patterns, which are related to the atom's outermost electrons. Atoms bond with each other to form compounds.
C. In a chemical reaction, one or more reactants are transformed into one or more new products. Many factors shape the nature of products and the rates of reaction.
D. Carbon-based compounds are building-blocks of known life forms on earth and numerous useful natural and synthetic products.

BENCHMARK CODE	BENCHMARK
SC.912.P.8.1	Differentiate among the four states of matter. *Remarks/Examples*: Differentiate among the four states of matter (solid, liquid, gas and plasma) in terms of energy, particle motion, and phase transitions. (Note: Currently five states of matter have been identified.) *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.10	Describe oxidation-reduction reactions in living and non-living systems. *Remarks/Examples*: Identify the substance(s) losing and gaining electrons in oxidation-reduction reactions. Discuss voltaic cells, various types of batteries, electrolysis of water, smelting and purification of metals, electrolysis of brine versus molten NaCl, neutralization reactions, electrolytic cells, and living systems (photosynthesis and cellular respiration). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.11	Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH. *Remarks/Examples*: Use experimental data to illustrate and explain the pH scale to characterize acid and base solutions. Compare and contrast the strengths of various common acids and bases. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.12	Describe the properties of the carbon atom that make the diversity of carbon compounds possible. *Remarks/Examples*: Explain how the bonding characteristics of carbon lead to a large variety of structures ranging from simple hydrocarbons to complex polymers and biological molecules. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

SC.912.P.8.13	Identify selected functional groups and relate how they contribute to properties of carbon compounds. *Remarks/Examples*: Recognize functional groups in structural formulas of carbon molecules (e.g. sugars, proteins, nucleotides, amino acids, hydroxyl groups which form alcohols, carbonyl groups which form aldehydes / ketones, carboxyl groups which form carboxylic acids, etc.). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.8.2	Differentiate between physical and chemical properties and physical and chemical changes of matter. *Remarks/Examples*: Discuss volume, compressibility, density, conductivity, malleability, reactivity, molecular composition, freezing, melting and boiling points. Describe simple laboratory techniques that can be used to separate homogeneous and heterogeneous mixtures (e.g. filtration, distillation, chromatography, evaporation). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.3	Explore the scientific theory of atoms (also known as atomic theory) by describing changes in the atomic model over time and why those changes were necessitated by experimental evidence. *Remarks/Examples*: Describe the development and historical importance of atomic theory from Dalton (atomic theory), Thomson (the electron), Rutherford (the nucleus and “gold foil” experiment), and Bohr (planetary model of atom), and understand how each discovery leads to modern atomic theory. Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.8.4	Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom. *Remarks/Examples*: Explain that electrons, protons and neutrons are parts of the atom and that the nuclei of atoms are composed of protons and neutrons, which experience forces of attraction and repulsion consistent with their charges and masses. Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons. *Remarks/Examples*: Use the periodic table and electron configuration to determine an element's number of valence electrons and its chemical and physical properties. Explain how chemical properties depend almost entirely on the configuration of the outer electron shell. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.6	Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces. *Remarks/Examples*: Describe how atoms combine to form molecules through ionic, covalent, and hydrogen bonding. Compare and contrast the characteristics of the interactions between atoms in ionic and covalent compounds and how these bonds form. Use electronegativity to explain the difference between polar and nonpolar covalent bonds. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure.

	Remarks/Examples: Write chemical formulas for simple covalent (HCl, SO2, CO2, and CH4), ionic (Na+ + Cl− → NaCl) and molecular (O2, H2O) compounds. Predict the formulas of ionic compounds based on the number of valence electrons and the charges on the ions. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.8	Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions. *Remarks/Examples*: Classify chemical reactions as synthesis (combination), decomposition, single displacement (replacement), double displacement, and combustion. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.P.8.9	Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions. *Remarks/Examples*: Recognize one mole equals 6.02 x 10^23 particles (atoms or molecules). Determine number of particles for elements and compounds using the mole concept, in terms of number of particles, mass, and the volume of an ideal gas at specified conditions of temperature and pressure. Use experimental data to determine percent yield, empirical formulas, molecular formulas, and calculate the mass-to-mass stoichiometry for a chemical reaction. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.P.8.In.1 Classify states of matter as solid, liquid, and gaseous. *Date Adopted or Revised*: 02/08	SC.912.P.8.Su.1 Identify examples of states of matter as solid, liquid, and gaseous. *Date Adopted or Revised*: 02/08	SC.912.P.8.Pa.1 Select an example of a common solid, liquid, and gas. *Date Adopted or Revised*: 02/08
SC.912.P.8.In.2 Compare characteristics of physical and chemical changes of matter. *Date Adopted or Revised*: 02/08	SC.912.P.8.Su.2 Identify examples of physical and chemical changes. *Date Adopted or Revised*: 02/08	SC.912.P.8.Pa.2 Recognize a common chemical change, such as cooking, burning, rusting, or decaying. *Date Adopted or Revised*: 02/08
SC.912.P.8.In.3 Identify the nucleus as the center of an atom. *Date Adopted or Revised*: 02/08	SC.912.P.8.Su.3 Recognize that atoms are tiny particles in materials, too small to see. *Date Adopted or Revised*: 02/08	SC.912.P.8.Pa.3 Recognize that the parts of an object can be put together to make a whole. *Date Adopted or Revised*: 02/08
SC.912.P.8.In.4 Recognize that the periodic table includes all known elements. *Date Adopted or Revised*: 02/08	SC.912.P.8.Su.4 Recognize examples of common elements, such as oxygen and hydrogen. *Date Adopted or Revised*: 02/08	SC.912.P.8.Pa.3 Recognize that the parts of an object can be put together to make a whole. *Date Adopted or Revised*: 02/08
SC.912.P.8.In.5 Identify that compounds are made of two or more elements.	SC.912.P.8.Su.5 Recognize examples of common compounds, such as water	SC.912.P.8.Pa.4 Match common compounds to their names or communication symbols.

	Date Adopted or Revised: 02/08 SC.912.P.8.In.6 Identify formulas for common compounds, such as H2O and CO2. *Date Adopted or Revised*: 02/08 SC.912.P.8.In.7 Identify properties of common acids and bases. *Date Adopted or Revised*: 02/08 SC.912.P.8.In.8 Identify that carbon is found in all living things. *Date Adopted or Revised*: 02/08	and salt. *Date Adopted or Revised*: 02/08 SC.912.P.8.Su.6 Match common chemical formulas to their common name, such as H2O to water. *Date Adopted or Revised*: 02/08 SC.912.P.8.Su.7 Categorize common materials or foods as acids or bases. *Date Adopted or Revised*: 02/08 SC.912.P.8.Su.8 Recognize that carbon is found in all living things. *Date Adopted or Revised*: 02/08	*Date Adopted or Revised*: 02/08 SC.912.P.8.Pa.5 Recognize that some acids and bases can be dangerous and identify related hazard symbols. *Date Adopted or Revised*: 02/08

Body of Knowledge: EARTH AND SPACE SCIENCE

Standard 5: Earth in Space and Time

The origin and eventual fate of the Universe still remains one of the greatest questions in science. Gravity and energy influence the development and life cycles of galaxies, including our own Milky Way Galaxy, stars, the planetary systems, Earth, and residual material left from the formation of the Solar System. Humankind's need to explore continues to lead to the development of knowledge and understanding of the nature of the Universe.

BENCHMARK CODE	BENCHMARK
SC.912.E.5.1	Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin of the universe. *Remarks/Examples*: Explain evidence to support the formation of the universe, which has been expanding for approximately 15 billion year (e.g. ratio of gases, red-shift from distant galaxies, and cosmic background radiation). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.10	Describe and apply the coordinate system used to locate objects in the sky. *Remarks/Examples*: Discuss how scientists determine the location of constellations, celestial spheres, and sky maps. Compare and contrast the celestial coordinate system (equatorial system) to the use of latitude and longitude to specify locations on Earth. Recognize the use of right ascension and declination in the location of objects in space, including stars and constellations. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.5.11	

	Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations. *Remarks/Examples*: Determine which units of measurement are appropriate to describe distance (e.g. astronomical units, parallax, and light years). Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and MAFS.K12.MP.6: Attend to precision. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.2	Identify patterns in the organization and distribution of matter in the universe and the forces that determine them. *Remarks/Examples*: Identify patterns that influence the formation, heirarchy, and motions of the various kinds of objects in the solar system and the role of gravity and inertia on these motions (include the Sun, Earth, and Moon, planets, satellites, comets, asteroids, star clusters, galaxies, galaxy clusters). Recognize that the universe contains many billions of galaxies, and each galaxy contains many billions of stars. Recognize that constellations are contrived associations of stars that do not reflect functional relationships in space. Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.5.3	Describe and predict how the initial mass of a star determines its evolution. *Remarks/Examples*: Compare and contrast the evolution of stars of different masses (include the three outcomes of stellar evolution based on mass: black hole, neutron star, white dwarf). Differentiate between the different types of stars found on the Hertzsprung-Russell diagram and the balance between gravitational collapse and nuclear fusion in determining the color, brightness, and life span of a star. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.5.4	Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth. *Remarks/Examples*: Describe the physical properties of the Sun (sunspot cycles, solar flares, prominences, layers of the Sun, coronal mass ejections, and nuclear reactions) and the impact of the Sun as the main source of external energy for the Earth. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.5	Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly discovered planetary systems. *Remarks/Examples*: Describe how evidence from the study of our Solar System and newly discovered extra solar planetary systems supports the Nebular theory of the formation of planetary systems. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.6	Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the effects of Earth, Moon, and Sun on each other. *Remarks/Examples*: Explain that Kepler’s laws determine the orbits of objects in the solar system and recognize that Kepler’s laws are a direct consequence of Newton’s Law of Universal Gravitation and Laws of Motion. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.7	Relate the history of and explain the justification for future space exploration and continuing technology development. *Remarks/Examples*:

	Identify examples of historical space exploration (e.g. telescopes, high altitude balloons, lunar landers, deep-space probes, space station) that had significant impact on current space exploration and recognize the importance of continued exploration in space. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.8	Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools. *Remarks/Examples*: Describe how frequency is related to the characteristics of electromagnetic radiation and recognize how spectroscopy is used to detect and interpret information from electromagnetic radiation sources. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.9	Analyze the broad effects of space exploration on the economy and culture of Florida. *Remarks/Examples*: Recognize the economic, technical and social benefits of spinoff technology developed through the space program. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.E.5.In.1 Recognize that the Milky Way is part of the expanding universe. *Date Adopted or Revised*: 02/08	SC.912.E.5.Su.1 Recognize that the universe consists of many galaxies, including the Milky Way. *Date Adopted or Revised*: 02/08	SC.912.E.5.Pa.1 Recognize that when objects move away from each other, the distance between them expands. *Date Adopted or Revised*: 02/08
SC.912.E.5.In.2 Explain that stars change over time, and that stars can be different; some are smaller, some are larger and some appear brighter than others. *Date Adopted or Revised*: 02/08	SC.912.E.5.Su.2 Identify differences in stars: some are smaller, some are larger and some appear brighter than others. *Date Adopted or Revised*: 02/08	SC.912.E.5.Pa.2 Recognize that some stars are brighter than others. *Date Adopted or Revised*: 02/08
SC.912.E.5.In.3 Describe the Sun as a medium-sized star with sunspots and storms that can affect weather and radio transmissions on Earth. *Date Adopted or Revised*: 02/08	SC.912.E.5.Su.3 Describe observable effects of the Sun on Earth, such as changes in light and temperature. *Date Adopted or Revised*: 02/08	SC.912.E.5.Pa.3 Observe and recognize effects of the Sun on Earth, such as temperature changes. *Date Adopted or Revised*: 02/08
SC.912.E.5.In.4 Recognize that there are other planetary systems in the universe besides the Solar System. *Date Adopted or Revised*: 02/08	SC.912.E.5.Su.4 Recognize that there are planetary systems in the Universe. *Date Adopted or Revised*: 02/08	SC.912.E.5.Pa.4 Recognize that Earth is a planet. *Date Adopted or Revised*: 02/08
SC.912.E.5.In.5 Identify tools that use different types of radiation, such as radio waves,	SC.912.E.5.Su.5 Recognize an eclipse. *Date Adopted or Revised*: 02/08	SC.912.E.5.Pa.5 Recognize items, such as freeze-dried food and space blankets, developed because of space exploration. *Date Adopted or Revised*: 02/08

	ultraviolet radiation, and infrared waves. *Date Adopted or Revised*: 02/08 SC.912.E.5.In.6 Identify major contributions and research from space exploration that affected Florida's economy and culture. *Date Adopted or Revised*: 02/08 SC.912.E.5.In.7 Recognize a lunar eclipse, a solar eclipse, and the effect of the Moon on tides on Earth. *Date Adopted or Revised*: 02/08	SC.912.E.5.Su.6 Identify major contributions related to space exploration that affected Florida. *Date Adopted or Revised*: 02/08 SC.912.E.5.Su.6 Identify major contributions related to space exploration that affected Florida. *Date Adopted or Revised*: 02/08 SC.912.E.5.Su.7 Recognize examples of tools that use radiation for observation purposes, such as x-rays and infrared night goggles. *Date Adopted or Revised*: 02/08	SC.912.E.5.Pa.6 Recognize a tool that uses radiation for personal reasons, such as x-rays. *Date Adopted or Revised*: 02/08

Standard 6: Earth Structures

The scientific theory of plate tectonics provides the framework for much of modern geology. Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.

BENCHMARK CODE	BENCHMARK
SC.912.E.6.1	Describe and differentiate the layers of Earth and the interactions among them. *Remarks/Examples*: Recognize the importance of the study of seismic wave data and how it can be used to determine the internal structure, density variations, and dynamic processes between Earth's layers. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.6.2	Connect surface features to surface processes that are responsible for their formation. *Remarks/Examples*: Identify various landforms (e.g. dunes, lakes, sinkholes, aquifers) and describe how they form (erosion, physical/chemical weathering, and deposition). Explain how sea level changes over time have exposed and inundated continental shelves, created and destroyed inland seas, and shaped the surface of the Earth. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.6.3	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates. *Remarks/Examples*: Discuss the development of plate tectonic theory, which is derived from the combination of two theories: continental drift and seafloor spreading. Compare and contrast the three primary

	types of plate boundaries (convergent, divergent, and transform). Explain the origin of geologic features and processes that result from plate tectonics (e.g. earthquakes, volcanoes, trenches, mid-ocean ridges, island arcs and chains, hot spots, earthquake distribution, tsunamis, mountain ranges). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.6.4	Analyze how specific geologic processes and features are expressed in Florida and elsewhere. *Remarks/Examples*: Describe the effect of ocean and Gulf water currents, gravel mining, beach erosion, dune development, aquifers and ground water, salt water intrusion, springs, and sink holes on the formation of the Florida peninsula. Explain the effects of latitude, elevation, topography (land surface type), proximity to large bodies of water, and temperature of ocean currents, on climate in Florida. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.6.5	Describe the geologic development of the present day oceans and identify commonly found features. *Remarks/Examples*: Describe the topography of the ocean floor and how it formed (e.g. plate tectonics, sea level changes). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.6.6	Analyze past, present, and potential future consequences to the environment resulting from various energy production technologies. *Remarks/Examples*: Investigate and discuss how humans affect and are affected by geological systems and processes by describing the possible long-term consequences (costs and benefits) that increased human consumption (e.g. mining and extraction techniques; off-shore drilling; petrochemical refining) has placed on the environment (e.g. pollution, health, habitat destruction) and the impact on future energy production. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.E.6.In.1 Describe the three layers of Earth (core, mantle, and crust). *Date Adopted or Revised*: 02/08	SC.912.E.6.Su.1 Recognize the three layers of Earth (core, mantle, and crust). *Date Adopted or Revised*: 02/08	SC.912.E.6.Pa.1 Identify a surface feature of Earth, such as a hill. *Date Adopted or Revised*: 02/08
SC.912.E.6.In.2 Describe examples of surface features, such as glaciers, valleys, canyons, and dried riverbeds, which are caused by wind and erosion (surface processes). *Date Adopted or Revised*: 02/08	SC.912.E.6.Su.2 Identify types of surface features, such as hills and valleys. *Date Adopted or Revised*: 02/08	SC.912.E.6.Pa.2 Recognize that the surface of Earth can change. *Date Adopted or Revised*: 02/08
SC.912.E.6.In.3 Relate a cause and effect of movements in Earth's crust (plate tectonics), such as fault lines in the plates causing earthquakes. *Date Adopted or Revised*:	SC.912.E.6.Su.3 Recognize that Earth's crust is broken into parts (plates) that move and cause mountains and volcanoes. *Date Adopted or Revised*: 02/08	

	02/08 SC.912.E.6.In.4 Identify natural geological processes that change the land and water in Florida, including beach erosion and sinkholes. *Date Adopted or Revised*: 02/08	SC.912.E.6.Su.4 Recognize examples of natural changes to Florida's land and water, such as beach erosion. *Date Adopted or Revised*: 02/08	

Standard 7: Earth Systems and Patterns

The scientific theory of the evolution of Earth states that changes in our planet are driven by the flow of energy and the cycling of matter through dynamic interactions among the atmosphere, hydrosphere, cryosphere, geosphere, and biosphere, and the resources used to sustain human civilization on Earth.

BENCHMARK CODE	BENCHMARK
SC.912.E.7.1	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon. *Remarks/Examples*: Describe that the Earth system contains fixed amounts of each stable chemical element and that each element moves among reservoirs in the solid earth, oceans, atmosphere and living organisms as part of biogeochemical cycles (i.e., nitrogen, water, carbon, oxygen and phosphorus), which are driven by energy from within the Earth and from the Sun. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.2	Analyze the causes of the various kinds of surface and deep water motion within the oceans and their impacts on the transfer of energy between the poles and the equator. *Remarks/Examples*: Explain how surface and deep-water circulation patterns (Coriolis effect, La Niña, El Niño, Southern Oscillation, upwelling, ocean surface cooling, freshwater influx, density differences, Labrador Current and Gulf Stream) impact energy transfer in the environment. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.3	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere. *Remarks/Examples*: Interactions include transfer of energy (biogeochemical cycles, water cycle, ground and surface waters, photosynthesis, radiation, plate tectonics, conduction, and convection), storms, winds, waves, erosion, currents, deforestation and wildfires, hurricanes, tsunamis, volcanoes. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.4	Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans. *Remarks/Examples*: Describe how latitude, altitude, topography, prevailing winds, proximity to large bodies of water, vegetation and ocean currents determine the climate of a geographic area. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.7.5	Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.

	Remarks/Examples: Use models, weather maps and other tools to predict weather conditions and differentiate between accuracy of short-range and long-range weather forecasts. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.6	Relate the formation of severe weather to the various physical factors. *Remarks/Examples*: Identify the causes of severe weather. Compare and contrast physical factors that affect the formation of severe weather events (e.g. hurricanes, tornados, flash floods, thunderstorms, and drought). *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.E.7.7	Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change. *Remarks/Examples*: Explain the possible natural (e.g. increased global temperature, wildfires, volcanic dust) and anthropogenic mechanisms (e.g. air pollution, acid rain, greenhouse gases, burning of fossil fuels) and the effects of these mechanisms on global climate change. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.8	Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively. *Remarks/Examples*: Describe and discuss the conditions that bring about floods, droughts, wildfires, thunderstorms, hurricanes, rip currents, and tsunamis and how these conditions can influence human behavior (e.g. energy alternatives, conservation, migration, storm preparedness). *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.9	Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water. *Remarks/Examples*: Explain how the oceans act as sources/sinks of heat energy, store carbon dioxide mostly as dissolved HCO3– and CaCO3 as precipitate or biogenic carbonate deposits, which have an impact on climate change. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.E.7.In.1 Identify cycles that occur on Earth, such as the water and carbon cycles, and the role energy plays in them. *Date Adopted or Revised*: 02/08	SC.912.E.7.Su.1 Recognize the phases of the water cycle that occur on Earth and the role energy plays in the water cycle. *Date Adopted or Revised*: 02/08	SC.912.E.7.Pa.1 Recognize that clouds release rain (part of the water cycle). *Date Adopted or Revised*: 02/08
SC.912.E.7.In.2 Recognize that there are circular movements of ocean water (surface and deep-water currents) which move cold water from the poles toward the tropics and vice versa. *Date Adopted or Revised*: 02/08	SC.912.E.7.Su.2 Recognize that currents move the ocean water around Earth. *Date Adopted or Revised*: 02/08	SC.912.E.7.Pa.2 Recognize waves in the ocean. *Date Adopted or Revised*: 02/08
SC.912.E.7.In.3	SC.912.E.7.Su.3 Recognize components of the	SC.912.E.7.Pa.3 Recognize that humans, plants, and animals live on the Earth (biosphere). *Date Adopted or Revised*:

	Describe the interactions among the atmosphere, hydrosphere, and biosphere, including how air, water, and land support living things and how air temperature affects water and land temperatures. *Date Adopted or Revised*: 02/08 SC.912.E.7.In.4 Describe variations in climate due to geological locations, such as on mountains and the nearness to large bodies of water. *Date Adopted or Revised*: 02/08 SC.912.E.7.In.5 Identify weather conditions using weather data and weather maps. *Date Adopted or Revised*: 02/08 SC.912.E.7.In.6 Compare weather conditions in different types of severe storms, including hurricanes, tornadoes, and thunderstorms. *Date Adopted or Revised*: 02/08 SC.912.E.7.In.7 Recognize that global climate change is related to conditions in the atmosphere and oceans. *Date Adopted or Revised*: 02/08 SC.912.E.7.In.8 Describe how atmospheric and hydrologic conditions, such as hurricanes, drought, wildfires, and sinkholes, affect human behavior. *Date Adopted or Revised*: 02/08 SC.912.E.7.In.9 Recognize that the ocean absorbs most of the solar energy reaching Earth and loses heat primarily by evaporation. *Date Adopted or Revised*:	atmosphere, the hydrosphere, and the biosphere. *Date Adopted or Revised*: 02/08 SC.912.E.7.Su.4 Identify the climate conditions in different parts of the world. *Date Adopted or Revised*: 02/08 SC.912.E.7.Su.5 Identify weather conditions, including temperature, wind speed, and humidity. *Date Adopted or Revised*: 02/08 SC.912.E.7.Su.6 Recognize conditions in severe storms, such as hurricanes, tornadoes, and thunderstorms. *Date Adopted or Revised*: 02/08 SC.912.E.7.Su.7 Recognize that global climate change occurs over a long period of time. *Date Adopted or Revised*: 02/08 SC.912.E.7.Su.8 Identify how weather and water conditions affect humans in Florida. *Date Adopted or Revised*: 02/08 SC.912.E.7.Su.9 Recognize that the ocean absorbs heat from the Sun and then warms the air. *Date Adopted or Revised*: 02/08	02/08 SC.912.E.7.Pa.4 Recognize that weather (climate) is different in different locations. *Date Adopted or Revised*: 02/08 SC.912.E.7.Pa.5 Recognize the weather conditions, including severe weather, in Florida. *Date Adopted or Revised*: 02/08 SC.912.E.7.Pa.6 Recognize that the Sun heats the water in the ocean. *Date Adopted or Revised*: 02/08

	02/08		

Body of Knowledge: NATURE OF SCIENCE

Standard 1: The Practice of Science

A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."
C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.
D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.912.N.1.1	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models). 5. **Plan investigations,** (Design and evaluate a scientific investigation). 6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage). 7. **Pose answers, explanations, or descriptions of events,** 8. **Generate explanations that explicate or describe natural phenomena (inferences),** 9. **Use appropriate evidence and reasoning to justify these explanations to others,** 10. **Communicate results of scientific investigations, and** 11. **Evaluate the merits of the explanations produced by others.** *Remarks/Examples*: Florida Standards Connections for 6-12 Literacy in Science For Students in Grades 9-10 LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

	LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text. LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. For Students in Grades 11-12 LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Florida Standards Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.1.2	Describe and explain what characterizes science and its methods. *Remarks/Examples*: Science is characterized by empirical observations, testable questions, formation of hypotheses, and experimentation that results in stable and replicable results, logical reasoning, and coherent theoretical constructs. Florida Standards Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. *Remarks/Examples*: Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions. Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others *Cognitive Complexity:* Level 1: Recall
SC.912.N.1.4	

	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. *Remarks/Examples*: Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification. Florida Standards Connections: LAFS.910.RST.1.1 / LAFS.1112.RST.1.1. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.1.5	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome. *Remarks/Examples*: Recognize that contributions to science can be made and have been made by people from all over the world. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. *Remarks/Examples*: Collect data/evidence and use tables/graphs to draw conclusions and make inferences based on patterns or trends in the data. Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.N.1.7	Recognize the role of creativity in constructing scientific questions, methods and explanations. *Remarks/Examples*: Work through difficult problems using creativity, and critical and analytical thinking in problem solving (e.g. convergent versus divergent thinking and creativity in problem solving). Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 1: Recall

Access Point for Students with Significant Cognitive Disabilities

Independent	***Supported***	***Participatory***
SC.912.N.1.In.1 Identify a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Identify a scientific question 2. Examine reliable sources of informtion to identify what is already known 3. Develop a possible explanation (hypothesis) 4. Plan and carry out an experiment 5. Gather data based on measurement and observations 6. Evaluate the data 7. Use the data to support reasonable explanations, inferences, and conclusions. *Date Adopted or Revised*:	SC.912.N.1.Su.1 Recognize a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Recognize a scientific question 2. Use reliable information and identify what is already known 3. Create possible explanation 4. Carry out a planned experiment 5. Record observations 6. Summarize results 7. Reach a reasonable conclusion. *Date Adopted or Revised*: 02/08 SC.912.N.1.Su.2	SC.912.N.1.Pa.1 Recognize a problem related to a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Observe objects and activities 2. Follow planned procedures 3. Recognize a solution. *Date Adopted or Revised*: 02/08 SC.912.N.1.Pa.2 Recognize a process used in science to solve problems, such as observing, following procedures, and recognizing

	02/08 SC.912.N.1.In.2 Describe the processes used in scientific investigations, including posing a research question, forming a hypothesis, reviewing what is known, collecting evidence, evaluating results, and reaching conclusions. *Date Adopted or Revised*: 02/08 SC.912.N.1.In.3 Identify that scientific investigations are sometimes repeated in different locations. *Date Adopted or Revised*: 02/08 SC.912.N.1.In.4 Identify that scientists use many different methods in conducting their research. *Date Adopted or Revised*: 02/08	Identify the basic process used in scientific investigations, including questioning, observing, recording, determining, and sharing results. *Date Adopted or Revised*: 02/08 SC.912.N.1.Su.3 Recognize that scientific investigations can be repeated in different locations. *Date Adopted or Revised*: 02/08 SC.912.N.1.Su.4 Recognize that scientists use a variety of methods to get answers to their research questions. *Date Adopted or Revised*: 02/08	results. *Date Adopted or Revised*: 02/08 SC.912.N.1.Pa.3 Recognize that when a variety of common activities are repeated the same way, the outcomes are the same. *Date Adopted or Revised*: 02/08 SC.912.N.1.Pa.4 Recognize that people try different ways to complete a task when the first one does not work. *Date Adopted or Revised*: 02/08

Standard 2: The Characteristics of Scientific Knowledge

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.
B: Scientific knowledge is durable and robust, but open to change.
C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.912.N.2.1	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science). *Remarks/Examples*: Science is the systematic and organized inquiry that is derived from observations and experimentation that can be verified or tested by further investigation to explain natural phenomena (e.g. Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations.) *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.2.2	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. *Remarks/Examples*:

	Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification). Florida Standards Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.2.3	Identify examples of pseudoscience (such as astrology, phrenology) in society. *Remarks/Examples*: Determine if the phenomenon (event) can be observed, measured, and tested through scientific experimentation. *Cognitive Complexity:* Level 1: Recall
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability. *Remarks/Examples*: Recognize that ideas with the most durable explanatory power become established theories, but scientific explanations are continually subjected to change in the face of new evidence. Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations. *Remarks/Examples*: Recognize that scientific questions, observations, and conclusions may be influenced by the existing state of scientific knowledge, the social and cultural context of the researcher, and the observer's experiences and expectations. Identify possible bias in qualitative and quantitative data analysis. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

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Independent	***Supported***	***Participatory***
SC.912.N.2.In.1 Identify examples of investigations that involve science. *Date Adopted or Revised*: 02/08	SC.912.N.2.Su.1 Identify questions that can be answered by science. *Date Adopted or Revised*: 02/08	SC.912.N.2.Pa.1 Recognize an example of work by scientists. *Date Adopted or Revised*: 02/08
SC.912.N.2.In.2 Distinguish between questions that can be answered by science and observable information and questions that can't be answered by science and observable information. *Date Adopted or Revised*: 02/08	SC.912.N.2.Su.2 Recognize that what is known about science can change based on new information. *Date Adopted or Revised*: 02/08 SC.912.N.2.Su.3 Recognize	SC.912.N.2.Pa.2 Recognize a variety of cause-effect relationships related to science. *Date Adopted or Revised*: 02/08

	SC.912.N.2.In.3 Recognize that scientific knowledge can be challenged or confirmed by new investigations and reexamination. *Date Adopted or Revised*: 02/08 SC.912.N.2.In.4 Identify major contributions of scientists. *Date Adopted or Revised*: 02/08	major contributions of scientists. *Date Adopted or Revised*: 02/08	

Standard 3: The Role of Theories, Laws, Hypotheses, and Models

The terms that describe examples of scientific knowledge, for example: "theory," "law," "hypothesis" and "model" have very specific meanings and functions within science.

BENCHMARK CODE	BENCHMARK
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer. *Remarks/Examples*: Explain that a scientific theory is a well-tested hypothesis supported by a preponderance of empirical evidence. Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science. *Remarks/Examples*: Recognize that scientific argument, disagreement, discourse, and discussion create a broader and more accurate understanding of natural processes and events. Florida Standards Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.N.3.3	Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships. *Remarks/Examples*: Recognize that a scientific theory provides a broad explanation of many observed phenomena while a scientific law describes how something behaves. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts
SC.912.N.3.4	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions. *Remarks/Examples*: Recognize that theories do not become laws, theories explain laws. Recognize that not all scientific laws have accompanying explanatory theories.

	Cognitive Complexity: Level 2: Basic Application of Skills & Concepts
SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science. *Remarks/Examples*: Describe how models are used by scientists to explain observations of nature. Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

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Independent	***Supported***	***Participatory***
SC.912.N.3.In.1 Recognize that a scientific theory is developed by repeated investigations of many scientists and agreement on the likely explanation. *Date Adopted or Revised*: 02/08	SC.912.N.3.Su.1 Recognize that scientific theories are supported by evidence and agreement of many scientists. *Date Adopted or Revised*: 02/08	SC.912.N.3.Pa.1 Recognize examples of cause-effect descriptions or explanations related to science. *Date Adopted or Revised*: 02/08
SC.912.N.3.In.2 Identify examples of scientific laws that describe relationships in the natural world, such as Newton's laws. *Date Adopted or Revised*: 02/08	SC.912.N.3.Su.2 Recognize examples of scientific laws that describe relationships in nature, such as Newton's laws. *Date Adopted or Revised*: 02/08	SC.912.N.3.Pa.2 Recognize a model used in the context of one's own study of science. *Date Adopted or Revised*: 02/08
SC.912.N.3.In.3 Identify ways models are used in the study of science. *Date Adopted or Revised*: 02/08	SC.912.N.3.Su.3 Recognize ways models are used in the study of science. *Date Adopted or Revised*: 02/08	

Standard 4: Science and Society

As tomorrows citizens, students should be able to identify issues about which society could provide input, formulate scientifically investigable questions about those issues, construct investigations of their questions, collect and evaluate data from their investigations, and develop scientific recommendations based upon their findings.

BENCHMARK CODE	BENCHMARK
SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. *Remarks/Examples*: Recognize that no single universal step-by-step scientific method captures the complexity of doing science. A number of shared values and perspectives characterize a scientific approach. MAFS.K12.MP.1: Make sense of problems and persevere in solving them, and MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 2: Basic Application of Skills & Concepts

SC.912.N.4.2	Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental. *Remarks/Examples*: Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified. Discuss ethics in scientific research to advance society (e.g. global climate change, historical development of medicine and medical practices). Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them, and MAFS.K12.MP.2: Reason abstractly and quantitatively. *Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

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Independent	***Supported***	***Participatory***
SC.912.N.4.In.1 Identify ways scientific knowledge and problem solving benefit people. *Date Adopted or Revised*: 02/08	SC.912.N.4.Su.1 Recognize ways scientific knowledge and problem solving benefit people. *Date Adopted or Revised*: 02/08	SC.912.N.4.Pa.1 Recognize science information that helps people. *Date Adopted or Revised*: 02/08
SC.912.N.4.In.2 Identify that costs and benefits must be considered when choosing a strategy for solving a problem. *Date Adopted or Revised*: 02/08	SC.912.N.4.Su.2 Recognize that some strategies may cost more to solve a problem. *Date Adopted or Revised*: 02/08	SC.912.N.4.Pa.2 Recognize a local problem that can be solved by science. *Date Adopted or Revised*: 02/08