



Florida Science Standards: Grades 3, 4 and 5

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	<p>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.</p> <p><i>Remarks/Examples:</i></p> <p>* 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.</p> <p>** 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>

SC.3.N.1.2	<p>Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups.</p> <p><u>Remarks/Examples:</u></p> <p>* 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.</p> <p>** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating:</u> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.3.N.1.3	<p>Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.</p> <p><u>Remarks/Examples:</u></p> <p>** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating:</u> Level 2: Basic Application of Skills & Concepts</p>
SC.3.N.1.4	<p>Recognize the importance of communication among scientists.</p> <p><u>Remarks/Examples:</u></p> <p>* 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.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating:</u> Level 2: Basic Application of Skills & Concepts</p>
SC.3.N.1.5	<p>Recognize that scientists question, discuss, and check each other's evidence and explanations.</p> <p><u>Remarks/Examples:</u></p> <p>** Florida Standards Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating:</u> Level 2: Basic Application of Skills & Concepts</p>
SC.3.N.1.6	<p>Infer based on observation.</p> <p><u>Remarks/Examples:</u></p> <p>** Florida Standards Connections: MAFS.K12.MP.6: Attend to precision.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating:</u> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.3.N.1.7	<p>Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena.</p> <p><u>Remarks/Examples:</u></p> <p>** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically.</p> <p><u>Cognitive Complexity/Depth of Knowledge Rating:</u> Level 3: Strategic Thinking & Complex Reasoning</p>

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall
SC.3.P.10.2	Recognize that energy has the ability to cause motion or create change. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning

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. <i>Remarks/Examples:</i> 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> <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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.

	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall

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. <i>Remarks/Examples:</i> * 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning

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. <i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.

	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.3.P.8.2	<p>Measure and compare the mass and volume of solids and liquids.</p> <p><i>Remarks/Examples:</i> Introduce the term mass as compared to the term weight.</p> <p>** Florida Standards Connections: MAFS.3.MD.1.2; MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.3.P.8.3	<p>Compare materials and objects according to properties such as size, shape, color, texture, and hardness.</p> <p><i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.3.MD.2.4; MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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	<p>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.</p> <p><i>Remarks/Examples:</i></p> <p>* 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.</p> <p>** 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.4.N.1.2	<p>Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.</p> <p><i>Remarks/Examples:</i></p> <p>* 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.</p> <p>** Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics; and, MAFS.K12.MP.5: Use appropriate tools strategically.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.4.N.1.3	<p>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.</p>

	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.4.N.1.4	<p>Attempt reasonable answers to scientific questions and cite evidence in support.</p> <p><i>Remarks/Examples:</i> * 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.</p> <p>** 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.4.N.1.5	<p>Compare the methods and results of investigations done by other classmates.</p> <p><i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.N.1.6	<p>Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.</p> <p><i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.4.N.1.7	<p>Recognize and explain that scientists base their explanations on evidence.</p> <p><i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.N.1.8	<p>Recognize that science involves creativity in designing experiments.</p> <p><i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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	<p>Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

SC.4.P.10.2	Investigate and describe that energy has the ability to cause motion or create change. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall
SC.4.P.11.2	Identify common materials that conduct heat well or poorly. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> Integrate HE.4.C.1.6. Identify the human body parts and organs that work together to form healthy body systems. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

SC.4.L.17.3	<p>Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.</p> <p><i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.L.17.2 and SC.4.L.17.2.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.L.17.4	<p>Recognize ways plants and animals, including humans, can impact the environment.</p> <p><i>Remarks/Examples:</i> 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).</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>

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	<p>Explain that science focuses solely on the natural world.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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

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	<p>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.</p> <p><i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.4.E.5.2	<p>Describe the changes in the observable shape of the moon over the course of about a month.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.E.5.3	<p>Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.</p> <p><i>Remarks/Examples:</i> ** Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.E.5.4	<p>Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.</p> <p><i>Remarks/Examples:</i> 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.</p> <p>Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.4.E.5.5	<p>Investigate and report the effects of space research and exploration on the economy and culture of Florida.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>

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	<p>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).</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall</p>

SC.4.E.6.2	<p>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.</p> <p><i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.4.E.6.1.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.E.6.3	<p>Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.</p> <p><i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.4.E.6.1.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.E.6.4	<p>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).</p> <p><i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.E.6.5	<p>Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.</p> <p><i>Remarks/Examples:</i> MAFS.K12.MP.5: Use appropriate tools strategically.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.4.E.6.6	<p>Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall</p>

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	<p>Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets.</p> <p><i>Remarks/Examples:</i> Investigate the concept of weight versus mass of objects.</p> <p>Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.P.8.2	<p>Identify properties and common uses of water in each of its states.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall</p>
SC.4.P.8.3	<p>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.</p> <p><i>Remarks/Examples:</i> Investigate the concept of weight versus mass of objects.</p> <p>Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.4.P.8.4	<p>Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>

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.

	<i>Cognitive Complexity/Depth of Knowledge Rating: Level 1: Recall</i>
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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	<p>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.</p> <p><i>Remarks/Examples:</i> 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.</p> <p>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.</p> <p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.5.N.1.2	<p>Explain the difference between an experiment and other types of scientific investigation.</p> <p><i>Remarks/Examples:</i> 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).</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

SC.5.N.1.3	<p>Recognize and explain the need for repeated experimental trials.</p> <p><i>Remarks/Examples:</i> Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.N.1.4	<p>Identify a control group and explain its importance in an experiment.</p> <p><i>Remarks/Examples:</i> Florida Standards Connections: MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.N.1.5	<p>Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."</p> <p><i>Remarks/Examples:</i> 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.N.1.6	<p>Recognize and explain the difference between personal opinion/interpretation and verified observation.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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	<p>Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.</p> <p><i>Remarks/Examples:</i> 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.P.10.2	<p>Investigate and explain that energy has the ability to cause motion or create change.</p> <p><i>Remarks/Examples:</i> 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.5.P.10.3	<p>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.</p>

	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning

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). <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

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	<p>Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.</p> <p><i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.E.5.4 and SC.4.P.8.4.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall</p>
SC.5.P.13.2	<p>Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.</p> <p><i>Remarks/Examples:</i> 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.P.13.3	<p>Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.P.13.4	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>

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	<p>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.</p> <p><i>Remarks/Examples:</i> 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).</p>

	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts
SC.5.L.14.2	<p>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.</p> <p><i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.L.15.1 and SC.3.L.15.2.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>

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	<p>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.</p> <p><i>Remarks/Examples:</i> 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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	<p>Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.</p> <p><i>Remarks/Examples:</i> 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.</p> <p>Florida Standards Connections: LAFS.5.W.3.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.N.2.2	<p>Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.</p> <p><i>Remarks/Examples:</i> 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.</p> <p>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.</p> <p>Florida Standards Connections: MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>

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	<p>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.</p> <p><i>Remarks/Examples:</i> 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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall</p>

SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.5.E.5.2. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning

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. <i>Remarks/Examples:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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.

	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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.
	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts

Big Idea 8: Properties of Matter

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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	<p>Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.</p> <p><i>Remarks/Examples:</i> 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.</p> <p>MAFS.K12.MP.5: Use appropriate tools strategically; and, MAFS.K12.MP.6: Attend to precision.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 2: Basic Application of Skills & Concepts</p>
SC.5.P.8.2	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning</p>
SC.5.P.8.3	<p>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.</p> <p><i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.5.P.8.2.</p>

	<i>Cognitive Complexity/Depth of Knowledge Rating:</i> 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. <i>Remarks/Examples:</i> Recognize that matter is composed of atoms. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 1: Recall

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. <i>Remarks/Examples:</i> Annually assessed on Grade 5 Science FCAT 2.0. Also assesses SC.3.P.9.1 and SC.4.P.9.1. <i>Cognitive Complexity/Depth of Knowledge Rating:</i> Level 3: Strategic Thinking & Complex Reasoning



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