

**ATTAINMENT COMPANY'S
TEACHING TO STANDARDS: SCIENCE
Alignment to the State of Florida
Science Standards**

GRADE: 4

Big Idea1:

The entire Teaching to Standards: Science is based on scientific inquiry.

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 All units of Teaching to Standards: Science	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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.4.N.1.2 All units of Teaching to Standards: Science	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.4.N.1.3 Understanding not explanation	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.4.N.1.4 All units of Teaching to Standards: Science	Attempt reasonable answers to scientific questions and cite evidence in support. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.4.N.1.5	Compare the methods and results of investigations done by other classmates.

All units of Teaching to Standards: Science	<i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.4.N.1.6 All units of Teaching to Standards: Science	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.4.N.1.7 All units of Teaching to Standards: Science	Recognize and explain that scientists base their explanations on evidence. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.4.N.1.8 All units of Teaching to Standards: Science	Recognize that science involves creativity in designing experiments. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory
SC.4.N.1.In.a Ask a question about the natural world and use selected reference material to find information, observe, explore, and identify findings.	SC.4.N.1.Su.a Ask a question about the natural world, explore materials, observe, and share information.	SC.4.N.1.Pa.a Explore, observe, and select an object or picture to solve a simple problem.
SC.4.N.1.In.a Ask a question about the natural world and use selected reference material to find information, observe, explore, and identify findings.	SC.4.N.1.Su.a Ask a question about the natural world, explore materials, observe, and share information.	SC.4.N.1.Pa.a Explore, observe, and select an object or picture to solve a simple problem.
SC.4.N.1.In.a Identify that a hot object will make a cold object warm when they touch.	SC.4.N.1.Su.a Recognize that a hot object can make a cold object warm when they touch.	SC.4.N.1.Pa.a Explore, observe, and select an object or picture to solve a simple problem.
SC.4.N.1.In.b Compare own observations with observations of others.	SC.4.N.1.Su.b Identify information based on observations of self and others.	SC.4.N.1.Pa.a Recognize a temperature change from cold to warm.
SC.4.N.1.In.b Compare own observations with observations of others.	SC.4.N.1.Su.b Identify information based on observations of self and others.	SC.4.N.1.Pa.b Recognize differences in objects or pictures.
SC.4.N.1.In.c Relate findings to predefined science questions.	SC.4.N.1.Su.c Answer questions about objects and actions related to science.	SC.4.N.1.Pa.c Select an object or picture to represent observed events.
SC.4.N.1.In.d Communicate observations and findings through the use of pictures, writing, or charts.	SC.4.N.1.Su.d Record observations using drawings, dictation, or pictures.	SC.4.N.1.Pa.d Recognize that people share information about science.
SC.4.N.1.In.e Recognize that scientists perform experiments, make observations, and gather evidence.	SC.4.N.1.Su.e Recognize ways that scientists collect evidence, such as by observations or measuring.	SC.4.N.1.Pa.d Recognize that people share information about science.
SC.4.N.1.In.e Recognize that scientists perform experiments, make observations, and gather evidence.	SC.4.N.1.Su.e Recognize ways that scientists collect evidence, such as by observations or measuring.	SC.4.N.1.Pa.d Recognize that people share information about science.

Big Idea2:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent SC.4.N.2.In.a Identify that science focuses on the natural world.	Supported SC.4.N.2.Su.a Recognize that science focuses on the natural world.	Participatory SC.4.N.2.Pa.a Associate science with the natural world in the local environment.

Big Idea3: 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 TSS: Science: Earth's History Unit	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent SC.4.N.3.In.a Identify different types of models, such as a replica, a picture, or an animation.	Supported SC.4.N.3.Su.a Recognize different types of models, such as a replica or a picture.	Participatory SC.4.N.3.Pa.a Match a model that is a replica to a real object.

Big Idea5: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

SC.4.E.5.2	Describe the changes in the observable shape of the moon over the course of about a month. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.4.E.5.5	Investigate and report the effects of space research and exploration on the economy and culture of Florida. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.E.5.In.a Identify that there are many stars in the sky with some that create patterns.	SC.4.E.5.Su.a Recognize a pattern of stars in the sky, such as the Big Dipper.	SC.4.E.5.Pa.a Recognize that there are many stars in the sky.
SC.4.E.5.In.b Label three phases of the moon, including full, half (quarter), and crescent.	SC.4.E.5.Su.b Identify a full moon and a half (quarter) moon.	SC.4.E.5.Pa.b Recognize a full moon as a circle.
SC.4.E.5.In.c Recognize that Earth revolves around the Sun.	SC.4.E.5.Su.c Recognize that Earth is always turning (rotating).	SC.4.E.5.Pa.c Identify morning, noon, and night.
SC.4.E.5.In.d Recognize that the Sun appears to rise and set because of Earth's rotation in a 24-hour day.	SC.4.E.5.Su.d Recognize that the side of Earth facing the Sun has daylight.	SC.4.E.5.Pa.c Identify morning, noon, and night.
SC.4.E.5.In.e Identify objects and people related to the space program in Florida.	SC.4.E.5.Su.e Recognize an object or person related to the space program in Florida.	SC.4.E.5.Pa.d Recognize a space-related object.

Big Idea6: 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). <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.4.E.6.3 TSS: Science Earth	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.

Unit	<i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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).	
	<i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.4.E.6.5 TSS: Science: Biology Unit	Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).	
	<i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory
SC.4.E.6.In.a Recognize that rocks are classified by the way they are formed, such as sedimentary.	SC.4.E.6.Su.a Sort rocks according to observable characteristics, including color, shape, and size.	SC.4.E.6.Pa.a Distinguish rocks from other substances found on the Earth's surface.
SC.4.E.6.In.b Identify physical properties (hardness, streak color, and luster) of common minerals, such as rock salt, talc, gold, and silver.	SC.4.E.6.Su.b Sort common minerals, such as rock salt, talc, gold, and silver, by their physical properties (luster and color).	SC.4.E.6.Pa.b Recognize common minerals, such as rock salt, talc, gold, and silver.
SC.4.E.6.In.c Recognize that some natural resources used by humans are non-renewable, such as oil.	SC.4.E.6.Su.c Recognize that some natural resources can run out (non-renewable).	SC.4.E.6.Pa.c Recognize the universal symbol for recycling.
SC.4.E.6.In.d Identify that wind and water cause physical weathering and erosion of rocks.	SC.4.E.6.Su.d Recognize examples of weathering or erosion in the environment.	SC.4.E.6.Pa.d Recognize the effect of weathering on an object.
SC.4.E.6.In.e Identify tools used to observe things that are far away and things that are very small.	SC.4.E.6.Su.e Recognize tools that will make things look larger, such as a telescope and a magnifier.	SC.4.E.6.Pa.e Recognize that something has been magnified.
SC.4.E.6.In.f Identify natural resources found in Florida, including solar energy, water, and limestone.	SC.4.E.6.Su.f Recognize natural resources found in Florida, such as solar energy and water.	SC.4.E.6.Pa.f Recognize water as a resource in Florida.

Big Idea8:

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.

BENCHMARK CODE	BENCHMARK
SC.4.P.8.1 TSS: Science: All Units	Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.4.P.8.2 TSS: Science: Earth's Waters Unit	Identify properties and common uses of water in each of its states. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.4.P.8.4	Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.4.P.8.In.a Compare objects and materials based on physical properties, such as size, shape, color, texture, weight, hardness, odor, taste, and temperature.	SC.4.P.8.Su.a Sort objects by physical properties, such as size, shape, color, texture, weight (heavy or light), and temperature (hot or cold).	SC.4.P.8.Pa.a Match objects with similar observable properties, such as size, shape, color, or texture.
SC.4.P.8.In.b Identify properties and uses of water in solid and liquid states.	SC.4.P.8.Su.b Identify uses of water in solid or liquid states.	SC.4.P.8.Pa.b Identify ice as a solid.
SC.4.P.8.In.c Identify that a whole object weighs the same as all of its parts together.	SC.4.P.8.Su.c Recognize that the parts of an object can be put together to make a whole.	SC.4.P.8.Pa.c Recognize that some objects have parts.
SC.4.P.8.In.d Identify objects a magnet will attract.	SC.4.P.8.Su.d Demonstrate that magnets can attract other magnets.	SC.4.P.8.Pa.d Recognize that objects can stick together.

Big Idea9:

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK CODE	BENCHMARK
SC.4.P.9.1 TSS: Science: Chemistry Unit	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: Low</i>

Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.P.9.In.a Observe and describe properties of materials that have been changed into other materials, such as decayed leaves of a plant.	SC.4.P.9.Su.a Indicate differences in materials that have been changed into other materials, such as rust on a can.	SC.4.P.9.Pa.a Recognize changes in observable properties of materials.

Big Idea10:

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 TSS: Science: Chemistry Unit	Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.4.P.10.2 TSS: Science: Chemistry Unit	Investigate and describe that energy has the ability to cause motion or create change. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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: High</i>
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: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.P.10.In.a Identify forms of energy, such as light, heat, electrical, and energy of motion.	SC.4.P.10.Su.a Recognize uses of different forms of energy, including electricity (computer, freezer); heat (camp fire, stove); and energy of motion (rollercoaster, pinball machine).	SC.4.P.10.Pa.a Recognize a source of heat energy (fire, heater).
SC.4.P.10.In.b Describe the 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).	SC.4.P.10.Su.b Recognize the results of using electrical energy (turning on television); heat energy (burning wood); and energy of motion (rolling ball).	SC.4.P.10.Pa.a Recognize a source of heat energy (fire, heater).
SC.4.P.10.In.c Recognize that vibrations cause sound and identify sounds as high or low (pitch).	SC.4.P.10.Su.c Recognize sounds as high or low (pitch).	SC.4.P.10.Pa.b Recognize objects that create sounds.
SC.4.P.10.In.d Identify machines that use energy from moving water or air, including a windmill and a waterwheel.	SC.4.P.10.Su.d Identify objects that use energy from moving air, such as a pinwheel or sailboat.	SC.4.P.10.Pa.c Recognize that moving air can move objects.

Big Idea11:**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.**

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: Low</i>	
SC.4.P.11.2	Identify common materials that conduct heat well or poorly. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.P.11.In.b Identify materials that are strong conductors of heat, such as metal.	SC.4.P.11.Su.b Recognize a common material that is a strong conductor of heat, such as metal.	SC.4.P.11.Pa.b Recognize common objects that conduct heat.

Big Idea12:**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: Low</i>	
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: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.P.12.In.a Identify that the position of an object changes when the object is in motion. SC.4.P.12.In.b Identify speed as how long it takes to travel a certain distance.	SC.4.P.12.Su.a Recognize that movement causes an object to change position. SC.4.P.12.Su.b Identify objects that move at different speeds.	SC.4.P.12.Pa.a Recognize that an object can move in different directions, such as left to right, straight line, and zigzag. SC.4.P.12.Pa.b Recognize an object as moving fast or slow.

Big Idea16:

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: Moderate</i>
SC.4.L.16.2	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.4.L.16.In.a Identify that insects spread pollen to help flowering plants make seeds.	SC.4.L.16.Su.a Recognize that many flowering plants grow from their own seeds.	SC.4.L.16.Pa.a Recognize that many plants have flowers and leaves.
SC.4.L.16.In.b Identify behaviors that animals have naturally (inherit) and behaviors that animals learn.	SC.4.L.16.Su.b Recognize behaviors of common animals.	SC.4.L.16.Pa.b Recognize similarities between self and parents.
SC.4.L.16.In.b Identify behaviors that animals have naturally (inherit) and behaviors that animals learn.	SC.4.L.16.Su.b Recognize behaviors of common animals.	SC.4.L.16.Pa.b Recognize similarities between self and parents.
SC.4.L.16.In.c Identify similarities in the major stages in the life cycles of common Florida plants and animals.	SC.4.L.16.Su.c Recognize the major stages in life cycles of common plants and animals.	SC.4.L.16.Pa.c Match offspring of animals with parents.

Big Idea17:

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: Moderate</i>
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: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.4.L.17.4 TSS: Science: Earth, Waters, Chemistry, and Biology Units	Recognize ways plants and animals, including humans, can impact the environment. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

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

GRADE: 5

Big Idea1: All Units in Teaching to Standards Science are based on the inquiry approach.

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 TSS: Science: All Units	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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.5.N.1.3 TSS: Science: All Units	Recognize and explain the need for repeated experimental trials. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.5.N.1.4	Identify a control group and explain its importance in an experiment. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method." <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>are repeated.</p> <p>SC.5.N.1.In.d Recognize that scientists use various methods to perform investigations, such as reviewing work of other scientists, making observations, and conducting experiments.</p> <p>SC.5.N.1.In.e Determine whether descriptions of observations are based on fact or personal belief.</p>	<p>with other groups.</p> <p>SC.5.N.1.Su.d Recognize ways that scientific evidence can be collected, such as by observing or measuring.</p> <p>SC.5.N.1.Su.e Recognize facts about a scientific observation.</p>	<p>questions about the natural world.</p> <p>SC.5.N.1.Pa.b Recognize that people use observation and actions to get answers to questions about the natural world.</p> <p>SC.5.N.1.Pa.b Recognize that people use observation and actions to get answers to questions about the natural world.</p> <p>SC.5.N.1.Pa.b Recognize that people use observation and actions to get answers to questions about the natural world.</p>
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Big Idea2:

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 TSS: Science: All Units	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory SC.5.N.2.Pa.a Recognize the importance of making careful observations. SC.5.N.2.Pa.b Recognize that a common activity can be repeated.

SC.5.N.2.In.a Identify that science knowledge is based on observations and evidence.	SC.5.N.2.Su.a Recognize that science knowledge is based on careful observations.	
SC.5.N.2.In.b Recognize that experiments involve procedures that can be repeated the same way by others.	SC.5.N.2.Su.b Recognize the importance of following correct procedures when carrying out science experiments.	

Big Idea5: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
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: Moderate</i>	
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>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.5.E.5.In.a Identify that a galaxy is made of a very large number of stars and the planets that orbit them.	SC.5.E.5.Su.a Recognize that a galaxy is a group of stars.	SC.5.E.5.Pa.a Recognize that stars are very far away from Earth.
SC.5.E.5.In.b Recognize major differences in the characteristics of the planets in the Solar System.	SC.5.E.5.Su.b Recognize that surface of planet Earth is covered by water and land.	SC.5.E.5.Pa.b Recognize Earth as the planet where we live.
SC.5.E.5.In.c Identify that the Solar System includes the Sun, Earth, Moon, and other planets and their moons.	SC.5.E.5.Su.c Identify that the Sun, Earth, and Moon are part of the Solar System.	SC.5.E.5.Pa.b Recognize Earth as the planet where we live.

Big Idea7: 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 TSS: Science: Water Unit	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>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected

TSS: Science: Water Unit	to all of Earth's water reservoirs via evaporation and precipitation processes. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
TSS: Science: Water Unit	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: High</i>
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: Moderate</i>
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: High</i>
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: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities

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

Big Idea8:

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.

BENCHMARK CODE	BENCHMARK
SC.5.P.8.1 TSS: Science: Chemistry Unit	Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.5.P.8.2 TSS: Science: Chemistry Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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>Cognitive Complexity/Depth of Knowledge Rating: Low</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.5.P.8.In.a Identify basic properties of solids, liquids, and gases, such as color, texture, and temperature.	SC.5.P.8.Su.a Identify the basic properties of solids and liquids, such as color, texture, and temperature.	SC.5.P.8.Pa.a Distinguish between water as a solid or liquid.
SC.5.P.8.In.b Identify examples of materials that will dissolve in water and those that will not.	SC.5.P.8.Su.b Recognize examples of materials that will dissolve in water.	SC.5.P.8.Pa.b Recognize a common substance that dissolves in water.
SC.5.P.8.In.c Identify the observable properties of the parts of a mixture, such as the particle size, shape, and color.	SC.5.P.8.Su.c Identify the separate parts of a mixture by color or shape.	SC.5.P.8.Pa.c Separate a group of objects into its parts.
SC.5.P.8.In.d Recognize that materials are made of very small parts that cannot be seen without a magnifying glass or a microscope.	SC.5.P.8.Su.d Use a magnifying tool to see small parts of an object.	SC.5.P.8.Pa.c Separate a group of objects into its parts.

Big Idea9:		
A. Matter can undergo a variety of changes.		
B. Matter can be changed physically or chemically.		
BENCHMARK CODE	BENCHMARK	
SC.5.P.9.1 TSS: Science: Chemistry Unit	Investigate and describe that many physical and chemical changes are affected by temperature. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory
SC.5.P.9.In.a Observe and identify that heating and cooling can change the properties of materials.	SC.5.P.9.Su.a Recognize changes in properties of materials caused by heating or cooling.	SC.5.P.9.Pa.a Recognize that freezing changes water to ice.

Big Idea10:		
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.5.P.10.2	Investigate and explain that energy has the ability to cause motion or create change. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory
SC.5.P.10.In.a Identify forms of energy, including heat, light, sound, electrical, and mechanical.	SC.5.P.10.Su.a Recognize uses of electrical energy (popcorn popper, vacuum cleaner), heat energy (grill, heater), light energy (sunlight, flashlight), and mechanical energy (bicycle).	SC.5.P.10.Pa.a Recognize a source of light energy (Sun, light bulb). SC.5.P.10.Pa.b Initiate a change in the motion of an

SC.5.P.10.In.b Identify ways energy can cause things to move or create changes.	SC.5.P.10.Su.b Recognize that energy is required to cause motion.	change in the motion of an object.
SC.5.P.10.In.c Identify that electrically charged materials will pull (attract) other materials.	SC.5.P.10.Su.c Recognize that electrically charged materials will pull (attract) other materials.	SC.5.P.10.Pa.c Demonstrate pushing away (repulsion) and pulling (attraction).
SC.5.P.10.In.d Demonstrate that electricity can produce heat, light, and sound.	SC.5.P.10.Su.d Recognize examples of electricity as a producer of heat, light, and sound.	SC.5.P.10.Pa.d Identify one source of sound, heat, or light that uses electricity.

Big Idea11:

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.

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: Moderate</i>	
SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.5.P.11.In.a Identify the power source and wires (conductors) in an electrical circuit.	SC.5.P.11.Su.a Recognize the power source in an electrical circuit.	SC.5.P.11.Pa.a Recognize that electrical systems must be turned on (closed) in order to work.
SC.5.P.11.In.b Identify materials that conduct electricity.	SC.5.P.11.Su.b Recognize a material that conducts electricity.	SC.5.P.11.Pa.a Recognize that electrical systems must be turned on (closed) in order to work.

Big Idea13:

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.

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
<p>SC.5.P.13.In.a Distinguish between movement of an object caused by gravity and movement caused by pushes and pulls.</p> <p>SC.5.P.13.In.b Identify that heavier objects take more force to move than lighter ones.</p> <p>SC.5.P.13.In.b Identify that heavier objects take more force to move than lighter ones.</p> <p>SC.5.P.13.In.c Identify that an opposing force (push or pull) is needed to prevent an object from moving.</p>	<p>SC.5.P.13.Su.a Recognize that gravity causes an object to move.</p> <p>SC.5.P.13.Su.b Recognize that a heavier object is harder to move than a light one.</p> <p>SC.5.P.13.Su.b Recognize that a heavier object is harder to move than a light one.</p> <p>SC.5.P.13.Su.c Recognize the source of a force (push or pull) used to stop an object from moving.</p>	<p>SC.5.P.13.Pa.a Recognize that pushing or pulling makes an object move.</p> <p>SC.5.P.13.Pa.a Recognize that pushing or pulling makes an object move.</p> <p>SC.5.P.13.Pa.a Recognize that pushing or pulling makes an object move.</p> <p>SC.5.P.13.Pa.b Recognize a way to stop an object from moving.</p>

Big Idea14:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of

	<p>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>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
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Big Idea15:

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: High</i></p>

Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.5.L.15.In.a 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.	SC.5.L.15.Su.a Recognize ways that plants and animals can be affected by changes in their habitats, such as lack of food or water.	SC.5.L.15.Pa.a Recognize what happens when plants don't get water.

Big Idea17:

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>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>

Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.5.L.17.In.a Identify features of common plants and animals that enable them to survive in different habitats (environments).	SC.5.L.17.Su.a Recognize that many different kinds of living things are found in different habitats.	SC.5.L.17.Pa.a Match common living things with their habitats.

GRADE: 6

Big Idea1: Teaching to Standards Science is based on the inquiry approach.

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 TSS: Science: All Units	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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.6.N.1.2	Explain why scientific investigations should be replicable. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.6.N.1.4 TSS: Science: All Units	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.N.1.In.a Identify a problem from the sixth grade curriculum, use reference materials to gather	SC.6.N.1.Su.a Recognize a problem from the sixth grade curriculum, use materials to	SC.6.N.1.Pa.a Recognize a problem related to the sixth grade curriculum, observe and

<p>information, carry out an experiment, collect and record data, and report results.</p> <p>SC.6.N.1.In.b Identify that scientific investigations can be repeated the same way by others.</p> <p>SC.6.N.1.In.c Identify that scientists can use different kinds of experiments, methods, and explanations to find answers to scientific questions.</p> <p>SC.6.N.1.In.c Identify that scientists can use different kinds of experiments, methods, and explanations to find answers to scientific questions.</p> <p>SC.6.N.1.In.d Compare results of observations and experiments of self and others.</p>	<p>gather information, carry out a simple experiment, and record and share results.</p> <p>SC.6.N.1.Su.b Recognize that experiments involve procedures that can be repeated the same way by others.</p> <p>SC.6.N.1.Su.c Recognize that scientists perform experiments, make observations, and gather evidence to answer scientific questions.</p> <p>SC.6.N.1.Su.c Recognize that scientists perform experiments, make observations, and gather evidence to answer scientific questions.</p> <p>SC.6.N.1.Su.d Identify information based on observations and experiments of self and others.</p>	<p>explore objects or activities, and recognize a solution.</p> <p>SC.6.N.1.Pa.b Recognize that when a common activity is repeated, it has the same result.</p> <p>SC.6.N.1.Pa.c Recognize that people conduct activities and share information about science.</p> <p>SC.6.N.1.Pa.c Recognize that people conduct activities and share information about science.</p> <p>SC.6.N.1.Pa.c Recognize that people conduct activities and share information about science.</p>
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Big Idea2:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
Access Point for Students with Significant Cognitive Disabilities	
<i>Independent</i>	<i>Supported</i>
	<i>Participatory</i>

<p>included in the study of science.</p> <p>SC.6.N.2.In.b Identify that scientific knowledge changes with new evidence or new interpretations.</p> <p>SC.6.N.2.In.c Identify that scientists come from different backgrounds and have varied interests.</p>	<p>topics in the study of science.</p> <p>SC.6.N.2.Su.b Recognize that scientific knowledge changes when new things are discovered.</p> <p>SC.6.N.2.Su.c Recognize contributions of well-known scientists.</p>	<p>objects and pictures related to science.</p> <p>SC.6.N.2.Pa.a Recognize objects and pictures related to science.</p> <p>SC.6.N.2.Pa.b Recognize a scientist as a person who works with science.</p>
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Big Idea3: 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	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.6.N.3.2	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.6.N.3.3 TSS: Science: All Units	<p>Give several examples of scientific laws.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Low</i></p>
SC.6.N.3.4 TSS: Science: Earth's History Unit	<p>Identify the role of models in the context of the sixth grade science benchmarks.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>

Access Point for Students with Significant Cognitive Disabilities

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

Big Idea6: 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 TSS: Science: Earth's History Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.6.E.6.2 TSS: Science: Earth's History Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.E.6.In.a Describe how weathering and erosion reshape the Earth's surface. SC.6.E.6.In.b Identify various landforms in Florida, including coastlines, rivers, lakes, and dunes.	SC.6.E.6.Su.a Recognize that wind and water cause physical weathering and erosion. SC.6.E.6.Su.b Recognize different landforms in Florida, including beaches (coastlines), rivers, and lakes.	SC.6.E.6.Pa.a Recognize that water can move soil. SC.6.E.6.Pa.b Recognize a landform in Florida, such as a beach (coastline), river, or lake.

Big Idea7: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.6.E.7.2 TSS: Science: Water's Unit	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.6.E.7.6	Differentiate between weather and climate. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
Access Point for Students with Significant Cognitive Disabilities	
<i>Independent</i>	<i>Supported</i>
<i>Participatory</i>	

atmosphere protects Earth from radiation from the Sun and regulates the temperature.	air that surrounds Earth (atmosphere) protects living things from the intense heat of the Sun.	weather situations or drills at school and at home.
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Big Idea11:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.P.11.In.a Identify energy as stored (potential) or expressed in motion (kinetic).	SC.6.P.11.Su.a Recognize examples of stored energy, such as in a roller coaster.	SC.6.P.11.Pa.a Distinguish between objects in motion (kinetic energy) and at rest.

Big Idea12:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.P.12.In.a Identify that	SC.6.P.12.Su.a Recognize	

		classroom.
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Big Idea13:

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.

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.P.13.In.a Identify examples of gravitational and contact forces, such as falling objects or push and pull.	SC.6.P.13.Su.a Distinguish between pushing and pulling forces (contact) and falling (gravitational force) of an object.	SC.6.P.13.Pa.a Recognize that pushing or pulling makes an object move (contact force).
SC.6.P.13.In.a Identify examples of gravitational and contact forces, such as falling objects or push and pull.	SC.6.P.13.Su.a Distinguish between pushing and pulling forces (contact) and falling (gravitational force) of an object.	SC.6.P.13.Pa.a Recognize that pushing or pulling makes an object move (contact force).
SC.6.P.13.In.b Demonstrate and describe how forces can change the speed and direction of objects in motion.	SC.6.P.13.Su.b Recognize that force can change the speed and direction of an object in motion.	SC.6.P.13.Pa.b Recognize that objects fall unless supported by something.
		SC.6.P.13.Pa.c Recognize the speed (fast or slow) of a moving object.

Big Idea14:

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 TSS: Science: Biology Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
SC.6.L.14.2 TSS: Science: Biology Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.6.L.14.3 TSS: Science: Biology Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.6.L.14.4 TSS: Science: Biology Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.6.L.14.6 TSS: Science: Biology Unit	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>SC.6.L.14.In.d Recognize that plant and animal cells have different parts and each part has a function.</p> <p>SC.6.L.14.In.e Recognize that bacteria and viruses can infect the human body.</p>	<p>cells.</p> <p>SC.6.L.14.Su.c Recognize that animals, including humans, use energy from food.</p> <p>SC.6.L.14.Su.d Identify ways to prevent infection from bacteria and viruses, such as hand washing.</p>	<p>SC.6.L.14.Pa.d Recognize practices that keep the body free from infection, such as hand washing.</p>
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<p>Big Idea15:</p> <p>A. The scientific theory of evolution is the organizing principle of life science.</p> <p>B. The scientific theory of evolution is supported by multiple forms of evidence.</p> <p>C. Natural Selection is a primary mechanism leading to change over time in organisms.</p>		
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.
<p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>		
<p>Access Point for Students with Significant Cognitive Disabilities</p>		
<p><i>Independent</i></p> <p>SC.6.L.15.In.a Classify animals into major groups, such as insects, fish, reptiles, mammals, and birds.</p>	<p><i>Supported</i></p> <p>SC.6.L.15.Su.a Sort common animals by their physical characteristics.</p>	<p><i>Participatory</i></p> <p>SC.6.L.15.Pa.a Match animals based on a given shared characteristic.</p>

GRADE: 7

<p>Big Idea1:</p> <p>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.</p> <p>B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."</p> <p>C: Scientific argumentation is a necessary part of scientific inquiry and plays an</p>
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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 TSS: Science: All Units	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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials). <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.7.N.1.4 TSS: Science: All Units	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
SC.7.N.1.5 TSS: Science: All Units	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>SC.7.N.1.In.c Identify questions that can be answered by scientific investigation, such as can a plant grow without sunlight?</p> <p>SC.7.N.1.In.c Identify questions that can be answered by scientific investigation, such as can a plant grow without sunlight?</p> <p>SC.7.N.1.In.d Identify ways that science can be used to study different areas, such as life science, earth and space science, and physical science.</p> <p>SC.7.N.1.In.e Identify that scientific knowledge is based on a large body of evidence and observations.</p>	<p>can a plant grow without sunlight?</p> <p>SC.7.N.1.Su.c Recognize a question that can be answered by scientific investigation, such as can a plant grow without sunlight?</p> <p>SC.7.N.1.Su.d Recognize that science includes different areas, such as life science, earth and space science, and physical science.</p> <p>SC.7.N.1.Su.e Recognize that scientific knowledge is based on evidence and observations.</p>	<p>science.</p> <p>SC.7.N.1.Pa.c Associate objects and activities with science.</p> <p>SC.7.N.1.Pa.c Associate objects and activities with science.</p> <p>SC.7.N.1.Pa.c Associate objects and activities with science.</p>
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Big Idea2:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
Access Point for Students with Significant Cognitive Disabilities		
<p><i>Independent</i></p> <p>SC.7.N.2.In.a Identify an example of a change in scientific knowledge based on new evidence or new interpretations.</p>	<p><i>Supported</i></p> <p>SC.7.N.2.Su.a Recognize an example of a change in scientific knowledge based on new evidence.</p>	<p><i>Participatory</i></p> <p>SC.7.N.2.Pa.a Recognize information related to science.</p>

Big Idea3: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.7.N.3.2 TSS: Science: Earth Unit	Identify the benefits and limitations of the use of scientific models. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory
SC.7.N.3.In.a Identify that scientific theories are explanations and laws describe relationships, and both are supported by evidence. SC.7.N.3.In.b Identify a benefit of using a model to explain how things work.	SC.7.N.3.Su.a Recognize that scientific theories and laws are supported by evidence. SC.7.N.3.Su.b Recognize a benefit of using a model to explain how things work.	SC.7.N.3.Pa.a Recognize that people use science to solve problems. SC.7.N.3.Pa.b Recognize a model of a common activity.

Big Idea6: 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 TSS: Science: Earth Unit	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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). <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.7.E.6.3 TSS: Science: Earth Unit	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.7.E.6.5 TSS: Science: Earth Unit	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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.7.E.6.6 TSS: Science: Earth Unit	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.7.E.6.7 TSS: Science: Earth Unit	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
<p>SC.7.E.6.In.a Identify that Earth has three layers (crust, mantle, and core) and describe the inside (core) as the hottest layer.</p> <p>SC.7.E.6.In.b Recognize that slow changes, such as mountain-building, and fast changes, such as volcanic eruptions, are caused by shifts below Earth's surface.</p> <p>SC.7.E.6.In.b Recognize that slow changes, such as mountain-building, and fast changes, such as volcanic eruptions, are caused by shifts below Earth's surface.</p> <p>SC.7.E.6.In.b Recognize that slow changes, such as mountain-building, and fast changes, such as volcanic eruptions, are caused by shifts below Earth's surface.</p> <p>SC.7.E.6.In.c Demonstrate how older rock layers are deposited at the bottom before younger layers (Law of Superposition).</p> <p>SC.7.E.6.In.d Identify physical evidence, such as fossils and sedimentary rock, which show how Earth has changed over a very long period of time.</p> <p>SC.7.E.6.In.e Recognize that humans have had an impact on Earth, such as polluting the air and water and expanding urban areas and road systems.</p>	<p>SC.7.E.6.Su.a Recognize that the surface of Earth is called the crust.</p> <p>SC.7.E.6.Su.b Recognize that mountains change size and shape over a long period of time.</p> <p>SC.7.E.6.Su.b Recognize that mountains change size and shape over a long period of time.</p> <p>SC.7.E.6.Su.c Recognize that fossils are remains or imprints of living things from long ago.</p> <p>SC.7.E.6.Su.d Recognize the effects of earthquakes and volcanoes.</p> <p>SC.7.E.6.Su.d Recognize the effects of earthquakes and volcanoes.</p> <p>SC.7.E.6.Su.e Recognize that polluting the air and water can harm Earth.</p>	<p>SC.7.E.6.Pa.a Recognize the ground as the outer surface (crust) of Earth.</p> <p>SC.7.E.6.Pa.b Discriminate between surface features of ground on Earth, such as rocky/sandy, flat/hilly, rough/smooth, or solid/liquid.</p> <p>SC.7.E.6.Pa.b Discriminate between surface features of ground on Earth, such as rocky/sandy, flat/hilly, rough/smooth, or solid/liquid.</p> <p>SC.7.E.6.Pa.c Recognize that ground on the Earth's surface changes over time.</p> <p>SC.7.E.6.Pa.c Recognize that ground on the Earth's surface changes over time.</p> <p>SC.7.E.6.Pa.c Recognize that ground on the Earth's surface changes over time.</p> <p>SC.7.E.6.Pa.d Distinguish between clean and dirty water.</p>

Big Idea10: 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	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Low</i></p>
SC.7.P.10.2	<p>Observe and explain that light can be reflected, refracted, and/or absorbed.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.7.P.10.3	<p>Recognize that light waves, sound waves, and other waves move at different</p>

speeds in different materials.		
<i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>		
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory
SC.7.P.10.In.a Identify that white (visible) light has many colors, such as when viewed with a prism.	SC.7.P.10.Su.a Recognize that white (visible) light contains many colors, such as viewed with a prism or rainbow.	SC.7.P.10.Pa.a Recognize primary colors of a rainbow.
SC.7.P.10.In.b Recognize that light can be reflected or absorbed.	SC.7.P.10.Su.b Recognize that light can be reflected.	SC.7.P.10.Pa.b Recognize reflections of objects.
SC.7.P.10.In.c Identify that light and sound travel in wave patterns.	SC.7.P.10.Su.c Recognize that sound and light travel.	SC.7.P.10.Pa.c Match light and sound to their sources.

Big Idea11:	
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 TSS: Science: Chemistry Unit	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.7.P.11.2 TSS: Science: Chemistry Unit	Investigate and describe the transformation of energy from one form to another. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.7.P.11.3 TSS: Science: Chemistry Unit	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
Access Point for Students with Significant Cognitive Disabilities	
Independent	Supported
Participatory	

forms of energy, such as solar panels change light into electricity. SC.7.P.11.In.b Recognize that one form of energy can change to other forms of energy, such as solar panels change light into electricity. SC.7.P.11.In.c Identify examples of the predictable movement of heat, such as hot air rises and heat transfers from hot to cold objects.	as electricity produces light and heat in a lamp. SC.7.P.11.Su.b Recognize that energy can change forms, such as electricity produces light and heat in a lamp. SC.7.P.11.Su.c Identify that heat rises.	that a hot object can make a cold object warm when they touch. SC.7.P.11.Pa.b Recognize that electrical devices need energy to work. SC.7.P.11.Pa.b Recognize that electrical devices need energy to work.
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Big Idea15:

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
TSS: Science: Earth (History) Unit	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.7.L.15.In.a Recognize that fossils help people learn about living things that lived a very long time ago. SC.7.L.15.In.b 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. SC.7.L.15.In.c Explain extinction and give examples.	SC.7.L.15.Su.a Identify fossils as parts of animals and plants that are no longer alive. SC.7.L.15.Su.b Recognize that common plants or animals have special features that enable them to live in their environment, such as a fish has gills so it can live underwater. SC.7.L.15.Su.c Recognize that some plants and animals no longer exist (are extinct).	SC.7.L.15.Pa.a Recognize that living things can die. SC.7.L.15.Pa.a Recognize that living things can die. SC.7.L.15.Pa.b Recognize a personal characteristic, such as hair color, that is different from the parents.

Big Idea16:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.7.L.16.In.a Explain that some characteristics are passed from parent to child (inherited).	SC.7.L.16.Su.a Recognize that offspring have similar characteristics to parents.	SC.7.L.16.Pa.a Recognize a characteristic passed from parents to self, such as eye color.
SC.7.L.16.In.b Recognize that it is possible to predict whether a person is likely to inherit a particular trait from parents.	SC.7.L.16.Su.b Recognize that animals, including humans, inherit some characteristics from one parent and some from the other.	SC.7.L.16.Pa.a Recognize a characteristic passed from parents to self, such as eye color.
SC.7.L.16.In.c Explain that offspring receive half their genes from each parent in sexual reproduction.	SC.7.L.16.Su.b Recognize that animals, including humans, inherit some characteristics from one parent and some from the other.	SC.7.L.16.Pa.b Recognize that children are born from two parents.
SC.7.L.16.In.d Recognize that science processes (biotechnology) have been used to develop new foods and medicines.	SC.7.L.16.Su.c Recognize that science (biotechnology) has been used to develop new products for use in daily life.	SC.7.L.16.Pa.c Recognize common products, such as medicine, developed through science.

Big Idea17:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.7.L.17.In.a Identify that in a simple food chain, energy transfers from the Sun to plants (producers), to animals (consumers), and to organisms that cause decay (decomposers).	SC.7.L.17.Su.a Identify different types of consumers in a food chain, including animals that eat plants, animals that eat other animals, and animals that eat plants and animals.	SC.7.L.17.Pa.a Recognize that humans eat vegetables and fruits (plants) and meat (animals).
SC.7.L.17.In.b 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).	SC.7.L.17.Su.b Recognize how living things affect each other in their habitat (ecosystem).	SC.7.L.17.Pa.b Recognize a mutual relationship between people and other living things.
SC.7.L.17.In.c Recognize that living things compete with each other to get the things they need to live in their local environment.	SC.7.L.17.Su.c Identify how a lack of food, water, or shelter affects plants and animals in their habitats.	SC.7.L.17.Pa.c Recognize what happens when animals don't get food and water.

GRADE: 8

Big Idea1: ALL Units in Teaching to Standards Science are based on the Inquiry approach.

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 TSS: Science: All Units	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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.8.N.1.2 TSS: Science: All Units	Design and conduct a study using repeated trials and replication. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.8.N.1.3 TSS: Science: All Units	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.8.N.1.4 TSS: Science: All Units	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>an experiment, collect and record data, and report results.</p> <p>SC.8.N.1.In.a 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.</p> <p>SC.8.N.1.In.b Identify a possible explanation (hypothesis) for a science problem.</p> <p>SC.8.N.1.In.c Identify methods used in different areas of science, such as life science, earth and space science, and physical science.</p> <p>SC.8.N.1.In.d 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.</p>	<p>curriculum, use materials to gather information, conduct a simple experiment, and record and share results.</p> <p>SC.8.N.1.Su.a Recognize a problem from the eighth grade curriculum, use materials to gather information, conduct a simple experiment, and record and share results.</p> <p>SC.8.N.1.Su.b Recognize a possible explanation (hypothesis) for a science problem.</p> <p>SC.8.N.1.Su.c Recognize methods used in different areas of science, such as life science, earth and space science, and physical science.</p> <p>SC.8.N.1.Su.d Recognize that the basic process used in scientific investigations involves questioning, observing, and recording and sharing results.</p>	<p>grade curriculum, observe and explore objects and activities, and recognize a solution.</p> <p>SC.8.N.1.Pa.a Recognize a problem related to the eighth grade curriculum, observe and explore objects and activities, and recognize a solution.</p> <p>SC.8.N.1.Pa.b Recognize science as a way to solve problems about the natural world.</p> <p>SC.8.N.1.Pa.b Recognize science as a way to solve problems about the natural world.</p> <p>SC.8.N.1.Pa.b Recognize science as a way to solve problems about the natural world.</p>
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Big Idea2:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.8.N.2.2	Discuss what characterizes science and its methods. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

scientific knowledge must be supported by evidence. SC.8.N.2.In.a Identify that scientific knowledge must be supported by evidence.	examples of evidence that supports scientific knowledge. SC.8.N.2.Su.a Recognize examples of evidence that supports scientific knowledge.	example of observable evidence related to science. SC.8.N.2.Pa.a Recognize an example of observable evidence related to science.
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Big Idea3: 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 TSS: Science: Earth Unit	Select models useful in relating the results of their own investigations. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.8.N.3.In.a Identify models used in the context of one's own study of science. SC.8.N.3.In.b Identify that scientific theories can change.	SC.8.N.3.Su.a Recognize models used in the context of one's own study of science. SC.8.N.3.Su.b Recognize that scientific theories can change.	SC.8.N.3.Pa.a Associate a model with an activity used in the context of one's own study of science. SC.8.N.3.Pa.b Observe and recognize a cause-effect relationship related to a science topic.

Big Idea4: As tomorrow's 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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

SC.8.N.4.In.a Identify ways that science processes can be used to make informed decisions in the community, state, and nation.	SC.8.N.4.Su.a Recognize that science processes can be used to help people in the community and state make wise choices.	SC.8.N.4.Pa.a Recognize a way science is used in the community.
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Big Idea5: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness). <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.8.E.5.9	Explain the impact of objects in space on each other including: <ol style="list-style-type: none"> the Sun on the Earth including seasons and gravitational attraction the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.

	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.8.E.5.12	Summarize the effects of space exploration on the economy and culture of Florida. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

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<p>SC.8.E.5.In.j Recognize that the Moon's revolution around the Earth takes about thirty days.</p> <p>SC.8.E.5.In.k Identify technology used by scientists to locate, view, and study objects in space.</p> <p>SC.8.E.5.In.l Recognize that technology allows special cameras and satellites to take pictures of objects in space.</p> <p>SC.8.E.5.In.m Identify effects of space research and exploration on Florida's economy.</p>	<p>SC.8.E.5.Su.h Recognize that scientists use special tools to examine objects in space.</p> <p>SC.8.E.5.Su.i Identify an effect space exploration has had on Florida's economy.</p>	<p>use, such as computers, telescopes, or satellites.</p>
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Big Idea8:

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.

BENCHMARK CODE	BENCHMARK
SC.8.P.8.1	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.8.P.8.2	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.8.P.8.3	<p>Explore and describe the densities of various materials through measurement of their masses and volumes.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.8.P.8.4	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>

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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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). <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.8.P.8.8 TSS: Science: Chemistry Unit	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.8.P.8.9 TSS: Science: Chemistry Unit	Distinguish among mixtures (including solutions) and pure substances. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.8.P.8.In.a Compare properties of solids, liquids, and gases.	SC.8.P.8.Su.a Recognize three states of matter, including solids, liquids, and gases.	SC.8.P.8.Pa.a Recognize examples of the gaseous state of matter, such as steam or smoke.
SC.8.P.8.In.b Recognize that the weight of an object is related to the pull of gravity.	SC.8.P.8.Su.b Compare the weight of different sized objects.	SC.8.P.8.Pa.a Recognize examples of the gaseous state of matter, such as steam or smoke.
SC.8.P.8.In.c Observe and compare the density of various materials.	SC.8.P.8.Su.c Recognize that smaller objects can weigh more than bigger objects because of density.	SC.8.P.8.Pa.b Recognize the heavier of two objects.
SC.8.P.8.In.d Observe and compare substances based on their physical properties, such as thermal and electrical conductivity, solubility, or magnetic properties.	SC.8.P.8.Su.d Observe and compare substances by physical properties, such as weight, size, boiling and melting points, and magnetic properties.	SC.8.P.8.Pa.c Recognize substances by physical properties, such as weight (heavy and light), size (big and small), and temperature (hot and cold).
SC.8.P.8.In.e Recognize that common elements combine in different ways to make up all living and nonliving things.	SC.8.P.8.Su.e Recognize that parts of matter can be separated in tiny particles.	SC.8.P.8.Pa.d Recognize common acids as safe or harmful.
SC.8.P.8.In.f Identify common elements, such as oxygen, iron, and carbon.	SC.8.P.8.Su.e Recognize that parts of matter can be separated in tiny particles.	SC.8.P.8.Pa.e Separate a mixture into its parts.
SC.8.P.8.In.g Identify that matter is made of small particles called atoms.	SC.8.P.8.Su.f Recognize examples of common elements, such as carbon or iron.	SC.8.P.8.Pa.e Separate a mixture into its parts.
SC.8.P.8.In.h Identify common acids, such as lemon juice and vinegar, and bases, such as baking soda and ammonia, and their hazardous properties.	SC.8.P.8.Su.g Recognize common acids, such as vinegar, and bases, such as ammonia, and their hazardous properties.	SC.8.P.8.Pa.e Separate a mixture into its parts.
	SC.8.P.8.Su.h Recognize	

SC.8.P.8.In.i Identify common materials as pure substances or mixtures.	examples of pure substances and mixtures.	
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Big Idea9:

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.

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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.8.P.9.2 TSS: Science: Chemistry Unit	Differentiate between physical changes and chemical changes. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.8.P.9.3 TSS: Science: Chemistry Unit	Investigate and describe how temperature influences chemical changes. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
<p>SC.8.P.9.In.a Observe and classify changes in matter as physical (reversible) or chemical (irreversible).</p> <p>SC.8.P.9.In.a Observe and classify changes in matter as physical (reversible) or chemical (irreversible).</p> <p>SC.8.P.9.In.b Observe and identify how temperature influences chemical changes.</p>	<p>SC.8.P.9.Su.a 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.</p> <p>SC.8.P.9.Su.a 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.</p> <p>SC.8.P.9.Su.b Observe and recognize changes caused by heat on substances.</p>	<p>SC.8.P.9.Pa.a Recognize an example of a physical change, such as ice changing to water.</p> <p>SC.8.P.9.Pa.a Recognize an example of a physical change, such as ice changing to water.</p> <p>SC.8.P.9.Pa.b Recognize that heat influences changes (chemical) in matter, such as cooking.</p> <p>SC.8.P.9.Pa.b Recognize that heat influences changes (chemical) in matter, such as cooking.</p> <p>SC.8.P.9.Pa.b Recognize that heat influences changes (chemical) in matter, such as cooking.</p>

Big Idea18:

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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

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

GRADE: 9-12

BODY OF KNOWLEDGE: LIFE SCIENCE

Standard14: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.2 TSS: Science: Biology Unit	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). <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.3 TSS: Science: Biology Unit	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.4 TSS: Science: Biology Unit	Compare and contrast structure and function of various types of microscopes. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.5	Explain the evidence supporting the scientific theory of the origin of eukaryotic cells (endosymbiosis). <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.14.7	Relate the structure of each of the major plant organs and tissues to physiological processes. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.8	Explain alternation of generations in plants. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.9	Relate the major structure of fungi to their functions. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.10	Discuss the relationship between the evolution of land plants and their anatomy. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.14.11	Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue.

	<i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.12	Describe the anatomy and histology of bone tissue. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.13	Distinguish between bones of the axial skeleton and the appendicular skeleton. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.14	Identify the major bones of the axial and appendicular skeleton. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.15	Identify major markings (such as foramina, fossae, tubercles, etc.) on a skeleton. Explain why these markings are important. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.16	Describe the anatomy and histology, including ultrastructure, of muscle tissue. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.17	List the steps involved in the sliding filament of muscle contraction. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.18	Describe signal transmission across a myoneural junction. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.19	Explain the physiology of skeletal muscle. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.20	Identify the major muscles of the human on a model or diagram. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.22	Describe the physiology of nerve conduction, including the generator potential, action potential, and the synapse. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.23	Identify the parts of a reflex arc. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.24	Identify the general parts of a synapse and describe the physiology of signal transmission across a synapse. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.25	Identify the major parts of a cross section through the spinal cord. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.26	Identify the major parts of the brain on diagrams or models. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.28	Identify the major functions of the spinal cord. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.29	Define the terms endocrine and exocrine.

	<i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.30	Compare endocrine and neural controls of physiology. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.31	Describe the physiology of hormones including the different types and the mechanisms of their action. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.32	Describe the anatomy and physiology of the endocrine system. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.33	Describe the basic anatomy and physiology of the reproductive system. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.34	Describe the composition and physiology of blood, including that of the plasma and the formed elements. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.35	Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.36	Describe the factors affecting blood flow through the cardiovascular system. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.37	Explain the components of an electrocardiogram. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.38	Describe normal heart sounds and what they mean. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.39	Describe hypertension and some of the factors that produce it. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.40	Describe the histology of the major arteries and veins of systemic, pulmonary, hepatic portal, and coronary circulation. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.41	Describe fetal circulation and changes that occur to the circulatory system at birth. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.42	Describe the anatomy and the physiology of the lymph system. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.43	Describe the histology of the respiratory system. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.45	Describe the histology of the alimentary canal and its associated accessory organs. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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.

	<i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.47	Describe the physiology of urine formation by the kidney. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.48	Describe the anatomy, histology, and physiology of the ureters, the urinary bladder and the urethra. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.49	Identify the major functions associated with the sympathetic and parasympathetic nervous systems. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.50	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.51	Describe the function of the vertebrate integumentary system. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
SC.912.L.14.52	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.14.53	Discuss basic classification and characteristics of plants. Identify bryophytes, pteridophytes, gymnosperms, and angiosperms. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

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<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
	SC.912.L.14.Su.a Identify that the cell is the smallest basic unit of life and that all living things are made of cells. SC.912.L.14.Su.b Recognize that cells have different parts and each has a function.	SC.912.L.14.Pa.a Match parts of common living things to their functions. SC.912.L.14.Pa.a Match parts of common living things to their functions. SC.912.L.14.Pa.a Match

human health issues. TSS: Science: Biology Unit		
SC.912.L.14.In.e Describe the general processes of food production, support, water transport, and reproduction in the major parts of plants.		

Standard15: 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 TSS: Science: Earth Unit	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.15.4	Describe how and why organisms are hierarchically classified and based on evolutionary relationships. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.15.5	Explain the reasons for changes in how organisms are classified. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.15.7	Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.15.8	Describe the scientific explanations of the origin of life on Earth. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.15.9	Explain the role of reproductive isolation in the process of speciation.

	<i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.15.11	Discuss specific fossil hominids and what they show about human evolution. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.15.14	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.15.15	Describe how mutation and genetic recombination increase genetic variation. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

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<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

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SC.912.L.15.In.f Recognize that changes in the genes of a species can affect the characteristics of their offspring.	living things are sometimes different from their parents.	species of animals, such as different types of dogs.
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Standard16: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.16.5	Explain the basic processes of transcription and translation, and how they result in the expression of genes. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.16.6	Discuss the mechanisms for regulation of gene expression in prokaryotes and eukaryotes at transcription and translation level. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.16.7	Describe how viruses and bacteria transfer genetic material between cells and the role of this process in biotechnology. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.16.8	Explain the relationship between mutation, cell cycle, and uncontrolled cell

	<p>growth potentially resulting in cancer.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.16.9	<p>Explain how and why the genetic code is universal and is common to almost all organisms.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.16.10	<p>Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.L.16.11	<p>Discuss the technologies associated with forensic medicine and DNA identification, including restriction fragment length polymorphism (RFLP) analysis.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.L.16.12	<p>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).</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.16.13	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.16.14	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.16.15	<p>Compare and contrast binary fission and mitotic cell division.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.16.16	<p>Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.16.17	<p>Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>

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<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>SC.912.L.16.In.c 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.</p> <p>SC.912.L.16.In.c 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.</p> <p>SC.912.L.16.In.c 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.</p> <p>SC.912.L.16.In.d Identify that cancer can result when cells change or grow uncontrollably.</p> <p>SC.912.L.16.In.e Identify ways that biotechnology has impacted society and the environment, such as the development of new medicines and farming techniques.</p> <p>SC.912.L.16.In.f Describe the basic process of human development from fertilization to birth.</p> <p>SC.912.L.16.In.g Recognize that cells reproduce by dividing to produce new cells that are identical (mitosis) or new cells that are different (meiosis).</p> <p>SC.912.L.16.In.g Recognize that cells reproduce by dividing to produce new cells that are identical (mitosis) or new cells that are different (meiosis).</p> <p>SC.912.L.16.In.g Recognize that cells reproduce by dividing to produce new cells that are identical (mitosis) or new cells that are different (meiosis).</p>	<p>that all organisms have a substance called DNA with unique information.</p> <p>SC.912.L.16.Su.b Recognize that all organisms have a substance called DNA with unique information.</p> <p>SC.912.L.16.Su.b Recognize that all organisms have a substance called DNA with unique information.</p> <p>SC.912.L.16.Su.c Recognize that cancer may result when cells change or grow too fast.</p> <p>SC.912.L.16.Su.d Recognize that new medicines and foods can be developed by science (biotechnology).</p> <p>SC.912.L.16.Su.e Recognize major phases in the process of human development from fertilization to birth.</p> <p>SC.912.L.16.Su.f Recognize that cells reproduce by dividing.</p> <p>SC.912.L.16.Su.f Recognize that cells reproduce by dividing.</p> <p>SC.912.L.16.Su.f Recognize that cells reproduce by dividing.</p>	<p>plants and animals of the same type (species).</p> <p>SC.912.L.16.Pa.b Recognize similarities in characteristics of plants and animals of the same type (species).</p> <p>SC.912.L.16.Pa.b Recognize similarities in characteristics of plants and animals of the same type (species).</p> <p>SC.912.L.16.Pa.b Recognize similarities in characteristics of plants and animals of the same type (species).</p> <p>SC.912.L.16.Pa.c Recognize that illness can result when parts of our bodies are not working properly.</p> <p>SC.912.L.16.Pa.d Recognize a food.</p> <p>SC.912.L.16.Pa.e Recognize the sequence of human development from baby to child to adult.</p> <p>SC.912.L.16.Pa.f Recognize that living things produce offspring (reproduce).</p> <p>SC.912.L.16.Pa.f Recognize that living things produce offspring (reproduce).</p> <p>SC.912.L.16.Pa.f Recognize that living things produce offspring (reproduce).</p>
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Standard17: 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	<p>Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.17.2	<p>Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.L.17.3	<p>Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.17.4	<p>Describe changes in ecosystems resulting from seasonal variations, climate change and succession.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.17.5	<p>Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.L.17.6	<p>Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.17.7	<p>Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.17.8	<p>Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.L.17.9	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.17.10	<p>Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.17.11	<p>Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.L.17.12	<p>Discuss the political, social, and environmental consequences of sustainable use of land.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.L.17.13	<p>Discuss the need for adequate monitoring of environmental parameters when making policy decisions.</p>

	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.17.14	Assess the need for adequate waste management strategies. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.17.15	Discuss the effects of technology on environmental quality. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.17.17	Assess the effectiveness of innovative methods of protecting the environment. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.L.17.18	Describe how human population size and resource use relate to environmental quality. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.17.19	Describe how different natural resources are produced and how their rates of use and renewal limit availability. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.17.20	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

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<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>the other (parasitism); and competing with each other for food, space, or shelter (competition).</p> <p>SC.912.L.17.In.d Recognize possible changes in an ecosystem (biodiversity) that can result from natural catastrophic events, changes in climate, and human activity.</p> <p>SC.912.L.17.In.e Identify the components of a food web, including sunlight, producers, consumers, and decomposers, and trace the flow of energy from the Sun.</p> <p>SC.912.L.17.In.f Identify the contributions of non-living elements, such as carbon and oxygen, to maintaining life in an ecosystem.</p> <p>SC.912.L.17.In.g Identify types of renewable and nonrenewable natural resources and explain the need for conservation.</p> <p>SC.912.L.17.In.h Describe ways the lifestyles of individuals and groups can help or hurt the environment. TSS: Science: Earth, Waters, and Chemistry Unit</p>	<p>human activity.</p> <p>SC.912.L.17.Su.e Identify producers, consumers, and decomposers in a simple food chain.</p> <p>SC.912.L.17.Su.f Identify that clean water and air are important for supporting life in an ecosystem.</p> <p>SC.912.L.17.Su.g Identify a way to conserve a familiar, nonrenewable, natural resource.</p> <p>SC.912.L.17.Su.h Identify ways individuals can help the environment.</p>	<p>Recognize that animals (consumers) eat animals and plants for food.</p> <p>SC.912.L.17.Pa.f Recognize the importance of clean water for living things.</p> <p>SC.912.L.17.Pa.f Recognize the importance of clean water for living things.</p> <p>SC.912.L.17.Pa.g Recognize a way to help the local environment.</p>
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Standard18: 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	<p>Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.L.18.2	<p>Describe the important structural characteristics of monosaccharides, disaccharides, and polysaccharides and explain the functions of carbohydrates in</p>

	living things. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.18.5	Discuss the use of chemiosmotic gradients for ATP production in chloroplasts and mitochondria. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.18.6	Discuss the role of anaerobic respiration in living things and in human society. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.18.7	Identify the reactants, products, and basic functions of photosynthesis. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.18.8	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.18.9	Explain the interrelated nature of photosynthesis and cellular respiration. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.L.18.10	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
Access Point for Students with Significant Cognitive Disabilities	
<i>Independent</i>	<i>Supported</i>
	<i>Participatory</i>

<p>SC.912.L.18.In.d Recognize that plants give off oxygen that is used by animals and animals give off carbon dioxide that is used by plants.</p> <p>SC.912.L.18.In.e Recognize that energy is stored in cells. TSS: Science: Biology Unit</p> <p>SC.912.L.18.In.f Recognize that enzymes break down food molecules during the digestive process.</p> <p>SC.912.L.18.In.g Identify that special properties of water, such as the ability to moderate temperature and dissolve substances, help to sustain living things on Earth.</p>	<p>that cells get energy from food.</p> <p>SC.912.L.18.Su.d Recognize that people and animals breathe in the oxygen that plants give off.</p> <p>SC.912.L.18.Su.e Recognize that food is broken down in digestion (use of enzymes).</p> <p>SC.912.L.18.Su.f Identify the important role of water in sustaining life of plants and animals.</p>	<p>SC.912.L.18.Pa.c Identify that food is a source of energy.</p> <p>SC.912.L.18.Pa.c Identify that food is a source of energy.</p> <p>SC.912.L.18.Pa.d Recognize that saliva helps people eat when they chew.</p> <p>SC.912.L.18.Pa.e Recognize that plants and animals use water to live.</p>
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BODY OF KNOWLEDGE: PHYSICAL SCIENCE

Standard8: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.P.8.2	Differentiate between physical and chemical properties and physical and chemical changes of matter. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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.

	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.P.8.6	Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.P.8.8	Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.P.8.9	Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.912.P.8.10	Describe oxidation-reduction reactions in living and non-living systems. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.P.8.11	Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.P.8.12	Describe the properties of the carbon atom that make the diversity of carbon compounds possible. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.P.8.13	Identify selected functional groups and relate how they contribute to properties of carbon compounds. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>characteristics of physical and chemical changes of matter. TSS: Science: Biology Unit</p> <p>SC.912.P.8.In.b Compare characteristics of physical and chemical changes of matter. TSS: Science: Chemistry and Biology Units</p> <p>SC.912.P.8.In.c Identify the nucleus as the center of an atom.</p> <p>SC.912.P.8.In.c Identify the nucleus as the center of an atom.</p> <p>SC.912.P.8.In.d Recognize that the periodic table includes all known elements.</p> <p>SC.912.P.8.In.e Identify that compounds are made of two or more elements.</p> <p>SC.912.P.8.In.f Identify formulas for common compounds, such as H₂O and CO₂.</p> <p>SC.912.P.8.In.g Identify properties of common acids and bases.</p> <p>SC.912.P.8.In.h Identify that carbon is found in all living things.</p> <p>SC.912.P.8.In.h Identify that carbon is found in all living things.</p>	<p>SC.912.P.8.Su.b Identify examples of physical and chemical changes.</p> <p>SC.912.P.8.Su.c Recognize that atoms are tiny particles in materials, too small to see.</p> <p>SC.912.P.8.Su.c Recognize that atoms are tiny particles in materials, too small to see.</p> <p>SC.912.P.8.Su.d Recognize examples of common elements, such as oxygen and hydrogen.</p> <p>SC.912.P.8.Su.e Recognize examples of common compounds, such as water and salt.</p> <p>SC.912.P.8.Su.f Match common chemical formulas to their common name, such as H₂O to water.</p> <p>SC.912.P.8.Su.g Categorize common materials or foods as acids or bases.</p> <p>SC.912.P.8.Su.h Recognize that carbon is found in all living things.</p> <p>SC.912.P.8.Su.h Recognize that carbon is found in all living things.</p>	<p>common chemical change, such as cooking, burning, rusting, or decaying.</p> <p>SC.912.P.8.Pa.b Recognize a common chemical change, such as cooking, burning, rusting, or decaying.</p> <p>SC.912.P.8.Pa.c Recognize that the parts of an object can be put together to make a whole.</p> <p>SC.912.P.8.Pa.c Recognize that the parts of an object can be put together to make a whole.</p> <p>SC.912.P.8.Pa.c Recognize that the parts of an object can be put together to make a whole.</p> <p>SC.912.P.8.Pa.d Match common compounds to their names or communication symbols.</p> <p>SC.912.P.8.Pa.d Match common compounds to their names or communication symbols.</p> <p>SC.912.P.8.Pa.d Match common compounds to their names or communication symbols.</p> <p>SC.912.P.8.Pa.d Match common compounds to their names or communication symbols.</p> <p>SC.912.P.8.Pa.e Recognize that some acids and bases can be dangerous and identify related hazard symbols.</p>
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Standard10: 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.

BENCHMARK CODE	BENCHMARK
SC.912.P.10.1	<p>Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.2	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.10.3	<p>Compare and contrast work and power qualitatively and quantitatively.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.4	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.10.5	<p>Relate temperature to the average molecular kinetic energy.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.6	<p>Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.10.7	<p>Distinguish between endothermic and exothermic chemical processes.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.8	<p>Explain entropy's role in determining the efficiency of processes that convert energy to work.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.10.9	<p>Describe the quantization of energy at the atomic level.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.10	<p>Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear).</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.11	<p>Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.10.12	<p>Differentiate between chemical and nuclear reactions.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.13	<p>Relate the configuration of static charges to the electric field, electric force, electric potential, and electric potential energy.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.10.14	<p>Differentiate among conductors, semiconductors, and insulators.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.10.15	<p>Investigate and explain the relationships among current, voltage, resistance, and power.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>

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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.P.10.17	Explore the theory of electromagnetism by explaining electromagnetic waves in terms of oscillating electric and magnetic fields. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.P.10.22	Construct ray diagrams and use thin lens and mirror equations to locate the images formed by lenses and mirrors. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.912.P.10.In.a Identify examples of energy being transformed from one form to another (conserved quantity).	SC.912.P.10.Su.a Recognize energy transformations that occur in everyday life, such as solar energy to electricity.	SC.912.P.10.Pa.a Observe and recognize examples of the transformation of electrical energy to light and heat.
SC.912.P.10.In.a Identify examples of energy being transformed from one form to another (conserved quantity).	SC.912.P.10.Su.a Recognize energy transformations that occur in everyday life, such as solar energy to electricity.	SC.912.P.10.Pa.a Observe and recognize examples of the transformation of electrical energy to light and heat.
SC.912.P.10.In.a Identify examples of energy being transformed from one form to another (conserved quantity).	SC.912.P.10.Su.a Recognize energy transformations that occur in everyday life, such as solar energy to electricity.	SC.912.P.10.Pa.b Recognize that work requires energy. SC.912.P.10.Pa.c Recognize the source and recipient of heat transfer.
SC.912.P.10.In.b Identify power as work done in a certain amount of time using measurable terms, such as watts or horsepower.	SC.912.P.10.Su.b Recognize the relationship between work and power, such as power is the amount of work a person or machine does.	SC.912.P.10.Pa.c Recognize the source and recipient of heat transfer.
SC.912.P.10.In.c 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. TSS: Science: Chemistry Unit	SC.912.P.10.Su.c Observe and recognize ways that heat travels, such as through space (radiation), through solids (conduction), and through liquids and gases (convection).	SC.912.P.10.Pa.d Identify materials that provide protection (insulation) from heat. SC.912.P.10.Pa.d Identify materials that provide protection (insulation) from heat.

<p>Chemistry Unit</p> <p>SC.912.P.10.In.c 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. TSS: Science: Chemistry Unit</p> <p>SC.912.P.10.In.d 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.</p> <p>SC.912.P.10.In.e Identify fundamental forces, including gravitational and electromagnetic.</p> <p>SC.912.P.10.In.e Identify fundamental forces, including gravitational and electromagnetic.</p> <p>SC.912.P.10.In.f Identify that atoms can be changed to release energy, such as in nuclear power plants, and recognize one related safety issue.</p> <p>SC.912.P.10.In.f Identify that atoms can be changed to release energy, such as in nuclear power plants, and recognize one related safety issue.</p> <p>SC.912.P.10.In.f Identify that atoms can be changed to release energy, such as in nuclear power plants, and recognize one related safety issue.</p> <p>SC.912.P.10.In.g Identify common conductors and insulators of electricity.</p> <p>SC.912.P.10.In.h Identify that some electrical devices use different types of power sources and explain what might happen if incorrect electrical components are used.</p> <p>SC.912.P.10.In.i Identify common applications of electromagnetic waves moving through different media, such as radio waves, microwaves, x-rays, or infrared.</p> <p>SC.912.P.10.In.i Identify common applications of electromagnetic</p>	<p>SC.912.P.10.Su.c Observe and recognize ways that heat travels, such as through space (radiation), through solids (conduction), and through liquids and gases (convection).</p> <p>SC.912.P.10.Su.d Recognize common processes that give off heat (exothermic), such as burning, and processes that absorb heat (endothermic), such as water coming to a boil.</p> <p>SC.912.P.10.Su.e Recognize that nuclear power plants generate electricity and can be dangerous.</p> <p>SC.912.P.10.Su.e Recognize that nuclear power plants generate electricity and can be dangerous.</p> <p>SC.912.P.10.Su.e Recognize that nuclear power plants generate electricity and can be dangerous.</p> <p>SC.912.P.10.Su.f Recognize fundamental forces, such as gravitational.</p> <p>SC.912.P.10.Su.g Recognize common objects that conduct electricity (conductors) and objects that do not conduct electricity (insulators).</p> <p>SC.912.P.10.Su.h Recognize that some electrical devices use different types of power sources.</p> <p>SC.912.P.10.Su.i Observe and identify the effects of magnetic attraction on iron.</p> <p>SC.912.P.10.Su.j Recognize examples of electromagnetic waves moving through different media, such as microwave ovens, radios, and x-rays.</p> <p>SC.912.P.10.Su.j Recognize examples of electromagnetic waves moving through different media, such as microwave ovens, radios, and x-rays.</p> <p>SC.912.P.10.Su.j Recognize examples of electromagnetic</p>	<p>(insulation) from heat.</p> <p>SC.912.P.10.Pa.e Recognize the universal symbols for radioactive and other hazardous materials.</p> <p>SC.912.P.10.Pa.e Recognize the universal symbols for radioactive and other hazardous materials.</p> <p>SC.912.P.10.Pa.e Recognize the universal symbols for radioactive and other hazardous materials.</p> <p>SC.912.P.10.Pa.f Recognize that an object falls unless stopped (gravity).</p> <p>SC.912.P.10.Pa.g 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.</p> <p>SC.912.P.10.Pa.h Demonstrate opening and closing an electrical circuit to turn an electrical device on and off.</p> <p>SC.912.P.10.Pa.i Recognize how magnets are used in real-world situations.</p> <p>SC.912.P.10.Pa.j Recognize primary and secondary colors in visible light.</p> <p>SC.912.P.10.Pa.j Recognize primary and secondary colors in visible light.</p> <p>SC.912.P.10.Pa.j Recognize primary and secondary colors in visible light.</p>
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<p>waves moving through different media, such as radio waves, microwaves, x-rays, or infrared.</p> <p>SC.912.P.10.In.i Identify common applications of electromagnetic waves moving through different media, such as radio waves, microwaves, x-rays, or infrared.</p>	<p>waves moving through different media, such as microwave ovens, radios, and x-rays.</p>	
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Standard12: 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	<p>Distinguish between scalar and vector quantities and assess which should be used to describe an event.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.12.2	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.12.3	<p>Interpret and apply Newton's three laws of motion.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.12.4	<p>Describe how the gravitational force between two objects depends on their masses and the distance between them.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.P.12.5	<p>Apply the law of conservation of linear momentum to interactions, such as collisions between objects.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.P.12.6	<p>Qualitatively apply the concept of angular momentum.</p>

	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
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.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
SC.912.P.12.9	Recognize that time, length, and energy depend on the frame of reference.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
SC.912.P.12.10	Interpret the behavior of ideal gases in terms of kinetic molecular theory.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.912.P.12.11	Describe phase transitions in terms of kinetic molecular theory.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
SC.912.P.12.13	Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.	
	<i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

Solar System. SC.912.P.12.In.e Recognize that the speed of light is always the same. SC.912.P.12.In.f Identify that gases exert pressure in a closed surface, such as pressure inside a basketball or a hot air balloon.	light travels very fast. SC.912.P.12.Su.f Recognize that a gas can exert pressure, such as in balloons, car tires, or pool floats.	that some objects contain air, such as balloons, tires, and balls.
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BODY OF KNOWLEDGE: EARTH AND SPACE SCIENCE	
<p>Standard5: 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.</p>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.E.5.2	Identify patterns in the organization and distribution of matter in the universe and the forces that determine them. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.E.5.3	Describe and predict how the initial mass of a star determines its evolution. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.E.5.7	Relate the history of and explain the justification for future space exploration and continuing technology development. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.E.5.8	Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.E.5.9	Analyze the broad effects of space exploration on the economy and culture of

	Florida. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.E.5.10	Describe and apply the coordinate system used to locate objects in the sky. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.E.5.11	Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
Access Point for Students with Significant Cognitive Disabilities	
<i>Independent</i>	<i>Supported</i>
<p>SC.912.E.5.In.a Recognize that the Milky Way is part of the expanding universe.</p> <p>SC.912.E.5.In.a Recognize that the Milky Way is part of the expanding universe.</p> <p>SC.912.E.5.In.b Identify stars as giant masses of burning gases that are changing.</p> <p>SC.912.E.5.In.c Describe the Sun as a medium-sized star with sunspots and storms that can affect weather and radio transmissions on Earth.</p> <p>SC.912.E.5.In.d Recognize that there are other planetary systems in the universe besides the Solar System.</p> <p>SC.912.E.5.In.e Recognize a lunar eclipse, a solar eclipse, and the effect of the Moon on tides on Earth.</p> <p>SC.912.E.5.In.f Identify major contributions and research from space exploration that affected Florida's economy and culture.</p> <p>SC.912.E.5.In.f Identify major contributions and research from space exploration that affected Florida's economy and culture.</p> <p>SC.912.E.5.In.g Identify tools that use different types of radiation, such as radio waves, ultraviolet radiation, and infrared waves.</p>	<p>SC.912.E.5.Su.a Recognize that the universe consists of many galaxies, including the Milky Way.</p> <p>SC.912.E.5.Su.a Recognize that the universe consists of many galaxies, including the Milky Way.</p> <p>SC.912.E.5.Su.b Recognize that stars are made of burning gases.</p> <p>SC.912.E.5.Su.c Describe observable effects of the Sun on Earth, such as changes in light and temperature.</p> <p>SC.912.E.5.Su.d Recognize that there are planetary systems in the Universe.</p> <p>SC.912.E.5.Su.e Recognize an eclipse.</p> <p>SC.912.E.5.Su.f Identify major contributions related to space exploration that affected Florida.</p> <p>SC.912.E.5.Su.f Identify major contributions related to space exploration that affected Florida.</p> <p>SC.912.E.5.Su.g Recognize examples of tools that use radiation for observation purposes, such as x-rays and infrared night goggles.</p>
<i>Participatory</i>	<p>SC.912.E.5.Pa.a Recognize that when objects move away from each other, the distance between them expands.</p> <p>SC.912.E.5.Pa.a Recognize that when objects move away from each other, the distance between them expands.</p> <p>SC.912.E.5.Pa.b Recognize that stars are bright.</p> <p>SC.912.E.5.Pa.c Observe and recognize effects of the Sun on Earth, such as temperature changes.</p> <p>SC.912.E.5.Pa.c Observe and recognize effects of the Sun on Earth, such as temperature changes.</p> <p>SC.912.E.5.Pa.d Recognize that Earth is a planet.</p> <p>SC.912.E.5.Pa.e Recognize items, such as freeze-dried food and space blankets, developed because of space exploration.</p> <p>SC.912.E.5.Pa.e Recognize items, such as freeze-dried food and space blankets, developed because of space exploration.</p> <p>SC.912.E.5.Pa.f Recognize a tool that uses radiation for personal reasons, such as x-rays.</p>

Standard6: 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 TSS: Science: Earth Unit	Describe and differentiate the layers of Earth and the interactions among them. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.E.6.2 TSS: Science: Earth Unit	Connect surface features to surface processes that are responsible for their formation. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.E.6.3 TSS: Science: Earth Unit	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.E.6.4 TSS: Science: Earth Unit	Analyze how specific geologic processes and features are expressed in Florida and elsewhere. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.E.6.5	Describe the geologic development of the present day oceans and identify commonly found features. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>
SC.912.E.6.6 TSS: Science: Earth Unit	Analyze past, present, and potential future consequences to the environment resulting from various energy production technologies. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.912.E.6.In.a Describe the three layers of Earth (core, mantle, and crust).	SC.912.E.6.Su.a Recognize the three layers of Earth (core, mantle, and crust).	SC.912.E.6.Pa.a Identify a surface feature of Earth, such as a hill.
SC.912.E.6.In.b Describe examples of surface features, such as glaciers, valleys, canyons, and dried riverbeds, which are caused by wind and erosion (surface processes).	SC.912.E.6.Su.b Identify types of surface features, such as hills and valleys.	SC.912.E.6.Pa.a Identify a surface feature of Earth, such as a hill.
SC.912.E.6.In.c Relate a cause and effect of movements in Earth's crust (plate tectonics), such as fault lines in the plates causing earthquakes.	SC.912.E.6.Su.c Recognize that Earth's crust is broken into parts (plates) that move and cause mountains and volcanoes.	SC.912.E.6.Pa.b Recognize that the surface of Earth can change.
SC.912.E.6.In.d Identify natural geological processes that change the land and water in Florida, including beach erosion and sinkholes.	SC.912.E.6.Su.d Recognize examples of natural changes to Florida's land and water, such as beach erosion.	SC.912.E.6.Pa.b Recognize that the surface of Earth can change.

Standard7: 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	<p>Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
SC.912.E.7.2	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
SC.912.E.7.3	<p>Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
SC.912.E.7.4	<p>Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>	
SC.912.E.7.5	<p>Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
SC.912.E.7.6	<p>Relate the formation of severe weather to the various physical factors.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>	
SC.912.E.7.7	<p>Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
SC.912.E.7.8	<p>Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
SC.912.E.7.9	<p>Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
Access Point for Students with Significant Cognitive Disabilities		
Independent	Supported	Participatory

<p>temperatures.</p> <p>SC.912.E.7.In.d Describe variations in climate due to geological locations, such as on mountains and the nearness to large bodies of water.</p> <p>SC.912.E.7.In.e Identify weather conditions using weather data and weather maps.</p> <p>SC.912.E.7.In.f Compare weather conditions in different types of severe storms, including hurricanes, tornadoes, and thunderstorms.</p> <p>SC.912.E.7.In.g Recognize that global climate change is related to conditions in the atmosphere and oceans.</p> <p>SC.912.E.7.In.h Describe how atmospheric and hydrologic conditions, such as hurricanes, drought, wildfires, and sinkholes, affect human behavior.</p> <p>SC.912.E.7.In.i Recognize that the ocean absorbs most of the solar energy reaching Earth and loses heat primarily by evaporation.</p>	<p>climate conditions in different parts of the world.</p> <p>SC.912.E.7.Su.e Identify weather conditions, including temperature, wind speed, and humidity.</p> <p>SC.912.E.7.Su.f Recognize conditions in severe storms, such as hurricanes, tornadoes, and thunderstorms.</p> <p>SC.912.E.7.Su.g Recognize that global climate change occurs over a long period of time.</p> <p>SC.912.E.7.Su.h Identify how weather and water conditions affect humans in Florida.</p> <p>SC.912.E.7.Su.i Recognize that the ocean absorbs heat from the Sun and then warms the air.</p>	<p>Recognize that weather (climate) is different in different locations.</p> <p>SC.912.E.7.Pa.d Recognize that weather (climate) is different in different locations.</p> <p>SC.912.E.7.Pa.e Recognize the weather conditions, including severe weather, in Florida.</p> <p>SC.912.E.7.Pa.e Recognize the weather conditions, including severe weather, in Florida.</p> <p>SC.912.E.7.Pa.e Recognize the weather conditions, including severe weather, in Florida.</p> <p>SC.912.E.7.Pa.f Recognize that the Sun heats the water in the ocean.</p>
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BODY OF KNOWLEDGE: NATURE OF SCIENCE	
Standard1: The Practice of Science	
<p>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.</p> <p>B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."</p> <p>C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.</p> <p>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.</p>	
BENCHMARK CODE	BENCHMARK
SC.912.N.1.1 TSS: Science: All Units	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:

	<ol style="list-style-type: none"> 1. pose questions about the natural world, 2. conduct systematic observations, 3. examine books and other sources of information to see what is already known, 4. review what is known in light of empirical evidence, 5. plan investigations, 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), 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. <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>	
SC.912.N.1.2	Describe and explain what characterizes science and its methods. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
SC.912.N.1.4	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
SC.912.N.1.7	Recognize the role of creativity in constructing scientific questions, methods and explanations. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>

<p>SC.912.N.1.In.a 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 information to identify what is already known</p>	<p>SC.912.N.1.Su.a 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</p>	<p>SC.912.N.1.Pa.a 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.</p>
<p>SC.912.N.1.In.a 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 information to identify what is already known</p>	<p>SC.912.N.1.Su.a 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</p>	<p>SC.912.N.1.Pa.a 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.</p>
<p>SC.912.N.1.In.b 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.</p>	<p>SC.912.N.1.Su.b Identify the basic process used in scientific investigations, including questioning, observing, recording, determining, and sharing results.</p>	<p>SC.912.N.1.Pa.b Recognize a process used in science to solve problems, such as observing, following procedures, and recognizing results.</p>
<p>SC.912.N.1.In.b 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.</p>	<p>SC.912.N.1.Su.b Identify the basic process used in scientific investigations, including questioning, observing, recording, determining, and sharing results.</p>	<p>SC.912.N.1.Pa.b Recognize a process used in science to solve problems, such as observing, following procedures, and recognizing results.</p>
<p>SC.912.N.1.In.c Identify that scientific investigations are sometimes repeated in different locations.</p>	<p>SC.912.N.1.Su.c Recognize that scientific investigations can be repeated in different locations.</p>	<p>SC.912.N.1.Pa.c Recognize that when a variety of common activities are repeated the same way, the outcomes are the same.</p>
<p>SC.912.N.1.In.d Identify that scientists use many different methods in conducting their research.</p>	<p>SC.912.N.1.Su.d Recognize that scientists use a variety of methods to get answers to their research questions.</p>	<p>SC.912.N.1.Pa.d Recognize that people try different ways to complete a task when the first one does not work.</p>

Standard2: 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). <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.912.N.2.3	Identify examples of pseudoscience (such as astrology, phrenology) in society. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Access Point for Students with Significant Cognitive Disabilities

Independent	Supported	Participatory
SC.912.N.2.In.a Identify examples of investigations that involve science.	SC.912.N.2.Su.a Identify questions that can be answered by science.	SC.912.N.2.Pa.a Recognize an example of work by scientists.
SC.912.N.2.In.b Distinguish between questions that can be answered by science and observable information and questions that can't be answered by science and observable information.	SC.912.N.2.Su.a Identify questions that can be answered by science.	SC.912.N.2.Pa.a Recognize an example of work by scientists.
SC.912.N.2.In.b Distinguish between questions that can be answered by science and observable information and questions that can't be answered by science and observable information.	SC.912.N.2.Su.a Identify questions that can be answered by science.	SC.912.N.2.Pa.a Recognize an example of work by scientists.
SC.912.N.2.In.c Recognize that scientific knowledge can be challenged or confirmed by new investigations and reexamination.	SC.912.N.2.Su.b Recognize that what is known about science can change based on new information.	SC.912.N.2.Pa.a Recognize an example of work by scientists.
SC.912.N.2.In.d Identify major contributions of scientists.	SC.912.N.2.Su.c Recognize major contributions of scientists.	SC.912.N.2.Pa.b Recognize a variety of cause-effect relationships related to science.

Standard3: 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	<p>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.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: High</i></p>
SC.912.N.3.2	<p>Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.N.3.3	<p>Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.N.3.4	<p>Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>
SC.912.N.3.5	<p>Describe the function of models in science, and identify the wide range of models used in science.</p> <p><i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i></p>

Access Point for Students with Significant Cognitive Disabilities

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

laws. SC.912.N.3.In.c Identify ways models are used in the study of science.		study of science.
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Standard4: 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. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>	
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. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>	
Access Point for Students with Significant Cognitive Disabilities		
<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.912.N.4.In.a Identify ways scientific knowledge and problem solving benefit people.	SC.912.N.4.Su.a Recognize ways scientific knowledge and problem solving benefit people.	SC.912.N.4.Pa.a Recognize science information that helps people.
SC.912.N.4.In.b Identify that costs and benefits must be considered when choosing a strategy for solving a problem.	SC.912.N.4.Su.b Recognize that some strategies may cost more to solve a problem.	SC.912.N.4.Pa.b Recognize a local problem that can be solved by science.