

Access Points to the Next  
Generation Sunshine State  
Standards for Science - 2016



## Science Standards

GRADE: K

### Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.K.N.1.1	Collaborate with a partner to collect information. <i>Cognitive Complexity:</i> Level 1: Recall
SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.K.N.1.5	Recognize that learning can come from careful observation. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.K.N.1.In.1 Identify a partner to obtain information.	SC.K.N.1.Su.1 Collect a designated item with a partner.	SC.K.N.1.Pa.1 Share objects with a partner.

SC.K.N.1.In.2 Identify information about objects and actions in the natural world through observation.	SC.K.N.1.Su.2 Identify information about objects in the natural world through observation.	SC.K.N.1.Pa.2 Recognize common objects in the natural world through observation.
SC.K.N.1.In.3 Observe, explore, and create a visual representation of real objects.	SC.K.N.1.Su.3 Observe, explore, and match pictures to real objects.	

**Big Idea 10: Forms of Energy**

**A. Energy is involved in all physical processes and is a unifying concept in many areas of science.**

**B. Energy exists in many forms and has the ability to do work or cause a change.**

BENCHMARK CODE	BENCHMARK
SC.K.P.10.1	Observe that things that make sound vibrate. <i>Cognitive Complexity:</i> Level 1: Recall

**Access Point for Students with Significant Cognitive Disabilities**

<i>Independent</i>		<i>Supported</i>		<i>Participatory</i>	
SC.K.P.10.In.1 Identify objects that create specific sounds.		SC.K.P.10.Su.1 Match sounds to specific objects.		SC.K.P.10.Pa.1 Recognize and respond to common sounds.	

**Big Idea 12: Motion of Objects**

**A. Motion is a key characteristic of all matter that can be observed, described, and measured.**

**B. The motion of objects can be changed by forces.**

BENCHMARK CODE	BENCHMARK
SC.K.P.12.1	Investigate that things move in different ways, such as fast, slow, etc. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning

**Access Point for Students with Significant Cognitive Disabilities**

<i>Independent</i>		<i>Supported</i>		<i>Participatory</i>	
SC.K.P.12.In.1 Identify ways that things move, such as fast or slow.		SC.K.P.12.Su.1 Recognize that things move.		SC.K.P.12.Pa.1 Track objects in motion.	

**Big Idea 13: Forces and Changes in Motion**

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

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

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

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

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

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

BENCHMARK CODE	BENCHMARK
SC.K.P.13.1	Observe that a push or a pull can change the way an object is moving. <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.K.P.13.In.1 Demonstrate pushing or pulling of an object to make it move.	SC.K.P.13.Su.1 Recognize that pushing or pulling an object makes it move.	SC.K.P.13.Pa.1 Track the movement of objects that are pushed or pulled.

**Big Idea 14: Organization and Development of Living Organisms**

**A. All plants and animals, including humans, are alike in some ways and different in others.**

**B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.**

**C. Humans can better understand the natural world through careful observation.**

BENCHMARK CODE	BENCHMARK
SC.K.L.14.1	Recognize the five senses and related body parts. <i>Cognitive Complexity:</i> Level 1: Recall
SC.K.L.14.2	Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.K.L.14.3	Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.K.L.14.In.1 Recognize	SC.K.L.14.Su.1 Recognize	SC.K.L.14.Pa.1 Recognize

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

## Big Idea 5: Earth in Space and Time

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

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

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.K.E.5.In.1 Identify that objects can fall to the ground unless something stops them.	SC.K.E.5.Su.1 Recognize that objects fall to the ground.	SC.K.E.5.Pa.1 Track a falling object.
SC.K.E.5.In.2 Identify daily activities in a 24-hour period, such as eating breakfast and going to bed, and associate activities with morning and night.	SC.K.E.5.Su.2 Identify one common activity that occurs in the day and one that occurs in the night.	SC.K.E.5.Pa.2 Recognize one common activity that occurs during the day.
SC.K.E.5.In.3 Identify the Sun in the daytime.	SC.K.E.5.Su.3 Recognize the Sun in the daytime.	SC.K.E.5.Pa.3 Associate the Sun with daytime.
SC.K.E.5.In.4 Identify the Moon in the sky at night.	SC.K.E.5.Su.4 Recognize the Moon in the sky at night.	SC.K.E.5.Pa.4 Associate the Moon with night.
	SC.K.E.5.Su.5 Recognize	SC.K.E.5.Pa.5 Recognize items that are big.

SC.K.E.5.In.5 big and small things in the sky.	Observe	the size of items as either big or small.	SC.K.E.5.Pa.6 items as nearby.	Recognize
SC.K.E.5.In.6 an item that is far away and an item that is nearby.	Identify	SC.K.E.5.Su.6 familiar objects that are far away or nearby.		

## Big Idea 8: Properties of Matter

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

**B. Objects and substances can be classified by their physical and chemical properties.**

**Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.**

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

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

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

BENCHMARK CODE	BENCHMARK
SC.K.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light) and texture.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.K.P.8.In.1 objects by observable properties, such as size, shape, or color.	SC.K.P.8.Su.1 objects by an observable property, such as size or color.	SC.K.P.8.Pa.1 two common objects that are identical to each other.
Sort	Match	Recognize

## Big Idea 9: Changes in Matter

**A. Matter can undergo a variety of changes.**

**B. Matter can be changed physically or chemically.**

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

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

BENCHMARK CODE	BENCHMARK
SC.K.P.9.1	Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.  <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.K.P.9.In.1 Recognize that the shape of objects, such as paper, changes when cut, torn, or crumpled.	SC.K.P.9.Su.1 Recognize that the shape of objects, such as paper, changes when cut or torn.	SC.K.P.9.Pa.1 Recognize a change in an object.

## GRADE: 1

### Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.1.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.1.N.1.2	Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations

	conducted. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.1.N.1.4	Ask "how do you know?" in appropriate situations. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.1.N.1.In.1 Request information about the environment.	SC.1.N.1.Su.1 Ask questions about common objects in the environment.	SC.1.N.1.Pa.1 Recognize common objects in the environment.
SC.1.N.1.In.2 Use careful observation to identify objects based on size, shape, color, or texture.	SC.1.N.1.Su.2 Recognize differences in objects through observation of size, shape, or color	SC.1.N.1.Pa.2 Recognize common objects as the same.
SC.1.N.1.In.3 Draw pictures about investigations conducted.	SC.1.N.1.Su.3 Contribute to group recordings of observations.	
SC.1.N.1.In.4 Ask a question about a science investigation.		

**Big Idea 12: Motion of Objects**

**A. Motion is a key characteristic of all matter that can be observed, described, and measured.**

**B. The motion of objects can be changed by forces.**

BENCHMARK CODE	BENCHMARK
SC.1.P.12.1	Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.1.P.12.In.1 Demonstrate and identify that objects can move in different ways, such as up and down, in a straight line, and back and forth.	SC.1.P.12.Su.1 Demonstrate that objects can move in different ways, such as up and down.	SC.1.P.12.Pa.1 Track objects moving up and down.

**Big Idea 13: Forces and Changes in Motion**

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

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

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

**Clarification for grades K-5: The target understanding for students in the elementary**



grades should focus on Big Ideas A, B, and C.

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

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

BENCHMARK CODE	BENCHMARK
SC.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

**Big Idea 14: Organization and Development of Living Organisms**

A. All plants and animals, including humans, are alike in some ways and different in others.

B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.

C. Humans can better understand the natural world through careful observation.

BENCHMARK CODE	BENCHMARK
SC.1.L.14.1	Make observations of living things and their environment using the five senses.  <i>Cognitive Complexity:</i> Level 1: Recall
SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers.  <i>Cognitive Complexity:</i> Level 1: Recall
SC.1.L.14.3	Differentiate between living and nonliving things.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.1.L.14.In.1 Use sight, hearing, and smell to make observations.	SC.1.L.14.Su.1 Use sight and hearing to make observations.	SC.1.L.14.Pa.1 Recognize and respond to different types of sensory stimuli.
	SC.1.L.14.Su.2 Recognize	SC.1.L.14.Pa.2 Recognize

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

### Big Idea 16: Heredity and Reproduction

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

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

BENCHMARK CODE	BENCHMARK
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.  <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.1.L.16.In.1 Match offspring of specific animals to adult animals.	SC.1.L.16.Su.1 Recognize that baby plants and animals have parents.	SC.1.L.16.Pa.1 Recognize one's own parents.

### Big Idea 17: Interdependence

**A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.**

**B. Both human activities and natural events can have major impacts on the environment.**

**C. Energy flows from the sun through producers to consumers.**

BENCHMARK CODE	BENCHMARK
SC.1.L.17.1	Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.  <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.1.L.17.In.1 Observe and recognize that plants and animals need water and food.	SC.1.L.17.Su.1 Observe and recognize that plants and animals need water.	SC.1.L.17.Pa.1 Observe and recognize that people need water.

## Big Idea 5: Earth in Space and Time

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

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

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

## Big Idea 6: Earth Structures

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

BENCHMARK CODE	BENCHMARK
SC.1.E.6.1	Recognize that water, rocks, soil, and living organisms are found on Earth's surface. <i>Cognitive Complexity:</i> Level 1: Recall
SC.1.E.6.2	Describe the need for water and how to be safe around water. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly.

<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>

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

## Big Idea 8: Properties of Matter

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

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

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

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

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

BENCHMARK CODE	BENCHMARK
SC.1.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.1.P.8.In.1 Sort objects by observable properties, such as size, shape, color, or texture.	SC.1.P.8.Su.1 Sort objects by an observable property, such as size, shape, or color.	SC.1.P.8.Pa.1 Identify common classroom objects by one observable property, such as size or color.

## GRADE: 2

### Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.2.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.N.1.2	Compare the observations made by different groups using the same tools.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

#### Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.2.N.1.In.1 Ask questions and make observations about things in the natural world.	SC.2.N.1.Su.1 Answer yes and no questions and make observations about common objects and actions in the natural world.	SC.2.N.1.Pa.1 Request a change or help to solve a problem in the environment.
SC.2.N.1.In.2 Identify information about objects based on	SC.2.N.1.Su.2 Identify	SC.2.N.1.Pa.2 Use senses to recognize objects.

observation. SC.2.N.1.In.3 that the results of a scientific activity should be the same when repeated	Recognize	characteristics of objects based on observation. SC.2.N.1.Su.3 that science activities can be repeated.	Recognize	SC.2.N.1.Pa.3 common objects in different environments.	Recognize
SC.2.N.1.In.4 that scientists work to solve problems.	Recognize	SC.2.N.1.Su.4 that people work in science.	Recognize		

### Big Idea 10: Forms of Energy

**A. Energy is involved in all physical processes and is a unifying concept in many areas of science.**

**B. Energy exists in many forms and has the ability to do work or cause a change.**

BENCHMARK CODE	BENCHMARK
SC.2.P.10.1	Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes, and power their cars.  <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.2.P.10.In.1 ways people use electricity in their lives.	Identify SC.2.P.10.Su.1 a way people use electricity in their lives.	Recognize SC.2.P.10.Pa.1 a device that uses electricity.
		Activate

### Big Idea 13: Forces and Changes in Motion

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

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

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

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

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

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

BENCHMARK CODE	BENCHMARK
SC.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.P.13.2	Demonstrate that magnets can be used to make some things move without touching them. <i>Cognitive Complexity:</i> Level 1: Recall
SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up. <i>Cognitive Complexity:</i> Level 1: Recall
SC.2.P.13.4	Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 14: Organization and Development of Living Organisms

**A. All plants and animals, including humans, are alike in some ways and different in others.**

**B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.**

**C. Humans can better understand the natural world through careful observation.**

BENCHMARK CODE	BENCHMARK
SC.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.2.L.14.In.1 Identify major external body parts, such as hands	SC.2.L.14.Su.1 Match external body parts, such as a foot, to their	SC.2.L.14.Pa.1 Recognize

and legs, and their uses.	uses.	one or more external body parts.
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### Big Idea 16: Heredity and Reproduction

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

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

BENCHMARK CODE	BENCHMARK
SC.2.L.16.1	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.2.L.16.In.1 Observe and recognize the major stages in the life cycles of plants and animals.	SC.2.L.16.Su.1 Observe and recognize the sequence of stages in the life cycles of common animals.	SC.2.L.16.Pa.1 Recognize that offspring can be matched with their parents, such as a human baby with adult humans and a puppy with dogs.

### Big Idea 17: Interdependence

**A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.**

**B. Both human activities and natural events can have major impacts on the environment.**

**C. Energy flows from the sun through producers to consumers.**

BENCHMARK CODE	BENCHMARK
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.2.L.17.2	Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.2.L.17.In.1 Identify the basic needs of living things, including water, food, and air.	SC.2.L.17.Su.1 Recognize that living things have basic needs, including water and food.	SC.2.L.17.Pa.1 Recognize that animals need water.
SC.2.L.17.In.2 Recognize that many different kinds of living things are found in different habitats.	SC.2.L.17.Su.2 Recognize that many kinds of living things are found in the environment.	SC.2.L.17.Pa.2 Recognize common living things in the immediate environment.



## Big Idea 6: Earth Structures

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

BENCHMARK CODE	BENCHMARK
SC.2.E.6.1	Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.2.E.6.2	Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.6.3	Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning

### Access Point for Students with Significant Cognitive Disabilities

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

## Big Idea 7: Earth Systems and Patterns

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

BENCHMARK CODE	BENCHMARK
SC.2.E.7.1	Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate). <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.7.4	Investigate that air is all around us and that moving air is wind.

	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.2.E.7.5	State the importance of preparing for severe weather, lightning, and other weather related events.
	<i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 8: Properties of Matter

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

**B. Objects and substances can be classified by their physical and chemical properties.**

**Mass is the amount of matter (or "stuff") in an object. Weight, on the other hand, is the measure of force of attraction (gravitational force) between an object and Earth.**

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

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

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

BENCHMARK CODE		BENCHMARK	
SC.2.P.8.1	Observe and measure objects in terms of their properties, including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets. <i>Cognitive Complexity:</i> Level 1: Recall		
SC.2.P.8.2	Identify objects and materials as solid, liquid, or gas. <i>Cognitive Complexity:</i> Level 1: Recall		
SC.2.P.8.3	Recognize that solids have a definite shape and that liquids and gases take the shape of their container. <i>Cognitive Complexity:</i> Level 1: Recall		
SC.2.P.8.4	Observe and describe water in its solid, liquid, and gaseous states. <i>Cognitive Complexity:</i> Level 1: Recall		
SC.2.P.8.5	Measure and compare temperatures taken every day at the same time. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts		
SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and sizes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts		
<b>Access Point for Students with Significant Cognitive Disabilities</b>			

<i><b>Independent</b></i>	<i><b>Supported</b></i>	<i><b>Participatory</b></i>
SC.2.P.8.In.1 Identify objects by observable properties, such as, size, shape, color,	SC.2.P.8.Su.1 Identify objects by observable properties, such as size, shape, and color.	SC.2.P.8.Pa.1 Match objects by one observable property, such as size or color.
SC.2.P.8.In.2 Identify objects and materials as solid or liquid.	SC.2.P.8.Su.2 Recognize water in solid or liquid states.	SC.2.P.8.Pa.2 Recognize water as a liquid.
SC.2.P.8.In.3 Recognize that solids have a definite shape and liquids take the shape of their container.	SC.2.P.8.Su.3 Recognize that solids have a definite shape.	SC.2.P.8.Pa.3 Recognize different containers that hold liquids.
SC.2.P.8.In.4 Describe and compare outside daily temperatures as warm or cold.	SC.2.P.8.Su.4 Identify outside temperatures as warm or cold.	SC.2.P.8.Pa.4 Recognize common objects or materials as warm or cold.
SC.2.P.8.In.5 Compare the volume of liquid in a variety of containers.	SC.2.P.8.Su.5 Recognize different volumes of liquids in identical containers.	

## Big Idea 9: Changes in Matter

**A. Matter can undergo a variety of changes.**

**B. Matter can be changed physically or chemically.**

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

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

BENCHMARK CODE	BENCHMARK
SC.2.P.9.1	Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.2.P.9.In.1 Explore and identify that observable properties of materials can be changed.	SC.2.P.9.Su.1 Recognize changes in observable properties of materials.	SC.2.P.9.Pa.1 Recognize that the appearance of an object or material has changed.

## GRADE: 3

### Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.3.N.1.1	Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.3.N.1.2	Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.3.N.1.3	Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

SC.3.N.1.4	Recognize the importance of communication among scientists. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.N.1.5	Recognize that scientists question, discuss, and check each others' evidence and explanations. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.N.1.6	Infer based on observation. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.3.N.1.7	Explain that empirical evidence is information, such as observations or measurements, that is used to help validate explanations of natural phenomena. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i><b>Independent</b></i>	<i><b>Supported</b></i>	<i><b>Participatory</b></i>
SC.3.N.1.In.1                      Ask questions, explore, observe, and identify outcomes.	SC.3.N.1.Su.1                      Ask literal questions, explore, observe, and share information.	SC.3.N.1.Pa.1                      Explore, observe, and recognize common objects in the natural world.
SC.3.N.1.In.2                      Work with a group to make observations and identify results.	SC.3.N.1.Su.2                      Work with a partner to make observations.	SC.3.N.1.Pa.2                      Assist with investigations with a partner.
SC.3.N.1.In.3                      Record observations to describe findings using written or visual formats, such as picture stories.	SC.3.N.1.Su.3                      Record observations to describe findings using dictated words and phrases and pictures.	SC.3.N.1.Pa.3                      Recognize that people share information.
SC.3.N.1.In.4                      Recognize that scientists share their knowledge and results with each other.	SC.3.N.1.Su.4                      Recognize that people work in different kinds of jobs related to science.	

<b>Big Idea 10: Forms of Energy</b>	
<b>A. Energy is involved in all physical processes and is a unifying concept in many areas of science.</b>	
<b>B. Energy exists in many forms and has the ability to do work or cause a change.</b>	
BENCHMARK CODE	BENCHMARK
SC.3.P.10.1	Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical. <i>Cognitive Complexity:</i> Level 1: Recall
SC.3.P.10.2	Recognize that energy has the ability to cause motion or create change. <i>Cognitive Complexity:</i> Level 1: Recall
SC.3.P.10.3	Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 11: Energy Transfer and Transformations

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

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

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

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

<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>
SC.3.P.11.1	Investigate, observe, and explain that things that give off light often also give off heat. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.3.P.11.2	Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.3.P.11.In.1 Identify that objects that give off light often give off heat.	SC.3.P.11.Su.1 Recognize objects that give off both heat and light, such as a light bulb.	SC.3.P.11.Pa.1 Recognize sources of light.
SC.3.P.11.In.2 Observe and identify that heat is produced when objects are rubbed together.	SC.3.P.11.Su.2 Observe and recognize that rubbing objects together causes heat.	SC.3.P.11.Pa.2 Recognize sources of heat.

## Big Idea 14: Organization and Development of Living Organisms

**A. All plants and animals, including humans, are alike in some ways and different in**

others.

**B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.**

**C. Humans can better understand the natural world through careful observation.**

BENCHMARK CODE	BENCHMARK
SC.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.L.14.2	Investigate and describe how plants respond to stimuli (heat, light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

**Big Idea 15: Diversity and Evolution of Living Organisms**

**A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.**

**B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.**

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

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.3.L.15.In.1 Classify animals by a similar physical characteristic, such as fur, feathers, and number of legs.	SC.3.L.15.Su.1 Sort common animals by observable characteristics.	SC.3.L.15.Pa.1 Match animals that are the same.
		SC.3.L.15.Pa.2 Match

SC.3.L.15.In.2 Classify parts of plants into groups based on physical characteristics, such as classifying leaves by shape.	SC.3.L.15.Su.2 Sort common plants by observable characteristics.	plants that are the same.
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### Big Idea 17: Interdependence

**A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.**

**B. Both human activities and natural events can have major impacts on the environment.**

**C. Energy flows from the sun through producers to consumers.**

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

#### Access Point for Students with Significant Cognitive Disabilities

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

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

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

BENCHMARK CODE	BENCHMARK
SC.3.N.3.1	Recognize that words in science can have different or more specific meanings than their use in everyday language; for example, energy, cell, heat/cold, and evidence. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.N.3.2	Recognize that scientists use models to help understand and explain how things work. <i>Cognitive Complexity:</i> Level 1: Recall
SC.3.N.3.3	Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

#### Access Point for Students with Significant Cognitive Disabilities

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.3.N.3.In.1 Recognize meanings of words used in science, such as	SC.3.N.3.Su.1 Recognize meanings of words used in science, such as	SC.3.N.3.Pa.1 Recognize common objects related to science by name,



energy, temperature, and gravity.		telescope, environment, and solid.		such as ice, animal, and plant.	
SC.3.N.3.In.2 Use models to identify how things work.		SC.3.N.3.Su.2 Recognize that models represent real things.		SC.3.N.3.Pa.2 Recognize a model of a real object.	
SC.3.N.3.In.3 Identify that models are representations of things found in the real world.					

## Big Idea 5: Earth in Space and Time

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

BENCHMARK CODE	BENCHMARK
SC.3.E.5.1	Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.3.E.5.2	Identify the Sun as a star that emits energy; some of it in the form of light. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.3.E.5.4	Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.3.E.5.5	Investigate that the number of stars that can be seen through telescopes is dramatically greater than those seen by the unaided eye. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

through a telescope.

### Big Idea 6: Earth Structures

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

BENCHMARK CODE	BENCHMARK
SC.3.E.6.1	Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.3.E.6.In.1 Identify that energy from the Sun heats objects.	SC.3.E.6.Su.1 Recognize that many things will get hot when left in the Sun.	SC.3.E.6.Pa.1 Distinguish between hot and cold objects.

### Big Idea 8: Properties of Matter

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

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

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

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

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

BENCHMARK CODE	BENCHMARK
SC.3.P.8.1	Measure and compare temperatures of various samples of solids and liquids.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.P.8.2	Measure and compare the mass and volume of solids and liquids.

	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.3.P.8.3	Compare materials and objects according to properties such as size, shape, color, texture, and hardness.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

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

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

BENCHMARK CODE	BENCHMARK
SC.3.P.9.1	Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i><b>Independent</b></i>	<i><b>Supported</b></i>	<i><b>Participatory</b></i>
SC.3.P.9.In.1 Describe changes in the state of water as a result of freezing and melting.	SC.3.P.9.Su.1 Identify that water can change from solid to liquid state by heating.	SC.3.P.9.Pa.1 Recognize that ice can change to water.

GRADE: 4

## Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.4.N.1.1	Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.3	Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.N.1.4	Attempt reasonable answers to scientific questions and cite evidence in support. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.5	Compare the methods and results of investigations done by other classmates. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.N.1.6	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.N.1.7	Recognize and explain that scientists base their explanations on evidence. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.N.1.8	Recognize that science involves creativity in designing experiments. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

### Independent

### Supported

### Participatory

SC.4.N.1.In.1 Ask a question about the natural world and use selected reference material to find information, observe, explore, and identify findings.

SC.4.N.1.Su.1 Ask a question about the natural world, explore materials, observe, and share information.

SC.4.N.1.Pa.1 Explore, observe, and select an object or picture to solve a simple problem.

SC.4.N.1.In.2 Compare

SC.4.N.1.Su.2 Identify information based on observations of self and

SC.4.N.1.Pa.2 Recognize differences in objects or pictures.

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

## Big Idea 10: Forms of Energy

**A. Energy is involved in all physical processes and is a unifying concept in many areas of science.**

**B. Energy exists in many forms and has the ability to do work or cause a change.**

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

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.4.P.10.In.1 Identify forms of energy, such as light, heat, electrical, and energy of motion.	SC.4.P.10.Su.1 Recognize uses of different forms of energy, including electricity (computer, freezer); heat (camp fire, stove); and energy of motion (rollercoaster, pinball machine).	SC.4.P.10.Pa.1 Recognize a source of heat energy (fire, heater).
SC.4.P.10.In.2 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.2 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.2 Recognize objects that create sounds.
SC.4.P.10.In.3 Recognize that vibrations cause sound and identify sounds as high or low (pitch).	SC.4.P.10.Su.3 Recognize sounds as high or low (pitch).	SC.4.P.10.Pa.3 Recognize that moving air can move objects.
SC.4.P.10.In.4 Identify	SC.4.P.10.Su.4 Identify	

machines that use energy from moving water or air, including a windmill and a waterwheel.	objects that use energy from moving air, such as a pinwheel or sailboat.	
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**Big Idea 11: Energy Transfer and Transformations**

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

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

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

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

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

**Access Point for Students with Significant Cognitive Disabilities**

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.P.11.In.1 Identify that a hot object will make a cold object warm when they touch.	SC.4.P.11.Su.1 Recognize that a hot object can make a cold object warm when they touch.	SC.4.P.11.Pa.1 Recognize a temperature change from cold to warm.
SC.4.P.11.In.2 Identify materials that are strong conductors of heat, such as metal.	SC.4.P.11.Su.2 Recognize a common material that is a strong conductor of heat, such as metal.	SC.4.P.11.Pa.2 Recognize common objects that conduct heat.

**Big Idea 12: Motion of Objects**

**A. Motion is a key characteristic of all matter that can be observed, described, and measured.**

**B. The motion of objects can be changed by forces.**

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

**Access Point for Students with Significant Cognitive Disabilities**

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

**Big Idea 16: Heredity and Reproduction**

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

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

<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>
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:</i> Level 2: Basic Application of Skills & Concepts
SC.4.L.16.2	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.L.16.4	Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

**Access Point for Students with Significant Cognitive Disabilities**

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

## Big Idea 17: Interdependence

**A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.**

**B. Both human activities and natural events can have major impacts on the environment.**

**C. Energy flows from the sun through producers to consumers.**

BENCHMARK CODE	BENCHMARK
SC.4.L.17.1	Compare the seasonal changes in Florida plants and animals to those in other regions of the country.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.L.17.2	Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.L.17.3	Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 2: The Characteristics of Scientific Knowledge

**A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.**

**B: Scientific knowledge is durable and robust, but open to change.**



**C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.**

BENCHMARK CODE	BENCHMARK
SC.4.N.2.1	Explain that science focuses solely on the natural world. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.N.2.In.1 Identify that science focuses on the natural world.	SC.4.N.2.Su.1 Recognize that science focuses on the natural world.	SC.4.N.2.Pa.1 Associate science with the natural world in the local environment.

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

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

BENCHMARK CODE	BENCHMARK
SC.4.N.3.1	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.N.3.In.1 Identify different types of models, such as a replica, a picture, or an animation.	SC.4.N.3.Su.1 Recognize different types of models, such as a replica or a picture.	SC.4.N.3.Pa.1 Match a model that is a replica to a real object.

### Big Idea 5: Earth in Space and Time

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

BENCHMARK CODE	BENCHMARK
SC.4.E.5.1	Observe that the patterns of stars in the sky stay the same although they appear to shift across the sky nightly, and different stars can be seen in different seasons. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.E.5.2	Describe the changes in the observable shape of the moon over the course of about a month. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.E.5.3	Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.E.5.4	Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.

	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.E.5.5	Investigate and report the effects of space research and exploration on the economy and culture of Florida.
	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.E.5.In.1 Identify that there are many stars in the sky with some that create patterns.	SC.4.E.5.Su.1 Recognize a pattern of stars in the sky, such as the Big Dipper.	SC.4.E.5.Pa.1 Recognize that there are many stars in the sky.
SC.4.E.5.In.2 Label three phases of the moon, including full, half (quarter), and crescent.	SC.4.E.5.Su.2 Identify a full moon and a half (quarter) moon.	SC.4.E.5.Pa.2 Recognize a full moon as a circle.
SC.4.E.5.In.3 Recognize that Earth revolves around the Sun.	SC.4.E.5.Su.3 Recognize that Earth is always turning (rotating).	SC.4.E.5.Pa.3 Identify morning, noon, and night.
SC.4.E.5.In.4 Recognize that the Sun appears to rise and set because of Earth's rotation in a 24-hour day.	SC.4.E.5.Su.4 Recognize that the side of Earth facing the Sun has daylight.	SC.4.E.5.Pa.4 Recognize a space-related object.
SC.4.E.5.In.5 Identify objects and people related to the space program in Florida.	SC.4.E.5.Su.5 Recognize an object or person related to the space program in Florida.	

## Big Idea 6: Earth Structures

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

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

	very small things and very large things. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy). <i>Cognitive Complexity:</i> Level 1: Recall

**Access Point for Students with Significant Cognitive Disabilities**

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

## Big Idea 8: Properties of Matter

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

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

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

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

**Clarification for grades 3-5: In grade 3, introduce the term mass as compared to the term**

weight. In grade 4, investigate the concept of weight versus mass of objects. In grade 5, discuss why mass (not weight) is used to compare properties of solids, liquids and gases.

BENCHMARK CODE	BENCHMARK
SC.4.P.8.1	Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.P.8.2	Identify properties and common uses of water in each of its states. <i>Cognitive Complexity:</i> Level 1: Recall
SC.4.P.8.3	Explore the Law of Conservation of Mass by demonstrating that the mass of a whole object is always the same as the sum of the masses of its parts. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.4.P.8.4	Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.P.8.In.1 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.1 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.1 Match objects with similar observable properties, such as size, shape, color, or texture.
SC.4.P.8.In.2 Identify properties and uses of water in solid and liquid states.	SC.4.P.8.Su.2 Identify uses of water in solid or liquid states.	SC.4.P.8.Pa.2 Identify ice as a solid.
SC.4.P.8.In.3 Identify that a whole object weighs the same as all of its parts together.	SC.4.P.8.Su.3 Recognize that the parts of an object can be put together to make a whole.	SC.4.P.8.Pa.3 Recognize that some objects have parts.
SC.4.P.8.In.4 Identify objects a magnet will attract.	SC.4.P.8.Su.4 Demonstrate that magnets can attract other magnets.	SC.4.P.8.Pa.4 Recognize that objects can stick together.

## Big Idea 9: Changes in Matter

**A. Matter can undergo a variety of changes.**

**B. Matter can be changed physically or chemically.**

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

**Clarification for Grades 6-8: The target understanding for students in the middle grades should begin to transition the focus to: C. When matter changes chemically, a**

rearrangement of bonds between the atoms occurs. This results in new substances with new properties.

BENCHMARK CODE	BENCHMARK
SC.4.P.9.1	Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking. <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.4.P.9.In.1 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.1 Indicate differences in materials that have been changed into other materials, such as rust on a can.	SC.4.P.9.Pa.1 Recognize changes in observable properties of materials.

## GRADE: 5

### Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.5.N.1.1	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.N.1.4	Identify a control group and explain its importance in an experiment.

	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 10: Forms of Energy

**A. Energy is involved in all physical processes and is a unifying concept in many areas of science.**

**B. Energy exists in many forms and has the ability to do work or cause a change.**

BENCHMARK CODE	BENCHMARK
SC.5.P.10.1	Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.P.10.2	Investigate and explain that energy has the ability to cause motion or create change. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.5.P.10.3	Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.5.P.10.4	Investigate and explain that electrical energy can be transformed into heat, light, and

	sound energy, as well as the energy of motion.
	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.5.P.10.In.1 Identify forms of energy, including heat, light, sound, electrical, and mechanical.	SC.5.P.10.Su.1 Recognize uses of electrical energy (popcorn popper, vacuum cleaner), heat energy (grill, heater), light energy (sunlight, flashlight), and mechanical energy (bicycle).	SC.5.P.10.Pa.1 Recognize a source of light energy (Sun, light bulb).
SC.5.P.10.In.2 Identify ways energy can cause things to move or create changes.	SC.5.P.10.Su.2 Recognize that energy is required to cause motion.	SC.5.P.10.Pa.2 Initiate a change in the motion of an object.
SC.5.P.10.In.3 Identify that electrically charged materials will pull (attract) other materials.	SC.5.P.10.Su.3 Recognize that electrically charged materials will pull (attract) other materials.	SC.5.P.10.Pa.3 Demonstrate pushing away (repulsion) and pulling (attraction).
SC.5.P.10.In.4 Demonstrate that electricity can produce heat, light, and sound.	SC.5.P.10.Su.4 Recognize examples of electricity as a producer of heat, light, and sound.	SC.5.P.10.Pa.4 Identify one source of sound, heat, or light that uses electricity.

**Big Idea 11: Energy Transfer and Transformations**

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

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

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

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

<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>
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:</i> Level 2: Basic Application of Skills & Concepts
SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 13: Forces and Changes in Motion

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

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

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

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

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

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

BENCHMARK CODE	BENCHMARK
SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects. <i>Cognitive Complexity:</i> Level 1: Recall
SC.5.P.13.2	Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.P.13.3	Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.P.13.4	Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.5.P.13.In.1 Distinguish between movement of an object caused by gravity and movement caused by pushes and pulls.	SC.5.P.13.Su.1 Recognize that gravity causes an object to move.	SC.5.P.13.Pa.1 Recognize that pushing or pulling makes an object move.
SC.5.P.13.In.2 Identify that heavier objects take more force to move than lighter ones.	SC.5.P.13.Su.2 Recognize that a heavier object is harder to move than a light one.	SC.5.P.13.Pa.2 Recognize a way to stop an object from moving.
SC.5.P.13.In.3 Identify	SC.5.P.13.Su.3 Recognize the source of a force (push or pull) used to stop	



that an opposing force (push or pull) is needed to prevent an object from moving.	an object from moving.	
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**Big Idea 14: Organization and Development of Living Organisms**

**A. All plants and animals, including humans, are alike in some ways and different in others.**

**B. All plants and animals, including humans, have internal parts and external structures that function to keep them alive and help them grow and reproduce.**

**C. Humans can better understand the natural world through careful observation.**

BENCHMARK CODE	BENCHMARK
SC.5.L.14.1	Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

**Access Point for Students with Significant Cognitive Disabilities**

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.5.L.14.In.1 Distinguish major external and internal body parts, including skin, brain, heart, lungs, stomach, muscles and skeleton, reproductive organs, and sensory organs.	SC.5.L.14.Su.1 Identify major external and internal body parts, including skin, brain, heart, lungs, stomach, and sensory organs.	SC.5.L.14.Pa.1 Recognize body parts related to movement and the five senses.
SC.5.L.14.In.2 Identify functions of plant and animal structures; for example, plant stem transports food to leaves, and heart pumps blood to parts of the body.	SC.5.L.14.Su.2 Recognize the functions of the major parts of plants and animals.	SC.5.L.14.Pa.2 Observe plants and animals and recognize how they are alike in the way they look.

**Big Idea 15: Diversity and Evolution of Living Organisms**

**A. Earth is home to a great diversity of living things, but changes in the environment can affect their survival.**

**B. Individuals of the same kind often differ in their characteristics and sometimes the differences give individuals an advantage in surviving and reproducing.**

BENCHMARK CODE	BENCHMARK
SC.5.L.15.1	Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>

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

**Big Idea 17: Interdependence**

**A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.**

**B. Both human activities and natural events can have major impacts on the environment.**

**C. Energy flows from the sun through producers to consumers.**

BENCHMARK CODE	BENCHMARK
SC.5.L.17.1	Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.
<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts	
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.5.L.17.In.1 Identify features of common plants and animals that enable them to survive in different habitats (environments).	SC.5.L.17.Su.1 Recognize that many different kinds of living things are found in different habitats.	SC.5.L.17.Pa.1 Match common living things with their habitats.

**Big Idea 2: The Characteristics of Scientific Knowledge**

**A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.**

**B: Scientific knowledge is durable and robust, but open to change.**

**C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.**

BENCHMARK CODE	BENCHMARK
SC.5.N.2.1	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.
<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts	
SC.5.N.2.2	Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.

<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>

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

### Big Idea 5: Earth in Space and Time

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

BENCHMARK CODE	BENCHMARK
SC.5.E.5.1	Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way.  <i>Cognitive Complexity:</i> Level 1: Recall
SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.E.5.3	Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.5.E.5.In.1 Identify that a galaxy is made of a very large number of stars and the planets that orbit them.	SC.5.E.5.Su.1 Recognize that a galaxy is a group of stars.	SC.5.E.5.Pa.1 Recognize that stars are very far away from Earth.
SC.5.E.5.In.2 Recognize major differences in the characteristics of the planets in the Solar System.	SC.5.E.5.Su.2 Recognize that surface of planet Earth is covered by water and land.	SC.5.E.5.Pa.2 Recognize Earth as the planet where we live.
SC.5.E.5.In.3 Identify that the Solar System includes the Sun, Earth, Moon, and other planets and their moons.	SC.5.E.5.Su.3 Identify that the Sun, Earth, and Moon are part of the Solar System.	

### Big Idea 7: Earth Systems and Patterns

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

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

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

SC.5.E.7.In.7 Identify emergency plans and procedures for severe weather.		
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**Big Idea 8: Properties of Matter**

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

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

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

**Clarification for grades K-2: The use of the more familiar term ‘weight’ instead of the term “mass” is recommended for grades K-2.**

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

BENCHMARK CODE	BENCHMARK
SC.5.P.8.1	Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.P.8.2	Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.5.P.8.3	Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.5.P.8.4	Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.  <i>Cognitive Complexity:</i> Level 1: Recall

**Access Point for Students with Significant Cognitive Disabilities**

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.5.P.8.In.1 Identify basic properties of solids, liquids, and gases, such as color, texture, and temperature.	SC.5.P.8.Su.1 Identify the basic properties of solids and liquids, such as color, texture, and temperature.	SC.5.P.8.Pa.1 Distinguish between water as a solid or liquid.  SC.5.P.8.Pa.2 Recognize

<p>SC.5.P.8.In.2 Identify examples of materials that will dissolve in water and those that will not.</p> <p>SC.5.P.8.In.3 Identify the observable properties of the parts of a mixture, such as the particle size, shape, and color.</p> <p>SC.5.P.8.In.4 Recognize that materials are made of very small parts that cannot be seen without a magnifying glass or a microscope.</p>	<p>SC.5.P.8.Su.2 Recognize examples of materials that will dissolve in water.</p> <p>SC.5.P.8.Su.3 Identify the separate parts of a mixture by color or shape.</p> <p>SC.5.P.8.Su.4 Use a magnifying tool to see small parts of an object.</p>	<p>a common substance that dissolves in water.</p> <p>SC.5.P.8.Pa.3 Separate a group of objects into its parts.</p>
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**Big Idea 9: Changes in Matter**

**A. Matter can undergo a variety of changes.**

**B. Matter can be changed physically or chemically.**

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

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

BENCHMARK CODE	BENCHMARK
SC.5.P.9.1	Investigate and describe that many physical and chemical changes are affected by temperature. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
<p>SC.5.P.9.In.1 Observe and identify that heating and cooling can change the properties of materials.</p>	<p>SC.5.P.9.Su.1 Recognize changes in properties of materials caused by heating or cooling.</p>	<p>SC.5.P.9.Pa.1 Recognize that freezing changes water to ice.</p>

## GRADE: 6

**Big Idea 1: The Practice of Science**

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

those data, and the communication of this evaluation.

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.2	Explain why scientific investigations should be replicable. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

**Access Point for Students with Significant Cognitive Disabilities**

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

## Big Idea 11: Energy Transfer and Transformations

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

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

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

D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.

BENCHMARK CODE	BENCHMARK
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

### **Independent**

SC.6.P.11.In.1 Identify energy as stored (potential) or expressed in motion (kinetic).

### **Supported**

SC.6.P.11.Su.1 Recognize examples of stored energy, such as in a roller coaster.

### **Participatory**

SC.6.P.11.Pa.1 Distinguish between objects in motion (kinetic energy) and at rest.

## Big Idea 12: Motion of Objects

A. Motion is a key characteristic of all matter that can be observed, described, and measured.

B. The motion of objects can be changed by forces.

BENCHMARK CODE	BENCHMARK
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

### **Independent**

SC.6.P.12.In.1 Identify that speed describes the distance and time in which an object is moving, such as miles per hour.

### **Supported**

SC.6.P.12.Su.1 Recognize that speed describes how far an object travels in a given amount of time.

### **Participatory**

SC.6.P.12.Pa.1 Recognize that traveling longer distances takes more time, such as going to the cafeteria takes longer than going across the classroom.

## Big Idea 13: Forces and Changes in Motion

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

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



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

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

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

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

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

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

**Big Idea 14: Organization and Development of Living Organisms**

**A. All living things share certain characteristics.**

**B. The scientific theory of cells, also called cell theory, is a fundamental organizing principle of life on Earth.**

**C. Life can be organized in a functional and structural hierarchy.**

**D. Life is maintained by various physiological functions essential for growth, reproduction, and homeostasis.**

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

**Access Point for Students with Significant Cognitive Disabilities**

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.L.14.In.1 Identify how the major structures of plants and organs of animals work as parts of larger systems, such as the heart is part of the circulatory system that pumps blood.	SC.6.L.14.Su.1 Identify the major internal organs of animals and external structures of plants and their functions.	SC.6.L.14.Pa.1 Recognize that the human body is made up of various parts.
SC.6.L.14.In.2 Identify that the cell is the smallest basic unit of life and most living things are composed of many cells.	SC.6.L.14.Su.2 Recognize that there are smaller parts in all living things, too small to be seen without magnification, called cells.	SC.6.L.14.Pa.1 Recognize that the human body is made up of various parts.
SC.6.L.14.In.3 Identify that cells carry out important functions within an organism, such as using energy from food.	SC.6.L.14.Su.3 Recognize that animals, including humans, use energy from food.	SC.6.L.14.Pa.2 Identify basic needs of plants and animals.
SC.6.L.14.In.4 Recognize that plant and animal cells have different parts and each part has a function.	SC.6.L.14.Su.4 Identify ways to prevent infection from bacteria and viruses, such as hand washing.	SC.6.L.14.Pa.3 Recognize body parts related to basic needs, such as mouth for eating.
SC.6.L.14.In.5 Recognize that bacteria and viruses can infect the human		SC.6.L.14.Pa.4 Recognize practices that keep the body free from infection, such as hand washing.

body.

### Big Idea 15: Diversity and Evolution of Living Organisms

**A. The scientific theory of evolution is the organizing principle of life science.**

**B. The scientific theory of evolution is supported by multiple forms of evidence.**

**C. Natural Selection is a primary mechanism leading to change over time in organisms.**

BENCHMARK CODE	BENCHMARK
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.L.15.In.1 Classify animals into major groups, such as insects, fish, reptiles, mammals, and birds.	SC.6.L.15.Su.1 Sort common animals by their physical characteristics.	SC.6.L.15.Pa.1 Match animals based on a given shared characteristic.

### Big Idea 2: The Characteristics of Scientific Knowledge

**A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.**

**B: Scientific knowledge is durable and robust, but open to change.**

**C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.**

BENCHMARK CODE	BENCHMARK
SC.6.N.2.1	Distinguish science from other activities involving thought.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.  <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.6.N.2.In.1 Identify	SC.6.N.2.Su.1 Recognize	SC.6.N.2.Pa.1 Recognize

familiar topics included in the study of science.  SC.6.N.2.In.2 Identify that scientific knowledge changes with new evidence or new interpretations.	familiar topics in the study of science.  SC.6.N.2.Su.2 Recognize that scientific knowledge changes when new things are discovered.  SC.6.N.2.Su.3 Recognize contributions of well-known scientists.	objects and pictures related to science.  SC.6.N.2.Pa.2 Recognize a scientist as a person who works with science.
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**Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models**

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

BENCHMARK CODE	BENCHMARK
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.6.N.3.3	Give several examples of scientific laws.  <i>Cognitive Complexity:</i> Level 1: Recall
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

**Big Idea 6: Earth Structures**

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

**material resources.**

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

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

**Big Idea 7: Earth Systems and Patterns**

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

BENCHMARK CODE	BENCHMARK
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.6	Differentiate between weather and climate.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida.

	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i><b>Independent</b></i>	<i><b>Supported</b></i>	<i><b>Participatory</b></i>
SC.6.E.7.In.1 Recognize that heat is a flow of energy that moves through Earth's land, air, and water in different ways, including conduction, convection, and radiation.	SC.6.E.7.Su.1 Recognize that heat can transfer from the Sun to the water, land, and air. Recognize that heat can transfer from the Sun to the water, land, and air.	SC.6.E.7.Pa.1 Recognize that the Sun is a source of heat.
SC.6.E.7.In.2 Identify components in the water cycle, including evaporation, condensation, precipitation, ground water, and runoff.	SC.6.E.7.Su.2 Recognize parts of the water cycle such as clouds (condensation), rain (precipitation), and evaporation.	SC.6.E.7.Pa.2 Recognize that rain comes from clouds.
SC.6.E.7.In.3 Identify the way elements of weather are measured, including temperature, humidity, wind speed and direction, and precipitation.	SC.6.E.7.Su.3 Recognize the way temperature and wind speed are measured.	SC.6.E.7.Pa.4 Recognize that air covers Earth (atmosphere).
SC.6.E.7.In.4 Recognize that Earth consists of different parts, including air that is over the Earth (atmosphere), water that covers much of the Earth (hydrosphere), and the parts that support all living things on Earth (biosphere).	SC.6.E.7.Su.4 Recognize where living things are found (biosphere) and where the air is found (atmosphere) on Earth.	SC.6.E.7.Pa.5 Recognize where to go in severe weather situations or drills at school and at home.
SC.6.E.7.In.5 Recognize that there are general patterns of weather that move around Earth, and in North America the patterns typically move from west to east.	SC.6.E.7.Su.5 Recognize that there are patterns of weather that move.	
SC.6.E.7.In.6 Identify climate as the expected weather patterns in a region.	SC.6.E.7.Su.6 Identify the major characteristics of climate in Florida, including temperature and precipitation.	
SC.6.E.7.In.7 Identify possible effects of hurricanes and other natural disasters on humans in Florida.	SC.6.E.7.Su.7 Recognize possible effects of severe storms, hurricanes, or other natural disasters in Florida.	
SC.6.E.7.In.8 Identify ways humans get ready for severe storms and protect themselves from sun exposure.	SC.6.E.7.Su.8 Recognize ways people prepare for severe storms and protect themselves from sun exposure.	
SC.6.E.7.In.9 Identify that the atmosphere protects Earth from radiation from the Sun and regulates the temperature.	SC.6.E.7.Su.9 Recognize that the air that surrounds Earth (atmosphere) protects living things from the intense heat of the Sun.	

## GRADE: 7

### Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

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

*Independent*

*Supported*

*Participatory*

<p>SC.7.N.1.In.1 Identify a problem from the seventh grade curriculum, use reference materials to gather information, carry out an experiment, collect and record data, and report results.</p>	<p>SC.7.N.1.Su.1 Recognize a problem from the seventh grade curriculum, use materials to gather information, conduct a simple experiment, and record and share results.</p>	<p>SC.7.N.1.Pa.1 Recognize a problem related to the seventh grade curriculum, observe and explore objects and activities, and recognize a solution.</p>
<p>SC.7.N.1.In.2 Recognize the relationship between the end product (dependent variable) and in the input (independent variable) in an experiment.</p>	<p>SC.7.N.1.Su.2 Recognize what is tested in a simple experiment (dependent variable).</p>	<p>SC.7.N.1.Pa.2 Recognize observable changes in a simple experiment, such as plant growth.</p>
<p>SC.7.N.1.In.3 Identify questions that can be answered by scientific investigation, such as can a plant grow without sunlight?</p>	<p>SC.7.N.1.Su.3 Recognize a question that can be answered by scientific investigation, such as can a plant grow without sunlight?</p>	<p>SC.7.N.1.Pa.3 Associate objects and activities with science.</p>
<p>SC.7.N.1.In.4 Identify ways that science can be used to study different areas, such as life science, earth and space science, and physical science.</p>	<p>SC.7.N.1.Su.4 Recognize that science includes different areas, such as life science, earth and space science, and physical science.</p>	<p>SC.7.N.1.Pa.3 Associate objects and activities with science.</p>
<p>SC.7.N.1.In.5 Identify that scientific knowledge is based on a large body of evidence and observations.</p>	<p>SC.7.N.1.Su.5 Recognize that scientific knowledge is based on evidence and observations.</p>	

## Big Idea 10: Forms of Energy

**A. Energy is involved in all physical processes and is a unifying concept in many areas of science.**

**B. Energy exists in many forms and has the ability to do work or cause a change.**

BENCHMARK CODE	BENCHMARK
SC.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:</i> Level 1: Recall</p>
SC.7.P.10.2	<p>Observe and explain that light can be reflected, refracted, and/or absorbed.</p> <p><i>Cognitive Complexity:</i> Level 3: Strategic Thinking &amp; Complex Reasoning</p>
SC.7.P.10.3	<p>Recognize that light waves, sound waves, and other waves move at different speeds in different materials.</p> <p><i>Cognitive Complexity:</i> Level 1: Recall</p>
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
<p>SC.7.P.10.In.1 Identify that white (visible) light has many colors, such as when viewed with a prism.</p>	<p>SC.7.P.10.Su.1 Recognize that white (visible) light contains many colors, such as viewed with a prism or rainbow.</p>	<p>SC.7.P.10.Pa.1 Recognize primary colors of a rainbow.</p>
<p>SC.7.P.10.In.2 Recognize that light can be reflected or absorbed.</p>	<p>SC.7.P.10.Su.2 Recognize that light can be reflected.</p>	<p>SC.7.P.10.Pa.2 Recognize reflections of objects.</p>
		<p>SC.7.P.10.Pa.3 Match</p>



SC.7.P.10.In.3 Identify that light and sound travel in wave patterns.	SC.7.P.10.Su.3 that sound and light travel.	Recognize	light and sound to their sources.
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**Big Idea 11: Energy Transfer and Transformations**

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

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

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

**D. The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.**

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

**Access Point for Students with Significant Cognitive Disabilities**

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.7.P.11.In.1 Identify that when heat is added or taken away, a temperature change occurs.	SC.7.P.11.Su.1 Recognize what happens to the temperature when heat is added.	SC.7.P.11.Pa.1 Recognize that a hot object can make a cold object warm when they touch.
SC.7.P.11.In.2 Recognize that one form of energy can change to other forms of energy, such as solar panels change light into electricity.	SC.7.P.11.Su.2 Recognize that energy can change forms, such as electricity produces light and heat in a lamp.	SC.7.P.11.Pa.2 Recognize that electrical devices need energy to work.
SC.7.P.11.In.3 Identify examples of the predictable movement of heat, such as hot air rises and heat transfers from hot to cold objects.	SC.7.P.11.Su.3 Identify that heat rises.	

**Big Idea 15: Diversity and Evolution of Living Organisms**

**A. The scientific theory of evolution is the organizing principle of life science.**

**B. The scientific theory of evolution is supported by multiple forms of evidence.**

**C. Natural Selection is a primary mechanism leading to change over time in organisms.**

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

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.7.L.15.In.1 Recognize that fossils help people learn about living things that lived a very long time ago.	SC.7.L.15.Su.1 Identify fossils as parts of animals and plants that are no longer alive.	SC.7.L.15.Pa.1 Recognize that living things can die.
SC.7.L.15.In.2 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.Su.2 Recognize that common plants or animals have special features that enable them to live in their environment, such as a as a fish has gills so it can live underwater.	SC.7.L.15.Pa.2 Recognize a personal characteristic, such as hair color, that is different from the parents.
SC.7.L.15.In.3 Explain extinction and give examples.	SC.7.L.15.Su.3 Recognize that some plants and animals no longer exist (are extinct).	

**Big Idea 16: Heredity and Reproduction**

**A. Reproduction is characteristic of living things and is essential for the survival of species.**

**B. Genetic information is passed from generation to generation by DNA; DNA controls the traits of an organism.**

**C. Changes in the DNA of an organism can cause changes in traits, and manipulation of DNA in organisms has led to genetically modified organisms.**

BENCHMARK CODE	BENCHMARK
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.

	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.7.L.16.In.1 Explain that some characteristics are passed from parent to child (inherited).	SC.7.L.16.Su.1 Recognize that offspring have similar characteristics to parents.	SC.7.L.16.Pa.1 Recognize a characteristic passed from parents to self, such as eye color.
SC.7.L.16.In.2 Recognize that it is possible to predict whether a person is likely to inherit a particular trait from parents.	SC.7.L.16.Su.2 Recognize that animals, including humans, inherit some characteristics from one parent and some from the other.	SC.7.L.16.Pa.2 Recognize that children are born from two parents.
SC.7.L.16.In.3 Explain that offspring receive half their genes from each parent in sexual reproduction.	SC.7.L.16.Su.3 Recognize that science (biotechnology) has been used to develop new products for use in daily life.	SC.7.L.16.Pa.3 Recognize common products, such as medicine, developed through science.
SC.7.L.16.In.4 Recognize that science processes (biotechnology) have been used to develop new foods and medicines.		

**Big Idea 17: Interdependence**

**A. Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.**

**B. Both human activities and natural events can have major impacts on the environment.**

**C. Energy flows from the sun through producers to consumers.**

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

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
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<p>SC.7.L.17.In.1 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).</p> <p>SC.7.L.17.In.2 Describe how organisms interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at the expense of the other (parasitism).</p> <p>SC.7.L.17.In.3 Recognize that living things compete with each other to get the things they need to live in their local environment.</p>	<p>SC.7.L.17.Su.1 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.</p> <p>SC.7.L.17.Su.2 Recognize how living things affect each other in their habitat (ecosystem).</p> <p>SC.7.L.17.Su.3 Identify how a lack of food, water, or shelter affects plants and animals in their habitats.</p>	<p>SC.7.L.17.Pa.1 Recognize that humans eat vegetables and fruits (plants) and meat (animals).</p> <p>SC.7.L.17.Pa.2 Recognize a mutual relationship between people and other living things.</p> <p>SC.7.L.17.Pa.3 Recognize what happens when animals don't get food and water.</p>
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**Big Idea 2: The Characteristics of Scientific Knowledge**

**A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.**

**B: Scientific knowledge is durable and robust, but open to change.**

**C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.**

BENCHMARK CODE	BENCHMARK
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.  <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
<p>SC.7.N.2.In.1 Identify an example of a change in scientific knowledge based on new evidence or new interpretations.</p>	<p>SC.7.N.2.Su.1 Recognize an example of a change in scientific knowledge based on new evidence.</p>	<p>SC.7.N.2.Pa.1 Recognize information related to science.</p>

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

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

BENCHMARK CODE	BENCHMARK
SC.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:</i> Level 3: Strategic Thinking & Complex Reasoning

SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

**Big Idea 6: Earth Structures**

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

<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>
SC.7.E.6.1	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.7.E.6.3	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.7.E.6.In.1 Identify that Earth has three layers (crust, mantle, and core)	SC.7.E.6.Su.1 Recognize that the surface of Earth is called the crust.	SC.7.E.6.Pa.1 Recognize the ground as the outer surface (crust) of Earth.

and describe the inside (core) as the hottest layer.		
SC.7.E.6.In.2 Recognize that slow changes, such as mountain-building, and fast changes, such as volcanic eruptions, are caused by shifts below Earth's surface.	SC.7.E.6.Su.2 Recognize that mountains change size and shape over a long period of time.	SC.7.E.6.Pa.2 Discriminate between surface features of ground on Earth, such as rocky/sandy, flat/hilly, rough/smooth, or solid/liquid.
SC.7.E.6.In.3 Demonstrate how older rock layers are deposited at the bottom before younger layers (Law of Superposition).	SC.7.E.6.Su.3 Recognize that fossils are remains or imprints of living things from long ago.	SC.7.E.6.Pa.3 Recognize that ground on the Earth's surface changes over time.
SC.7.E.6.In.4 Identify physical evidence, such as fossils and sedimentary rock, which show how Earth has changed over a very long period of time.	SC.7.E.6.Su.4 Recognize the effects of earthquakes and volcanoes.	SC.7.E.6.Pa.4 Distinguish between clean and dirty water.
SC.7.E.6.In.5 Recognize that humans have had an impact on Earth, such as polluting the air and water and expanding urban areas and road systems.	SC.7.E.6.Su.5 Recognize that polluting the air and water can harm Earth.	

## GRADE: 8

### Big Idea 1: The Practice of Science

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

**B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."**

**C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.**

**D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.**

BENCHMARK CODE	BENCHMARK
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning

SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

## Big Idea 18: Matter and Energy Transformations

**A. Living things all share basic needs for life.**

**B. Living organisms acquire the energy they need for life processes through various metabolic pathways (photosynthesis and cellular respiration).**

**C. Matter and energy are recycled through cycles such as the carbon cycle.**

BENCHMARK CODE	BENCHMARK
SC.8.L.18.1	Describe and investigate the process of photosynthesis, such as the roles of light,

	carbon dioxide, water and chlorophyll; production of food; release of oxygen. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

**Big Idea 2: The Characteristics of Scientific Knowledge**

**A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.**

**B: Scientific knowledge is durable and robust, but open to change.**

**C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.**

<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.N.2.2	Discuss what characterizes science and its methods. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i><b>Independent</b></i>	<i><b>Supported</b></i>	<i><b>Participatory</b></i>
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SC.8.N.2.In.1 Identify that scientific knowledge must be supported by evidence.	SC.8.N.2.Su.1 Recognize examples of evidence that supports scientific knowledge.	SC.8.N.2.Pa.1 Recognize an example of observable evidence related to science.
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### Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

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

BENCHMARK CODE	BENCHMARK
SC.8.N.3.1	Select models useful in relating the results of their own investigations. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.8.N.3.In.1 Identify models used in the context of one's own study of science.	SC.8.N.3.Su.1 Recognize models used in the context of one's own study of science.	SC.8.N.3.Pa.1 Associate a model with an activity used in the context of one's own study of science.
SC.8.N.3.In.2 Identify that scientific theories can change.	SC.8.N.3.Su.2 Recognize that scientific theories can change.	SC.8.N.3.Pa.2 Observe and recognize a cause-effect relationship related to a science topic.

### Big Idea 4: Science and Society

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:</i> Level 2: Basic Application of Skills & Concepts
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.8.N.4.In.1 Identify ways that science processes can be used to make informed decisions in the community, state, and nation.	SC.8.N.4.Su.1 Recognize that science processes can be used to help people in the community and state make wise choices.	SC.8.N.4.Pa.1 Recognize a way science is used in the community.

## Big Idea 5: Earth in Space and Time

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

BENCHMARK CODE	BENCHMARK
SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.11	Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.12	Summarize the effects of space exploration on the economy and culture of Florida. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars. <i>Cognitive Complexity:</i> Level 1: Recall
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness). <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences. <i>Cognitive Complexity:</i> Level 1: Recall
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.E.5.9	Explain the impact of objects in space on each other including: <ul style="list-style-type: none"> <li>1. the Sun on the Earth including seasons and gravitational attraction</li> </ul>

2. the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.

*Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

**Access Point for Students with Significant Cognitive Disabilities**

***Independent***

SC.8.E.5.In.1 Compare the distances of the Moon, the Sun, and other stars from the Earth.

SC.8.E.5.In.10 Recognize that the Moon's revolution around the Earth takes about thirty days.

SC.8.E.5.In.11 Identify technology used by scientists to locate, view, and study objects in space.

SC.8.E.5.In.12 Recognize that technology allows special cameras and satellites to take pictures of objects in space.

SC.8.E.5.In.13 Identify effects of space research and exploration on Florida's economy.

SC.8.E.5.In.2 Identify that the Earth and Sun are a part of the Milky Way galaxy.

SC.8.E.5.In.3 Identify Earth's position in the Solar System, and its size relative to the Moon and Sun.

SC.8.E.5.In.4 Identify gravity as the force that holds orbiting planets in place in the Solar System.

SC.8.E.5.In.5 Identify differences in physical properties of stars, such as brightness, color, and size.

SC.8.E.5.In.6 Describe the Sun as a mass of hot, burning gases that produces very high temperatures.

SC.8.E.5.In.7 Compare conditions on other planets in the Solar System to those on Earth, such as gravity, temperature, and atmosphere.

SC.8.E.5.In.8 Identify that long ago people thought the Sun traveled around Earth (geocentric model) until scientists proved otherwise.

***Supported***

SC.8.E.5.Su.1 Identify the relative positions of the Sun and the Moon from Earth.

SC.8.E.5.Su.2 Recognize that the Solar System is part of a galaxy.

SC.8.E.5.Su.3 Identify that there are planets and moons in the Solar System.

SC.8.E.5.Su.4 Recognize that the Sun is the closest star to Earth and appears large and bright.

SC.8.E.5.Su.5 Recognize that the Sun is made of gases that are on fire.

SC.8.E.5.Su.6 Recognize that conditions on other planets in the Solar System are different than those on Earth.

SC.8.E.5.Su.7 Recognize that Earth revolves around the Sun creating the four seasons.

SC.8.E.5.Su.8 Recognize that scientists use special tools to examine objects in space.

SC.8.E.5.Su.9 Identify an effect space exploration has had on Florida's economy.

***Participatory***

SC.8.E.5.Pa.1 Recognize that the Moon is closer to Earth than the Sun.

SC.8.E.5.Pa.2 Recognize the Sun and stars as objects in space.

SC.8.E.5.Pa.3 Recognize the four seasons.

SC.8.E.5.Pa.4 Recognize a technology tool created for space exploration and adapted for personal use, such as computers, telescopes, or satellites.

SC.8.E.5.In.9 Recognize that the four seasons are related to Earth's position as it travels (revolves) around the Sun.

## Big Idea 8: Properties of Matter

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

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

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

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

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

BENCHMARK CODE	BENCHMARK
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.

	<i>Cognitive Complexity:</i> Level 1: Recall
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties. <i>Cognitive Complexity:</i> Level 1: Recall
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons). <i>Cognitive Complexity:</i> Level 1: Recall
SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.8.P.8.In.1 Compare properties of solids, liquids, and gases.	SC.8.P.8.Su.1 Recognize three states of matter, including solids, liquids, and gases.	SC.8.P.8.Pa.1 Recognize examples of the gaseous state of matter, such as steam or smoke.
SC.8.P.8.In.2 Recognize that the weight of an object is related to the pull of gravity.	SC.8.P.8.Su.2 Compare the weight of different sized objects.	SC.8.P.8.Pa.2 Recognize the heavier of two objects.
SC.8.P.8.In.3 Observe and compare the density of various materials.	SC.8.P.8.Su.3 Recognize that smaller objects can weigh more than bigger objects because of density.	SC.8.P.8.Pa.3 Recognize substances by physical properties, such as weight (heavy and light), size (big and small), and temperature (hot and cold).
SC.8.P.8.In.4 Observe and compare substances based on their physical properties, such as thermal and electrical conductivity, solubility, or magnetic properties.	SC.8.P.8.Su.4 Observe and compare substances by physical properties, such as weight, size, boiling and melting points, and magnetic properties.	SC.8.P.8.Pa.4 Recognize common acids as safe or harmful.
SC.8.P.8.In.5 Recognize that common elements combine in different ways to make up all living and nonliving things.	SC.8.P.8.Su.5 Recognize that parts of matter can be separated in tiny particles.	SC.8.P.8.Pa.5 Separate a mixture into its parts.
SC.8.P.8.In.6 Identify common elements, such as oxygen, iron, and carbon.	SC.8.P.8.Su.6 Recognize examples of common elements, such as carbon or iron.	
SC.8.P.8.In.7 Identify that matter is made of small particles called atoms.	SC.8.P.8.Su.7 Recognize common acids, such as vinegar, and bases, such as ammonia, and their hazardous properties.	
SC.8.P.8.In.8 Identify common acids, such as lemon juice and vinegar, and bases, such as baking soda and ammonia, and their hazardous properties.	SC.8.P.8.Su.8 Recognize examples of pure substances and mixtures.	
SC.8.P.8.In.9 Identify common materials as pure substances or mixtures.		

## Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

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

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

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

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

BENCHMARK CODE	BENCHMARK
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.8.P.9.2	Differentiate between physical changes and chemical changes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
Access Point for Students with Significant Cognitive Disabilities	

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

GRADE: 912

Body of Knowledge: LIFE SCIENCE

Standard 14: Organization and Development of Living Organisms

A. Cells have characteristic structures and functions that make them distinctive.

B. Processes in a cell can be classified broadly as growth, maintenance, reproduction, and homeostasis.

C. Life can be organized in a functional and structural hierarchy ranging from cells to the biosphere.

D. Most multicellular organisms are composed of organ systems whose structures reflect their particular function.

BENCHMARK CODE	BENCHMARK
SC.912.L.14.1	Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.10	Discuss the relationship between the evolution of land plants and their anatomy. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.14.11	Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.12	Describe the anatomy and histology of bone tissue. <i>Cognitive Complexity:</i> Level 1: Recall
SC.912.L.14.13	Distinguish between bones of the axial skeleton and the appendicular skeleton. <i>Cognitive Complexity:</i> Level 1: Recall
SC.912.L.14.14	Identify the major bones of the axial and appendicular skeleton. <i>Cognitive Complexity:</i> Level 1: Recall
SC.912.L.14.15	Identify major markings (such as foramina, fossae, tubercles, etc.) on a skeleton. Explain why these markings are important. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.16	Describe the anatomy and histology, including ultrastructure, of muscle tissue. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.17	List the steps involved in the sliding filament of muscle contraction. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.18	Describe signal transmission across a myoneural junction. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.19	Explain the physiology of skeletal muscle. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.2	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport). <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.20	Identify the major muscles of the human on a model or diagram. <i>Cognitive Complexity:</i> Level 1: Recall
SC.912.L.14.21	Describe the anatomy, histology, and physiology of the central and peripheral nervous

	<p>systems and name the major divisions of the nervous system.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.22	<p>Describe the physiology of nerve conduction, including the generator potential, action potential, and the synapse.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.23	<p>Identify the parts of a reflex arc.</p> <p><i>Cognitive Complexity:</i> Level 1: Recall</p>
SC.912.L.14.24	<p>Identify the general parts of a synapse and describe the physiology of signal transmission across a synapse.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.25	<p>Identify the major parts of a cross section through the spinal cord.</p> <p><i>Cognitive Complexity:</i> Level 1: Recall</p>
SC.912.L.14.26	<p>Identify the major parts of the brain on diagrams or models.</p> <p><i>Cognitive Complexity:</i> Level 1: Recall</p>
SC.912.L.14.27	<p>Identify the functions of the major parts of the brain, including the meninges, medulla, pons, midbrain, hypothalamus, thalamus, cerebellum and cerebrum.</p> <p><i>Cognitive Complexity:</i> Level 1: Recall</p>
SC.912.L.14.28	<p>Identify the major functions of the spinal cord.</p> <p><i>Cognitive Complexity:</i> Level 1: Recall</p>
SC.912.L.14.29	<p>Define the terms endocrine and exocrine.</p> <p><i>Cognitive Complexity:</i> Level 1: Recall</p>
SC.912.L.14.3	<p>Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.30	<p>Compare endocrine and neural controls of physiology.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.31	<p>Describe the physiology of hormones including the different types and the mechanisms of their action.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.32	<p>Describe the anatomy and physiology of the endocrine system.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.33	<p>Describe the basic anatomy and physiology of the reproductive system.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.34	<p>Describe the composition and physiology of blood, including that of the plasma and the formed elements.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.35	<p>Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.36	<p>Describe the factors affecting blood flow through the cardiovascular system.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>
SC.912.L.14.37	<p>Explain the components of an electrocardiogram.</p>



	<u>Cognitive Complexity:</u> Level 1: Recall
SC.912.L.14.38	Describe normal heart sounds and what they mean. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.39	Describe hypertension and some of the factors that produce it. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.4	Compare and contrast structure and function of various types of microscopes. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.40	Describe the histology of the major arteries and veins of systemic, pulmonary, hepatic portal, and coronary circulation. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.41	Describe fetal circulation and changes that occur to the circulatory system at birth. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.42	Describe the anatomy and the physiology of the lymph system. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.43	Describe the histology of the respiratory system. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.44	Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport and the mechanisms that control the rate of ventilation. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.45	Describe the histology of the alimentary canal and its associated accessory organs. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.46	Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption and the neural and hormonal mechanisms of control. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.47	Describe the physiology of urine formation by the kidney. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.48	Describe the anatomy, histology, and physiology of the ureters, the urinary bladder and the urethra. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.49	Identify the major functions associated with the sympathetic and parasympathetic nervous systems. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.5	Explain the evidence supporting the scientific theory of the origin of eukaryotic cells (endosymbiosis). <u>Cognitive Complexity:</u> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.14.50	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems. <u>Cognitive Complexity:</u> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.51	Describe the function of the vertebrate integumentary system. <u>Cognitive Complexity:</u> Level 1: Recall
SC.912.L.14.52	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics.

	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.53	Discuss basic classification and characteristics of plants. Identify bryophytes, pteridophytes, gymnosperms, and angiosperms. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.6	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.14.7	Relate the structure of each of the major plant organs and tissues to physiological processes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.8	Explain alternation of generations in plants. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.14.9	Relate the major structure of fungi to their functions. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

<b>Standard 15: Diversity and Evolution of Living Organisms</b>	
A. The scientific theory of evolution is the fundamental concept underlying all of biology.	
B. The scientific theory of evolution is supported by multiple forms of scientific evidence.	
C. Organisms are classified based on their evolutionary history.	
D. Natural selection is a primary mechanism leading to evolutionary change.	
BENCHMARK CODE	BENCHMARK
SC.912.L.15.1	Explain how the scientific theory of evolution is supported by the fossil record,

	comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.10	Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.11	Discuss specific fossil hominids and what they show about human evolution.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.12	List the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature. Use the Hardy-Weinberg equation to predict genotypes in a population from observed phenotypes.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.13	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.14	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.15	Describe how mutation and genetic recombination increase genetic variation.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.2	Discuss the use of molecular clocks to estimate how long ago various groups of organisms diverged evolutionarily from one another.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.3	Describe how biological diversity is increased by the origin of new species and how it is decreased by the natural process of extinction.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.4	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.5	Explain the reasons for changes in how organisms are classified.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.7	Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.8	Describe the scientific explanations of the origin of life on Earth.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.15.9	Explain the role of reproductive isolation in the process of speciation.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
C.912.L.15.In.1 Identify	SC.912.L.15.Su.1 Match	SC.912.L.15.Pa.1 Recogniz

at prehistoric plants and animals changed over time (evolved) or became extinct.		fossils to related species.		that plants and animals change as they age.
C.912.L.15.In.1 Identify at prehistoric plants and animals changed over time (evolved) or became extinct.		SC.912.L.15.Su.2 Match organisms to the animal, plant, and fungus kingdoms.		SC.912.L.15.Pa.2 Sort common living things into plant and animal kingdoms.
C.912.L.15.In.2 Classify living organisms into their kingdoms.		SC.912.L.15.Su.3 Recognize that there are scientific explanations of how life began.		SC.912.L.15.Pa.3 Recognize that animals produce offspring.
C.912.L.15.In.3 Identify that there are scientific explanations of the origin of life on Earth.		SC.912.L.15.Su.4 Recognize that humans have changed in appearance over a very long period of time.		SC.912.L.15.Pa.4 Recognize differences in physical characteristics within a species of animals, such as different types of dogs.
C.912.L.15.In.4 Recognize ways that the appearance of humans, their language, and their tools have changed over time.		SC.912.L.15.Su.5 Recognize that some living things, such as fish and turtles, produce very large numbers of offspring because most will die as a result of dangers in the environment before they grow up.		
C.912.L.15.In.5 Recognize that some living things produce very large numbers of offspring to ensure that enough survive to continue the species (a condition for natural selection).		SC.912.L.15.Su.6 Recognize that characteristics of the offspring of living things are sometimes different from their parents.		
C.912.L.15.In.6 Recognize that changes in the genes of a species can affect the characteristics of their offspring.				

<b>Standard 16: Heredity and Reproduction</b>	
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.	
<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>
SC.912.L.16.1	Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.10	Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.11	Discuss the technologies associated with forensic medicine and DNA identification, including restriction fragment length polymorphism (RFLP) analysis. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning

SC.912.L.16.12	Describe how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, polymerase chain reaction, ligation, and transformation) is used to construct recombinant DNA molecules (DNA cloning).  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.16.13	Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.16.14	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.16.15	Compare and contrast binary fission and mitotic cell division.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.16.16	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.16.17	Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.2	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.3	Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.4	Explain how mutations in the DNA sequence may or may not result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.5	Explain the basic processes of transcription and translation, and how they result in the expression of genes.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.6	Discuss the mechanisms for regulation of gene expression in prokaryotes and eukaryotes at transcription and translation level.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.7	Describe how viruses and bacteria transfer genetic material between cells and the role of this process in biotechnology.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.16.8	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.16.9	Explain how and why the genetic code is universal and is common to almost all organisms.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
C.912.L.16.In.1 Identify Identify that genes are sets of instructions that determine which characteristics are passed from parent to offspring.	SC.912.L.16.Su.1 Recognize Recognize characteristics (traits) that offspring inherit from parents.	SC.912.L.16.Pa.1 Recognize Recognize similar characteristics (traits) between a child and parents, such as hair, eye, and skin color, or height.
C.912.L.16.In.2 Identify Identify traits that plants and animals, including humans, inherit.	SC.912.L.16.Su.2 Recognize Recognize that all organisms have a substance called DNA with unique information.	SC.912.L.16.Pa.2 Recognize Recognize similarities in characteristics of plants and animals of the same type (species).
C.912.L.16.In.3 Recognize 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.	SC.912.L.16.Su.3 Recognize Recognize that cancer may result when cells change or grow too fast.	SC.912.L.16.Pa.3 Recognize Recognize that illness can result when parts of our bodies are not working properly.
C.912.L.16.In.4 Identify Identify that cancer can result when cells change or grow uncontrollably.	SC.912.L.16.Su.4 Recognize Recognize that new medicines and foods can be developed by science (biotechnology).	SC.912.L.16.Pa.4 Recognize Recognize a food.
C.912.L.16.In.5 Identify Identify ways that biotechnology has impacted society and the environment, such as the development of new medicines and farming techniques.	SC.912.L.16.Su.5 Recognize Recognize major phases in the process of human development from fertilization to birth.	SC.912.L.16.Pa.5 Recognize Recognize the sequence of human development from baby to child to adult.
C.912.L.16.In.6 Describe Describe the basic process of human development from fertilization to birth.	SC.912.L.16.Su.6 Recognize Recognize that cells reproduce by dividing.	SC.912.L.16.Pa.6 Recognize Recognize that living things produce offspring (reproduce).
C.912.L.16.In.7 Recognize Recognize that cells reproduce by dividing to produce new cells that are identical (mitosis) or new cells that are different (meiosis).		

<b>Standard 17: Interdependence</b>	
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.	
<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>
SC.912.L.17.1	Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.10	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

SC.912.L.17.11	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.12	Discuss the political, social, and environmental consequences of sustainable use of land.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.13	Discuss the need for adequate monitoring of environmental parameters when making policy decisions.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.14	Assess the need for adequate waste management strategies.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.15	Discuss the effects of technology on environmental quality.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.16	Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.17	Assess the effectiveness of innovative methods of protecting the environment.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.18	Describe how human population size and resource use relate to environmental quality.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.19	Describe how different natural resources are produced and how their rates of use and renewal limit availability.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.2	Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.20	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.3	Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.4	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.5	Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.6	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.7	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.

	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.17.8	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.17.9	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
C.912.L.17.In.1 Recognize that living things in oceans and fresh water are affected by the location, availability of light, depth of the water, and temperature.	SC.912.L.17.Su.1 Recognize that living things in bodies of water are affected by the location and depth of the water.	SC.912.L.17.Pa.1 Recognize common living things in bodies of water.
C.912.L.17.In.2 Identify that living things in an ecosystem are affected by changes in the environment, such as changes to the food supply, climate change, or the introduction of predators.	SC.912.L.17.Su.2 Recognize how animals and plants in an ecosystem may be affected by changes to the food supply or climate.	SC.912.L.17.Pa.2 Recognize what happens to plants and animals when they don't get enough food or water.
C.912.L.17.In.3 Identify relationships among organisms, including helping each other (mutualism); obtaining food (predation); benefiting at the expense of the other (parasitism); and competing with each other for food, space, or shelter (competition).	SC.912.L.17.Su.3 Recognize that organisms can interact with other organisms in an ecosystem to help each other (mutualism), to obtain food (predation), and to benefit at expense of the other (parasitism).	SC.912.L.17.Pa.3 Recognize examples of mutual relationships between people and other living things.
C.912.L.17.In.4 Recognize possible changes in an ecosystem (biodiversity) that can result from natural catastrophic events, changes in climate, and human activity.	SC.912.L.17.Su.4 Recognize changes in living things (biodiversity) that can result from natural catastrophic events and human activity.	SC.912.L.17.Pa.4 Recognize actions that are harmful to living things.
C.912.L.17.In.5 Identify the components of a food web, including sunlight, producers, consumers, and decomposers, and trace the flow of energy from the Sun.	SC.912.L.17.Su.5 Identify producers, consumers, and decomposers in a simple food chain.	SC.912.L.17.Pa.5 Recognize that animals (consumers) eat animals and plants for food.
C.912.L.17.In.6 Identify the contributions of non-living elements, such as carbon and oxygen, to maintaining life in an ecosystem.	SC.912.L.17.Su.6 Identify that clean water and air are important for supporting life in an ecosystem.	SC.912.L.17.Pa.6 Recognize the importance of clean water for living things.
C.912.L.17.In.7 Identify types of renewable and nonrenewable natural resources and explain the need for conservation.	SC.912.L.17.Su.7 Identify a way to conserve a familiar, nonrenewable, natural resource.	SC.912.L.17.Pa.7 Recognize a way to help the local environment.
C.912.L.17.In.8 Describe ways the lifestyles of individuals and groups can help or hurt the environment.	SC.912.L.17.Su.8 Identify ways individuals can help the environment.	

**Standard 18: Matter and Energy Transformations**



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

B. Living organisms acquire the energy they need for life processes through various metabolic pathways (primarily photosynthesis and cellular respiration).

C. Chemical reactions in living things follow basic rules of chemistry and are usually regulated by enzymes.

D. The unique chemical properties of carbon and water make life on Earth possible.

BENCHMARK CODE	BENCHMARK
SC.912.L.18.1	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.10	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.L.18.11	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.12	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.2	Describe the important structural characteristics of monosaccharides, disaccharides, and polysaccharides and explain the functions of carbohydrates in living things. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.3	Describe the structures of fatty acids, triglycerides, phospholipids, and steroids. Explain the functions of lipids in living organisms. Identify some reactions that fatty acids undergo. Relate the structure and function of cell membranes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.4	Describe the structures of proteins and amino acids. Explain the functions of proteins in living organisms. Identify some reactions that amino acids undergo. Relate the structure and function of enzymes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.5	Discuss the use of chemiosmotic gradients for ATP production in chloroplasts and mitochondria. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.6	Discuss the role of anaerobic respiration in living things and in human society. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.7	Identify the reactants, products, and basic functions of photosynthesis. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.8	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.L.18.9	Explain the interrelated nature of photosynthesis and cellular respiration.

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

**Access Point for Students with Significant Cognitive Disabilities**

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

**Body of Knowledge: PHYSICAL SCIENCE**

Standard 10: Energy

A. Energy is involved in all physical and chemical processes. It is conserved, and can be transformed from one form to another and into work. At the atomic and nuclear levels energy is not continuous but exists in discrete amounts. Energy and mass are related through Einstein's equation  $E=mc^2$ .

B. The properties of atomic nuclei are responsible for energy-related phenomena such as radioactivity, fission and fusion.

C. Changes in entropy and energy that accompany chemical reactions influence reaction paths. Chemical reactions result in the release or absorption of energy.

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

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

BENCHMARK CODE	BENCHMARK
SC.912.P.10.1	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.10.10	Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear). <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.10.11	Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.12	Differentiate between chemical and nuclear reactions. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.10.13	Relate the configuration of static charges to the electric field, electric force, electric potential, and electric potential energy. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.14	Differentiate among conductors, semiconductors, and insulators. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.10.15	Investigate and explain the relationships among current, voltage, resistance, and power. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.16	Explain the relationship between moving charges and magnetic fields, as well as changing magnetic fields and electric fields, and their application to modern technologies. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.17	Explore the theory of electromagnetism by explaining electromagnetic waves in terms of oscillating electric and magnetic fields. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.18	Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.19	Explain that all objects emit and absorb electromagnetic radiation and distinguish between objects that are blackbody radiators and those that are not. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.2	Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.20	Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.21	Qualitatively describe the shift in frequency in sound or electromagnetic waves due to the relative motion of a source or a receiver. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts

SC.912.P.10.22	Construct ray diagrams and use thin lens and mirror equations to locate the images formed by lenses and mirrors. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.3	Compare and contrast work and power qualitatively and quantitatively. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.10.4	Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.5	Relate temperature to the average molecular kinetic energy. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.10.6	Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.7	Distinguish between endothermic and exothermic chemical processes. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.10.8	Explain entropy's role in determining the efficiency of processes that convert energy to work. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.10.9	Describe the quantization of energy at the atomic level. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.912.P.10.In.1 Identify examples of energy being transformed from one form to another (conserved quantity).	SC.912.P.10.Su.1 Recognize energy transformations that occur in everyday life, such as solar energy to electricity.	SC.912.P.10.Pa.1 Observe and recognize examples of the transformation of electrical energy to light and heat.
SC.912.P.10.In.2 Identify power as work done in a certain amount of time using measurable terms, such as watts or horsepower.	SC.912.P.10.Su.10 Recognize examples of electromagnetic waves moving through different media, such as microwave ovens, radios, and x-rays.	SC.912.P.10.Pa.10 Recognize primary and secondary colors in visible light. SC.912.P.10.Pa.2 Recognize that work requires energy.
SC.912.P.10.In.3 Relate the transfer of heat to the states of matter, including gases result from heating, liquids result from cooling a gas, and solids result from further cooling a liquid.	SC.912.P.10.Su.2 Recognize the relationship between work and power, such as power is how fast a person or machine does work.	SC.912.P.10.Pa.3 Recognize the source and recipient of heat transfer.
SC.912.P.10.In.4 Describe a process that gives off heat (exothermic), such as burning, and a process that absorbs heat (endothermic), such as water coming to a boil.	SC.912.P.10.Su.3 Observe and recognize ways that heat travels, such as through space (radiation), through solids (conduction), and through liquids and gases (convection).	SC.912.P.10.Pa.4 Identify materials that provide protection (insulation) from heat. SC.912.P.10.Pa.5 Recognize the universal symbols for radioactive and other hazardous materials.
SC.912.P.10.In.5 Identify fundamental forces, including gravitational and electromagnetic.	SC.912.P.10.Su.4 Recognize common processes that give off heat (exothermic), such as burning, and processes that absorb heat (endothermic), such as water coming to a boil.	SC.912.P.10.Pa.6 Recognize that an object falls unless stopped (gravity).
SC.912.P.10.In.6 Identify that atoms can be changed to release energy, such as in nuclear power plants, and recognize the related safety issue.	SC.912.P.10.Su.5 Recognize that nuclear power plants generate electricity and can be dangerous.	SC.912.P.10.Pa.7 Recognize safe and unsafe practices related to the use of electricity, such as keeping foreign objects out of

C.912.P.10.In.7	Identify common conductors and insulators of electricity.	SC.912.P.10.Su.6	Recognize fundamental forces, such as gravitational.	electrical sockets and not using electrical devices around water.
C.912.P.10.In.8	Identify that some electrical devices use different types of power sources and explain what might happen if correct electrical components are used.	SC.912.P.10.Su.7	Recognize common objects that conduct electricity (conductors) and objects that do not conduct electricity (insulators).	SC.912.P.10.Pa.8 Demonstrate opening and closing an electrical circuit to turn an electrical device on and off.
C.912.P.10.In.9	Identify common applications of electromagnetic waves moving through different media, such as radio waves, microwaves, x-rays, or infrared.	SC.912.P.10.Su.8	Recognize that some electrical devices use different types of power sources.	SC.912.P.10.Pa.9 Recognize how magnets are used in real-world situations.
		SC.912.P.10.Su.9	Observe and identify the effects of magnetic attraction on iron.	

Standard 12: Motion

A. Motion can be measured and described qualitatively and quantitatively. Net forces create a change in motion. When objects travel at speeds comparable to the speed of light, Einstein's special theory of relativity applies.

B. Momentum is conserved under well-defined conditions. A change in momentum occurs when a net force is applied to an object over a time interval.

C. The Law of Universal Gravitation states that gravitational forces act on all objects irrespective of their size and position.

D. Gases consist of great numbers of molecules moving in all directions. The behavior of gases can be modeled by the kinetic molecular theory.

E. Chemical reaction rates change with conditions under which they occur. Chemical equilibrium is a dynamic state in which forward and reverse processes occur at the same rates.

BENCHMARK CODE	BENCHMARK
SC.912.P.12.1	Distinguish between scalar and vector quantities and assess which should be used to describe an event. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.10	Interpret the behavior of ideal gases in terms of kinetic molecular theory. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.11	Describe phase transitions in terms of kinetic molecular theory. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.12.12	Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.13	Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.

	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.2	Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.3	Interpret and apply Newton's three laws of motion. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.4	Describe how the gravitational force between two objects depends on their masses and the distance between them. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.12.5	Apply the law of conservation of linear momentum to interactions, such as collisions between objects. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.6	Qualitatively apply the concept of angular momentum. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.12.7	Recognize that nothing travels faster than the speed of light in vacuum which is the same for all observers no matter how they or the light source are moving. <i>Cognitive Complexity:</i> Level 1: Recall
SC.912.P.12.8	Recognize that Newton's Laws are a limiting case of Einstein's Special Theory of Relativity at speeds that are much smaller than the speed of light. <i>Cognitive Complexity:</i> Level 1: Recall
SC.912.P.12.9	Recognize that time, length, and energy depend on the frame of reference. <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

Standard 8: Matter

A. A working definition of matter is that it takes up space, has mass, and has measurable properties. Matter is comprised of atomic, subatomic, and elementary particles.

B. Electrons are key to defining chemical and some physical properties, reactivity, and molecular structures. Repeating (periodic) patterns of physical and chemical properties occur among elements that define groups of elements with similar properties. The periodic table displays the repeating patterns, which are related to the atom's outermost electrons. Atoms bond with each other to form compounds.

C. In a chemical reaction, one or more reactants are transformed into one or more new products. Many factors shape the nature of products and the rates of reaction.

D. Carbon-based compounds are building-blocks of known life forms on earth and numerous useful natural and synthetic products.

BENCHMARK CODE	BENCHMARK
SC.912.P.8.1	Differentiate among the four states of matter. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.10	Describe oxidation-reduction reactions in living and non-living systems. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.11	Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.12	Describe the properties of the carbon atom that make the diversity of carbon compounds possible. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.13	Identify selected functional groups and relate how they contribute to properties of carbon compounds. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.8.2	Differentiate between physical and chemical properties and physical and chemical changes of matter. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.3	Explore the scientific theory of atoms (also known as atomic theory) by describing changes in the atomic model over time and why those changes were necessitated by experimental evidence. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.8.4	Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.6	Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces.

	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.8	Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.
	<i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.P.8.9	Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.
	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.912.P.8.In.1 Classify states of matter as solid, liquid, and gaseous.	SC.912.P.8.Su.1 Identify examples of states of matter as solid, liquid, and gaseous.	SC.912.P.8.Pa.1 Select an example of a common solid, liquid, and gas.
SC.912.P.8.In.2 Compare characteristics of physical and chemical changes of matter.	SC.912.P.8.Su.2 Identify examples of physical and chemical changes.	SC.912.P.8.Pa.2 Recognize a common chemical change, such as cooking, burning, rusting, or decaying.
SC.912.P.8.In.3 Identify the nucleus as the center of an atom.	SC.912.P.8.Su.3 Recognize that atoms are tiny particles in materials, too small to see.	SC.912.P.8.Pa.3 Recognize that the parts of an object can be put together to make a whole.
SC.912.P.8.In.4 Recognize that the periodic table includes all known elements.	SC.912.P.8.Su.4 Recognize examples of common elements, such as oxygen and hydrogen.	SC.912.P.8.Pa.3 Recognize that the parts of an object can be put together to make a whole.
SC.912.P.8.In.5 Identify that compounds are made of two or more elements.	SC.912.P.8.Su.5 Recognize examples of common compounds, such as water and salt.	SC.912.P.8.Pa.4 Match common compounds to their names or communication symbols.
SC.912.P.8.In.6 Identify formulas for common compounds, such as H <sub>2</sub> O and CO <sub>2</sub> .	SC.912.P.8.Su.6 Match common chemical formulas to their common name, such as H <sub>2</sub> O to water.	SC.912.P.8.Pa.5 Recognize that some acids and bases can be dangerous and identify related hazard symbols.
SC.912.P.8.In.7 Identify properties of common acids and bases.	SC.912.P.8.Su.7 Categorize common materials or foods as acids or bases.	
SC.912.P.8.In.8 Identify that carbon is found in all living things.	SC.912.P.8.Su.8 Recognize that carbon is found in all living things.	

## Body of Knowledge: EARTH AND SPACE SCIENCE

### Standard 5: Earth in Space and Time

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



development of knowledge and understanding of the nature of the Universe.

BENCHMARK CODE	BENCHMARK
SC.912.E.5.1	Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin of the universe. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.10	Describe and apply the coordinate system used to locate objects in the sky. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.5.11	Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.2	Identify patterns in the organization and distribution of matter in the universe and the forces that determine them. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.5.3	Describe and predict how the initial mass of a star determines its evolution. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.5.4	Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.5	Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly discovered planetary systems. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.6	Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the effects of Earth, Moon, and Sun on each other. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.7	Relate the history of and explain the justification for future space exploration and continuing technology development. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.8	Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.5.9	Analyze the broad effects of space exploration on the economy and culture of Florida. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.912.E.5.In.1 Recognize that the Milky Way is part of the expanding universe.	SC.912.E.5.Su.1 Recognize that the universe consists of many galaxies, including the Milky Way.	SC.912.E.5.Pa.1 Recognize that when objects move away from each other, the distance between them expands.
SC.912.E.5.In.2 Explain that stars change over time, and that stars can be different; some are smaller, some are larger and some appear brighter than others.	SC.912.E.5.Su.2 Identify differences in stars: some are smaller, some are larger and some appear brighter than others.	SC.912.E.5.Pa.2 Recognize that some stars are brighter than others.
SC.912.E.5.In.3 Describe the Sun as a medium-sized star with sunspots	SC.912.E.5.Su.3 Describe observable effects of the Sun on Earth, such as changes in light and temperature.	SC.912.E.5.Pa.3 Observe and recognize effects of the Sun on Earth, such as temperature changes.

and storms that can affect weather and radio transmissions on Earth.		SC.912.E.5.Su.4 Recognize that there are planetary systems in the Universe.	SC.912.E.5.Pa.4 that Earth is a planet.	Recognize
SC.912.E.5.In.4 that there are other planetary systems in the universe besides the Solar System.	Recognize	SC.912.E.5.Su.5 an eclipse.	SC.912.E.5.Pa.5 items, such as freeze-dried food and space blankets, developed because of space exploration.	Recognize
SC.912.E.5.In.5 tools that use different types of radiation, such as radio waves, ultraviolet radiation, and infrared waves.	Identify	SC.912.E.5.Su.6 major contributions related to space exploration that affected Florida.	SC.912.E.5.Pa.6 a tool that uses radiation for personal reasons, such as x-rays.	Recognize
SC.912.E.5.In.6 major contributions and research from space exploration that affected Florida's economy and culture.	Identify	SC.912.E.5.Su.6 major contributions related to space exploration that affected Florida.		
SC.912.E.5.In.7 a lunar eclipse, a solar eclipse, and the effect of the Moon on tides on Earth.	Recognize	SC.912.E.5.Su.7 examples of tools that use radiation for observation purposes, such as x-rays and infrared night goggles.		Recognize

Standard 6: Earth Structures	
The scientific theory of plate tectonics provides the framework for much of modern geology. Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources.	
BENCHMARK CODE	BENCHMARK
SC.912.E.6.1	Describe and differentiate the layers of Earth and the interactions among them. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.6.2	Connect surface features to surface processes that are responsible for their formation. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.6.3	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.6.4	Analyze how specific geologic processes and features are expressed in Florida and elsewhere. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.6.5	Describe the geologic development of the present day oceans and identify commonly found features. <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.6.6	Analyze past, present, and potential future consequences to the environment resulting from various energy production technologies. <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
Access Point for Students with Significant Cognitive Disabilities	

Independent	Supported	Participatory
SC.912.E.6.In.1 Describe the three layers of Earth (core, mantle, and	SC.912.E.6.Su.1 Recognize the three layers of Earth (core, mantle, and crust).	SC.912.E.6.Pa.1 Identify a surface feature of Earth, such as a hill.

<p>crust).</p> <p>SC.912.E.6.In.2 Describe examples of surface features, such as glaciers, valleys, canyons, and dried riverbeds, which are caused by wind and erosion (surface processes).</p> <p>SC.912.E.6.In.3 Relate a cause and effect of movements in Earth's crust (plate tectonics), such as fault lines in the plates causing earthquakes.</p> <p>SC.912.E.6.In.4 Identify natural geological processes that change the land and water in Florida, including beach erosion and sinkholes.</p>	<p>SC.912.E.6.Su.2 Identify types of surface features, such as hills and valleys.</p> <p>SC.912.E.6.Su.3 Recognize that Earth's crust is broken into parts (plates) that move and cause mountains and volcanoes.</p> <p>SC.912.E.6.Su.4 Recognize examples of natural changes to Florida's land and water, such as beach erosion.</p>	<p>SC.912.E.6.Pa.2 Recognize that the surface of Earth can change.</p>
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### Standard 7: Earth Systems and Patterns

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

BENCHMARK CODE	BENCHMARK
SC.912.E.7.1	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.2	Analyze the causes of the various kinds of surface and deep water motion within the oceans and their impacts on the transfer of energy between the poles and the equator.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.3	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.4	Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.7.5	Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.6	Relate the formation of severe weather to the various physical factors.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.E.7.7	Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.8	Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively.

	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.E.7.9	Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.
	<i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<i>Independent</i>	<i>Supported</i>	<i>Participatory</i>
SC.912.E.7.In.1 Identify cycles that occur on Earth, such as the water and carbon cycles, and the role energy plays in them.	SC.912.E.7.Su.1 Recognize the phases of the water cycle that occur on Earth and the role energy plays in the water cycle.	SC.912.E.7.Pa.1 Recognize that clouds release rain (part of the water cycle).
SC.912.E.7.In.2 Recognize that there are circular movements of ocean water (surface and deep-water currents) which move cold water from the poles toward the tropics and vice versa.	SC.912.E.7.Su.2 Recognize that currents move the ocean water around Earth.	SC.912.E.7.Pa.2 Recognize waves in the ocean.
SC.912.E.7.In.3 Describe the interactions among the atmosphere, hydrosphere, and biosphere, including how air, water, and land support living things and how air temperature affects water and land temperatures.	SC.912.E.7.Su.3 Recognize components of the atmosphere, the hydrosphere, and the biosphere.	SC.912.E.7.Pa.3 Recognize that humans, plants, and animals live on the Earth (biosphere).
SC.912.E.7.In.4 Describe variations in climate due to geological locations, such as on mountains and the nearness to large bodies of water.	SC.912.E.7.Su.4 Identify the climate conditions in different parts of the world.	SC.912.E.7.Pa.4 Recognize that weather (climate) is different in different locations.
SC.912.E.7.In.5 Identify weather conditions using weather data and weather maps.	SC.912.E.7.Su.5 Identify weather conditions, including temperature, wind speed, and humidity.	SC.912.E.7.Pa.5 Recognize the weather conditions, including severe weather, in Florida.
SC.912.E.7.In.6 Compare weather conditions in different types of severe storms, including hurricanes, tornadoes, and thunderstorms.	SC.912.E.7.Su.6 Recognize conditions in severe storms, such as hurricanes, tornadoes, and thunderstorms.	SC.912.E.7.Pa.6 Recognize that the Sun heats the water in the ocean.
SC.912.E.7.In.7 Recognize that global climate change is related to conditions in the atmosphere and oceans.	SC.912.E.7.Su.7 Recognize that global climate change occurs over a long period of time.	
SC.912.E.7.In.8 Describe how atmospheric and hydrologic conditions, such as hurricanes, drought, wildfires, and sinkholes, affect human behavior.	SC.912.E.7.Su.8 Identify how weather and water conditions affect humans in Florida.	
SC.912.E.7.In.9 Recognize that the ocean absorbs most of the solar energy reaching Earth and loses heat primarily by evaporation.	SC.912.E.7.Su.9 Recognize that the ocean absorbs heat from the Sun and then warms the air.	

Standard 1: The Practice of Science

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

B: The processes of science frequently do not correspond to the traditional portrayal of "the scientific method."

C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge.

D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.

BENCHMARK CODE	BENCHMARK
SC.912.N.1.1	<p>Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:</p> <ol style="list-style-type: none"> <li>1. <b>Pose questions about the natural world</b>, (Articulate the purpose of the investigation and identify the relevant scientific concepts).</li> <li>2. <b>Conduct systematic observations</b>, (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines).</li> <li>3. <b>Examine books and other sources of information to see what is already known</b>,</li> <li>4. <b>Review what is known in light of empirical evidence</b>, (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).</li> <li>5. <b>Plan investigations</b>, (Design and evaluate a scientific investigation).</li> <li>6. <b>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)</b>, (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).</li> <li>7. <b>Pose answers, explanations, or descriptions of events</b>,</li> <li>8. <b>Generate explanations that explicate or describe natural phenomena (inferences)</b>,</li> <li>9. <b>Use appropriate evidence and reasoning to justify these explanations to others</b>,</li> <li>10. <b>Communicate results of scientific investigations, and</b></li> <li>11. <b>Evaluate the merits of the explanations produced by others.</b></li> </ol> <p><i>Cognitive Complexity:</i> Level 3: Strategic Thinking &amp; Complex Reasoning</p>
SC.912.N.1.2	<p>Describe and explain what characterizes science and its methods.</p> <p><i>Cognitive Complexity:</i> Level 2: Basic Application of Skills &amp; Concepts</p>

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:</i> Level 1: Recall
SC.912.N.1.4	Identify sources of information and assess their reliability according to the strict standards of scientific investigation.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.1.5	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.N.1.7	Recognize the role of creativity in constructing scientific questions, methods and explanations.  <i>Cognitive Complexity:</i> Level 1: Recall
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
<p>SC.912.N.1.In.1 Identify a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Identify a scientific question 2. Examine reliable sources of information to identify what is already known 3. Develop a possible explanation (hypothesis) 4. Plan and carry out an experiment 5. Gather data based on measurement and observations 6. Evaluate the data 7. Use the data to support reasonable explanations, inferences, and conclusions.</p> <p>SC.912.N.1.In.2 Describe the processes used in scientific investigations, including posing a research question, forming a hypothesis, reviewing what is known, collecting evidence, evaluating results, and reaching conclusions.</p> <p>SC.912.N.1.In.3 Identify that scientific investigations are sometimes repeated in different locations.</p> <p>SC.912.N.1.In.4 Identify that scientists use many different methods in conducting their research.</p>	<p>SC.912.N.1.Su.1 Recognize a problem based on a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Recognize a scientific question 2. Use reliable information and identify what is already known 3. Create possible explanation 4. Carry out a planned experiment 5. Record observations 6. Summarize results 7. Reach a reasonable conclusion.</p> <p>SC.912.N.1.Su.2 Identify the basic process used in scientific investigations, including questioning, observing, recording, determining, and sharing results.</p> <p>SC.912.N.1.Su.3 Recognize that scientific investigations can be repeated in different locations.</p> <p>SC.912.N.1.Su.4 Recognize that scientists use a variety of methods to get answers to their research questions.</p>	<p>SC.912.N.1.Pa.1 Recognize a problem related to a specific body of knowledge, including life science, earth and space science, or physical science, and do the following: 1. Observe objects and activities 2. Follow planned procedures 3. Recognize a solution.</p> <p>SC.912.N.1.Pa.2 Recognize a process used in science to solve problems, such as observing, following procedures, and recognizing results.</p> <p>SC.912.N.1.Pa.3 Recognize that when a variety of common activities are repeated the same way, the outcomes are the same.</p> <p>SC.912.N.1.Pa.4 Recognize that people try different ways to complete a task when the first one does not work.</p>

**Standard 2: The Characteristics of Scientific Knowledge**

A: Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other

ways of knowing, such as art, philosophy, or religion.

B: Scientific knowledge is durable and robust, but open to change.

C: Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

BENCHMARK CODE	BENCHMARK
SC.912.N.2.1	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.2.2	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.2.3	Identify examples of pseudoscience (such as astrology, phrenology) in society.  <i>Cognitive Complexity:</i> Level 1: Recall
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

<b>Independent</b>	<b>Supported</b>	<b>Participatory</b>
SC.912.N.2.In.1 Identify examples of investigations that involve science.	SC.912.N.2.Su.1 Identify questions that can be answered by science.	SC.912.N.2.Pa.1 Recognize an example of work by scientists.
SC.912.N.2.In.2 Distinguish between questions that can be answered by science and observable information and questions that can't be answered by science and observable information.	SC.912.N.2.Su.2 Recognize that what is known about science can change based on new information.	SC.912.N.2.Pa.2 Recognize a variety of cause-effect relationships related to science.
SC.912.N.2.In.3 Recognize that scientific knowledge can be challenged or confirmed by new investigations and reexamination.	SC.912.N.2.Su.3 Recognize major contributions of scientists.	
SC.912.N.2.In.4 Identify major contributions of scientists.		

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

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

BENCHMARK CODE	BENCHMARK
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.  <i>Cognitive Complexity:</i> Level 3: Strategic Thinking & Complex Reasoning
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.N.3.3	Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.N.3.4	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
<b>Access Point for Students with Significant Cognitive Disabilities</b>	

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

**Standard 4: Science and Society**

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.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.  <i>Cognitive Complexity:</i> Level 2: Basic Application of Skills & Concepts
SC.912.N.4.2	Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.



*Cognitive Complexity:* Level 3: Strategic Thinking & Complex Reasoning

**Access Point for Students with Significant Cognitive Disabilities**

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



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