



FOSS Full Option Science System
(FOSS)
Grades K-8

Correlation

Florida
Sunshine State Standards



FOSS Correlations to Sunshine State Standards 2009 Kindergarten

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.K.N.1.1: Collaborate with a partner to collect information.</u>	<p>Wood and Paper Investigation 1, Parts 2, 3, 4, and 5, pages 15-32 Investigation 3, Part 1, pages 8-12 Investigation 4, Part 1, pages 8-13</p> <p>Trees Investigation 1, Part 4 and part 5, page 24-27 Investigation 1, Part 7, pages 31-34 Investigation 1, Part 9, pages 35-38 Investigation 2, Part 1 and part 5, pages 6-9 and 23-25</p>
<u>SC.K.N.1.2: Make observations of the natural world and know that they are descriptors collected using the five senses.</u>	<p>Wood and Paper Investigation 1, Part 1, pages 8-19 Science Stories, page 10</p> <p>Fabric Investigation 1, Parts 1 and 2, pages 12-19</p>
<u>SC.K.N.1.3: Keep records as appropriate -- such as pictorial records -- of investigations conducted.</u>	<p>Trees Investigation 2, Parts 1-4, pages 6-23</p> <p>Animals Two by Two Investigation 1, parts 1, 3, and 4, pages 10-16 and 22-29 Investigation 2, parts 1-3, pages 9-13 and 18-21</p> <p>Wood and Paper Investigation 1, Parts 4 and 5, pages 24-32 Investigation 3, Part 4, pages 22-25</p>
<u>SC.K.N.1.4: Observe and create a visual representation of an object which includes its major features.</u>	<p>Animals Two by Two Investigation 1, Parts 1 and 3, pages 10-16 and 22-25</p> <p>Trees Interdisciplinary Extensions, pages 29-30</p> <p>Wood and Paper Investigation 5, Part 3, pages 18-21</p>

<p><u>SC.K.N.1.5: Recognize that learning can come from careful observation.</u></p>	<p>This benchmark is addressed in all FOSS investigations. For example:</p> <p>Fabric Investigation 1, Parts 1 and 2, pages 6-15</p> <p>Animals Two by Two Investigation 1, Parts 1, 3, and 4, Pages 10-16 and 22-29</p> <p>Trees Investigation 3, Parts 1-9, pages 10-38</p> <p>Wood and Paper Investigation 1, Parts 1 and 2, pages 8-19 Investigation 3, Parts 1-4, pages 8-25 Science Stories, pages 9-10</p>
------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Big Idea 5: Earth in Space and Time

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

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.K.E.5.1: Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up.</u>	
<u>SC.K.E.5.2: Recognize the repeating pattern of day and night.</u>	
<u>SC.K.E.5.3: Recognize that the Sun can only be seen in the daytime.</u>	
<u>SC.K.E.5.4: Observe that sometimes the Moon can be seen at night and sometimes during the day.</u>	
<u>SC.K.E.5.5: Observe that things can be big and things can be small as seen from Earth.</u>	
<u>SC.K.E.5.6: Observe that some objects are far away and some are nearby as seen from Earth.</u>	

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<p><u>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.</u></p> <ul style="list-style-type: none"> •Color 	<p>Wood and Paper Investigation 1, Part 1, pages 8-14 Investigation 3, Part 1, pages 8-12</p> <p>Fabric</p>

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.K.P.12.1: Investigate that things move in different ways, such as fast, slow, etc</u>	Animals Two by Two Investigation 2, Part 2, pages 14-17 Investigation 3, Part 2, pages 13-16 Investigation 4, Part 3, pages 16-19

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.K.P.13.1: Observe that a push or a pull can change the way an object is moving.</u>	Wood and Paper Investigation 1, parts 4 and 5, pages 24-32 Investigation 2, Part 1, pages 8-11 Fabric Investigation 1, Part 6, pages 29-33

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.K.L.14.1: Recognize the five senses and related body parts.</u>	
<u>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.</u>	
<u>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.</u>	Trees Investigation 1, Parts 3 and 6, pages 20-22 and 28-30 Investigation 3, Part 4, pages 19-21 Animals Two by Two Investigation 1, Parts 1-4, pages 10-29 Investigation 2, Parts 1-4, pages 9-24 Investigation 3, Parts 1-3, pages 8-20 Investigation 4, Parts 1-4, pages 8-23 Investigation 5, Parts 1-4, pages 10-27

FOSS Correlations to Sunshine State Standards 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Balance and Motion Investigation 1, 2, and 3, All parts, pages 8-28 Air and Weather Investigation 1, Parts 1,2,3,4, 5, and 6 pages 8-38
<u>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.</u>	All FOSS modules offer students an opportunity to participate in activities related to this benchmark. Examples include: Balance and Motion Investigation 1, 2, and 3, All parts, pages 8-28 Solids and Liquids Investigation 1, Parts 1 and 2, pages 8-20 Investigation 2, Parts 1 and 2, pages 10-20 Investigation 3, Parts 2 and 4, pages 24-27 Science Stories, pages 3-7 Pebbles Sand and Silt Investigation 1, Parts 3 and 4, pages 18-25 Investigation 2, Parts 1-4, pages 8-29
<u>SC.1.N.1.3: Keep records as appropriate - such as pictorial and written records - of investigations conducted.</u>	All FOSS modules offer students an opportunity to participate in activities related to this benchmark. Examples include: Air and Weather Investigation 4, Parts 1-3, pages 8-24 New Plants Investigation 2, Part 3, pages 20-28 Pebbles, Sand, and Silt Investigation 2, Parts 3 and 4, pages 18-29

	Plants and Animals Investigation 1, Part 3, pages 63-72
<u>SC.1.N.1.4: Ask "how do you know?" in appropriate situations.</u>	FOSS is an inquiry based science program that stresses the importance of students questioning and communicating during each Investigation. As a result, asking the question "how do you know," becomes inherent to each investigation.

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Air and Weather Investigation 4, Part 3, pages 19-24
<u>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.</u>	Concept covered in grades 3 and 4 Balance and Motion Science Stories, page12
<u>SC.1.E.5.3: Investigate how magnifiers make things appear bigger and help people see things they could not see without them.</u>	Solids and Liquids Investigation 4, Part 1, pages 7-16 Pebbles, Sand, and Silt Investigation 2, Parts 3 and 4, pages 18-29
<u>SC.1.E.5.4: Identify the beneficial and harmful properties of the Sun.</u>	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.1.E.6.1: Recognize that water, rocks, soil, and living organisms are found on Earth's surface.</u>	Pebbles, Sand and Silt Investigation 1, Part 1, pages 8-12 Investigation 2, Parts 1-4, pages 8-29 Science Stories, pages 3-13, 20-23 New Plants Investigation 2, Part 1, pages 8-14 Plants and Animals Investigation 1, Part 1, pages 47-57
<u>SC.1.E.6.2: Describe the need for water and how to be safe around water.</u>	Air and Weather Investigation 2, Part 4, pages 24-27 Math Extension, Problem A and B
<u>SC.1.E.6.3: Recognize that some things in the world around us happen fast and some happen slowly.</u>	Air and Weather Investigation 3, Parts 1-5, pages 8-33 Investigation 3, Interdisciplinary Math Extension A Investigation 4, Parts 1-3, pages 8-24

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Solids and Liquids Investigation 1, Parts 1 and 2, pages 8-20 Investigation 2, Parts 1 and 2, pages 10-20 Investigation 3, Parts 2 and 4, pages 24-27 Science Stories, pages 3-7 Pebbles, Sand and Silt Investigation 1, Parts 3 and 4, pages 18-25 Investigation 2, Parts 1-4, pages 8-29

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Balance and Motion Investigation 2, Parts 1, 2, and 3, pages 8-25 Investigation 3, Parts 1, 2, and 3, pages 6-25 Science Stories, pages 22-25 and 26-31

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.1.P.13.1: Demonstrate that the way to change the motion of an object is by applying a push or a pull.</u>	Balance and Motion Investigation 2, Part 2, pages 14-19 Investigation 3, Parts 1-3, pages 6-25 Science Stories, pages 10-13

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.1.L.14.1: Make observations of living things and their environment using the five senses.</u>	Plants and Animals Investigation 1, Parts 1,2, and 3, pages Investigation 2, Parts 1,2, and 3, pages87-108 Investigation 3, Parts 1,2, and 3, pages 120-140 Investigation 4, Parts 1 and 2, pages 151-163 Science Stories, pages 3-51
<u>SC.1.L.14.2: Identify the major parts of plants including stem, roots, leaves, and flowers.</u>	Plants and Animals Investigation 2, Parts 1,2, and 3, pages87-108 Investigation 4, Parts 1 and 2, pages 151-163 Science Stories, pages 28-31, 34, 37, and 43

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.1.L.16.1: Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.</u>	Plants and Animals Investigation 3, Parts 1-3, pages 87-108 Investigation 4, Parts 1 and 2, pages 7-19 New Plants Investigation 3, Parts 1-3, pages 8-25 Investigation4, Parts 1 and 2, pages 7-19 Insects Investigation 3, Parts 1and 3, pages 8-11 , 21-26 Science Stories, pages 16-33 Insects and Plants Investigation 3, Parts 1 and 3 pages 129-133, 145-151

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.1.L.17.1: Through observation, recognize that all plants and animals, including humans, need the</u>	Plants and Animals

basic necessities of air, water, food, and space.

Investigation 1, Part 1, pages 47-56
Investigation 2, Part 3, pages 104-108
Investigation 3, Parts 1 and 2, pages 120-126
Investigation 4, Part 1, pages 151-156
Science Stories, pages 3-8 and 21-27
Science Resources, pages 3-7, 21-27
Video: How Plants Get Food

Insects

Investigation 1, Part 1, pages 8-15
Investigation 2, Part 1, pages 8-13
Investigation 3, Part 2, pages 12-20
Investigation 4, Part 2, pages 18

Plants and Animals

Investigation 1, Part 2, pages 47-57
Investigation 3, Parts 1 and 2, pages 120-134
Science Resources, pages 3-7, 21-27
Video: How Plants Get Food

Insects and Plants

Investigation 1, Part 1, pages 52-61
Investigation 2, Part 1, pages 91-94
Investigation 3, Part 2, pages 134-144
Investigation 4, Part 2, pages 170-174

FOSS Correlations to Sunshine State Standards 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	All FOSS modules offer students an opportunity to participate in activities related to this benchmark. Examples include: New Plants Investigation 2, Part 1, pages 8-14 Balance and Motion Investigation 3, Part 3, pages 19-25 Air and Weather Investigation 2, Parts 2 and 4, pages 14-19 and 24-27 Plants and Animals Investigation 1, Parts 1 and 2, pages 47-62 Insects and Plants Investigation 1, Parts 1 and 2, pages 47-62
<u>SC.2.N.1.2: Compare the observations made by different groups using the same tools.</u>	All FOSS modules offer students an opportunity to participate in activities related to this benchmark. Examples include: Air and Weather Investigation 2, Parts 1-4, pages 8-27 Pebbles, Sand, and Silt Investigation 4, Part 3, pages 19-25 Balance and Motion Investigation 3, Parts 1 and 2, pages 6-18 Solids and Liquids Investigation 4, Part 1, pages 7-16
<u>SC.2.N.1.3: Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.</u>	FOSS is an inquiry based science program that stresses the importance of students questioning and communicating during each Investigation. As a result, asking the question "how do you know," becomes inherent to each investigation.
<u>SC.2.N.1.4: Explain how particular scientific investigations should yield similar conclusions when</u>	All FOSS modules offer students an opportunity

<u>repeated.</u>	to participate in activities related to this benchmark. Examples Include: Solids and Liquids Investigation 4, Part 1, pages 7-16 Air and Weather Investigation 2, Part 2, pages 14-19 Pebbles, Sand, and Silt Investigation 4, Part 3, pages 19-25 Balance and Motion Investigation 3, Parts 1 and 2, pages 6-18
<u>SC.2.N.1.5: Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).</u>	All FOSS modules offer students an opportunity to participate in activities related to this benchmark. Examples include: Solids and Liquids Investigation 4, Parts 1-3, pages 7-27 Air and Weather Investigation 1, Parts 4 and 5, pages 21-33 Balance and Motion Investigation 3, Parts 1 and 2, pages 6-18
<u>SC.2.N.1.6: Explain how scientists alone or in groups are always investigating new ways to solve problems.</u>	All FOSS modules offer students an opportunity to participate in activities related to this benchmark. Examples include: New Plants Investigation 2, Parts 1 and 2, pages 9-19 Solids and Liquids Investigation 4, Part 3, pages 23-27 Air and Weather Investigation 4, Part 1, pages 8-11 Plants and Animals Investigation 1, Parts 1-2, pages 47-62

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.2.E.6.1: Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes.</u>	Pebbles, Sand and Silt Investigation 1, Part 1, pages 8-12 Investigation 2, Parts 1-4, pages 8-29 Science Stories, pages 3-13, 20-23 New Plants Investigation 2, Part 1, pages 8-14
<u>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.</u>	Plants and Animals Investigation 3, Part 2, pages 128-134
<u>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.</u>	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Air and Weather Investigation 2, Parts 1-4, pages 8-27 Investigation 4, Parts 1-3, pages 8-24 Science Stories, pages 7-13, and 14-17 Science Extensions Keep track of hourly weather Make a temperature graph
<u>SC.2.E.7.2: Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.</u>	Air and Weather Investigation 2, Part 2, pages 14-19
<u>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).</u>	
<u>SC.2.E.7.4: Investigate that air is all around us and that moving air is wind.</u>	Air and Weather Investigation 1, Parts 1-3, pages 8-20 Investigation 3, Parts 1-5, pages 8-33
<u>SC.2.E.7.5: State the importance of preparing for severe weather, lightning, and other weather related events.</u>	Air and Weather Science Stories, pages 14-17

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Solids and Liquids Investigation 1, Parts 1 and 2, pages 8-20 Investigation 2, Parts 1 and 2, pages 10-20 Investigation 3, Parts 2 and 4, pages 24-27 Science Stories, pages 3-7 Pebbles, Sand and Silt Investigation 1, Parts 3 and 4, pages 18-25 Investigation 2, Parts 1-4, pages 8-29 Balance and Motion Science Stories, pages 18-21
<u>SC.2.P.8.2: Identify objects and materials as solid, liquid, or gas.</u>	Solids and Liquids Investigation 1, Parts 1-3, pages 8-24

	Investigation 2, Parts 1-3, pages 10-27 Science Stories, pages 3-7 Air and Weather Investigation 1, Parts 1 and 2, pages 8-17
<u>SC.2.P.8.3: Recognize that solids have a definite shape and that liquids and gases take the shape of their container.</u>	Solids and Liquids Investigation 1, Part 1, pages 6-16 Investigation 2, Part 2, pages 15-20 Science Stories, pages 8-13 Air and Weather Investigation 1, Parts 1,2, and 4, pages 8-16 and 21-26 Science Stories, pages 3-6
<u>SC.2.P.8.4: Observe and describe water in its solid, liquid, and gaseous states.</u>	Solids and Liquids Investigation 2, Parts 1 and 2, pages 10-20 Science Stories, pages 7 and 16
<u>SC.2.P.8.5: Measure and compare temperatures taken every day at the same time.</u>	Air and Weather Investigation 2, Part 2, pages 14-19
<u>SC.2.P.8.6: Measure and compare the volume of liquids using containers of various shapes and sizes.</u>	

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Solids and Liquids Investigation 4, Parts 1 and 2, pages 18-23 Science Stories, pages 14-17 FOSS Web, Activity: Change It! Air and Weather Investigation 2, Science Extension, page 32 Pebbles, Sand and Silt Investigation 2, Part 3, pages 18-23

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.2.P.13.1: Investigate the effect of applying various pushes and pulls on different objects.</u>	Balance and Motion Investigation 1, Parts 1,2,3,and 4, pages 8-28 Investigation 2, Parts 2 and 3, pages 8-25 Science Stories, pages 10-17
<u>SC.2.P.13.2: Demonstrate that magnets can be used to make some things move without touching them.</u>	Balance and Motion Science Stories, pages 18-21
<u>SC.2.P.13.3: Recognize that objects are pulled toward the ground unless something holds them up.</u>	Balance and Motion Investigation 1, Parts 1,2, and 3, pages 8-23
<u>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.</u>	Balance and Motion Investigation 2, Part 1, pages 8-13 Investigation 3, Parts 1-3, pages 6-25

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.2.L.14.1: Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions.</u>	

Big Idea 16: Heredity and Reproduction

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

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.2.L.16.1: Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.</u>	Plants and Animals Investigation 1, Parts 1-3, pages 47-72 Investigation 2, Parts 1-3, pages 87-108 Investigation 4, Parts 1 and 2, pages 120-134 Video: How Plants Grow Science Stories, pages 9-15 New Plants Investigation 1, Part 3, pages 23-30 Investigation 2, Parts 1-3, pages 8-28 Investigation 4, Parts 1 and 2, pages 7-19 Insects Investigation 1-5, All parts Science Stories, pages 16-33 Insects and Plants Investigation 1-5, All parts Science Resources, pages 8-10, and 37-55

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<p><u>SC.2.L.17.1: Compare and contrast the basic needs that all living things, including humans, have for survival.</u></p>	<p>Plants and Animals Investigation 1, Part 2, pages 58-62 Investigation 3, Parts 1-3, pages 120-140 Science Stories, pages 28-45 Science Resources, pages 16-19, 29-30, 32-36, 39, and 41-50 Video: How Plants Live in Different Places</p> <p>New Plants Investigation 2, Part 2, pages 15-19 Science Stories, pages 8-11 and 22.43</p> <p>Insects and Plants Investigation 4, parts 3-4, pages 175-186 Science Resources, pages 26-29</p>
<p><u>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.</u></p>	<p>Plants and Animals Investigation 3, Parts 1-3, pages 120-140 Science Stories, pages 26-45 Science Resources, pages 28- Video: How Plants Live in Different Places</p> <p>New Plants Science Stories, pages 22-39</p> <p>Insects Investigation 6, Parts 1-3, pages 8-22</p> <p>Insects and Plants Science Resources, pages 48-55</p>

FOSS Correlations to Sunshine State Standards 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Ideas and Inventions Investigations 1, Parts 1-3, pages 8-21 Investigation 4, Part 4, pages 22-25 Measurement Investigation 3, Part 3, pages 18-21 Water Investigation 4, Part 1, pages 8-13 Magnetism and Electricity Investigation 4, Part 4, pages 22-25
<u>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.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Ideas and Inventions Investigations 1, Parts 1-3, pages 8-21 Investigation 3, Part 2, pages 14-17 Human Body Investigation 4, Part 2, pages 17-19 Structures of Life Investigation 3, Parts 3 and 4, pages 20-30 Physics of Sound Investigation 2, Parts 1-3, pages 8-24 Sun, Moon and Stars Investigation 1, Parts 1-2, pages 42-64
<u>SC.3.N.1.3: Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Measurement Investigation 4, Part 2, pages 14-17

	<p>Water Investigation 3, Parts 1-3, pages 8-20</p> <p>Human Body Investigation 4, Parts 2 and 3, pages 17-24</p> <p>Sun, Moon and Stars Investigation 1, Parts 1-2, pages 42-64 Investigation 2, Parts 1-2, pages 79-100</p>
<p><u>SC.3.N.1.4: Recognize the importance of communication among scientists.</u></p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Sun Moon and Stars Science Stories, pages 44-46</p> <p>Ideas and Inventions Investigations 1, Parts 1-3, pages 8-21 Investigation 3, Part 2, pages 14-17</p> <p>Physics of Sound Investigation 2, Parts 1-3, pages 8-24</p>
<p><u>SC.3.N.1.5: Recognize that scientists question, discuss, and check each others' evidence and explanations.</u></p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Ideas and Inventions Investigation 3, Part 2, pages 14-17</p> <p>Human Body Investigation 4, Part 2, pages 17-19</p> <p>Structures of Life Investigation 3, Parts 3 and 4, pages 20-30</p> <p>Sun, Moon and Stars Investigation 1, Parts 1-2, pages 42-64</p>
<p><u>SC.3.N.1.6: Infer based on observation.</u></p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Human Body Investigation 1, Part 3, pages 21-25</p> <p>Physics of Sound Investigation 2, Parts 1-3, pages 8-24</p> <p>Magnetism and Electricity Investigation 3, Parts 1-3, pages 10-26</p> <p>Ideas and Inventions Investigation 2, Parts 1-2, pages 8-19</p> <p>Sun, Moon and Stars Investigation 1, Parts 1-2, pages 42-64</p>
<p><u>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.</u></p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Structures of Life Investigation 4, Part 3, pages 20-24</p> <p>Water Investigation 4, Part 1, pages 8-13</p> <p>Magnetism and Electricity Investigation 4, Part 3, pages 19-22</p> <p>Human Body Investigation 4, Part 2, pages 17-19</p> <p>Sun, Moon and Stars</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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	
<u>SC.3.N.3.2: Recognize that scientists use models to help understand and explain how things work.</u>	Water Investigation 2, Parts 1 and 2, pages 8-18 Magnetism and Electricity Investigation 5, Parts 1 and 2, pages 8-20 Earth Materials Investigation 3, Parts 1 and 2, pages 8-19 Human Body Investigation 3, Parts 1-3, pages 8-21 Sun, Moon and Stars Investigation 1, Parts 1-2, pages 42-64 Investigation 2, Parts 1-2, pages 79-100
<u>SC.3.N.3.3: Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations.</u>	Earth Materials Investigation 1, Part 1, pages 8-15 Investigation 1, Part 2, pages 16-23

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Sun Moon and Stars Investigation 3, Parts 1 and 2, pages 106-132 Science Stories, page15
<u>SC.3.E.5.2: Identify the Sun as a star that emits energy; some of it in the form of light.</u>	Sun Moon and Stars Investigation 1, Parts 1 and 2 pages 36-64 Science Stories, pages 4-6 and pages 9-12
<u>SC.3.E.5.3: Recognize that the Sun appears large and bright because it is the closest star to Earth</u>	Sun Moon and Stars Science Stories, pages 16-18
<u>SC.3.E.5.4: Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome</u>	
<u>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.</u>	Sun Moon and Stars Investigation 3, Part 2, pages 127-129 Science Stories, pages 35-39 ,pages 40-43, and pages 47-50

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.3.P.8.1: Measure and compare temperatures of various samples of solids and liquids.</u>	Measurement Investigation 4, Part 1, Pages 8-13 Investigation 4, Part 2, Pages 14-18 Matter and Energy Investigation 4, part 1, pages 174-180
<u>SC.3.P.8.2: Measure and compare the mass and volume of solids and liquids.</u>	Matter and Energy Investigation 3, Part 2, pages 139-149
<u>SC.3.P.8.3: Compare materials and objects according to properties such as size, shape, color, texture, and hardness.</u>	Earth Materials Investigation 2, Part 1, pages 8-12 Investigation 2, Part 2, pages 14-21

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Measurement Investigation 4, Part 2, pages 14-18 Matter and Energy Investigation 4, Part 2, pages 181-191 Science Stories, pages 54-56

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.3.P.10.1: Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.</u>	Matter and Energy Investigation 1, Part 1, pages 50-61 Physics of Sound Investigation 2, Part 1, pages 8-12 Investigation 2, Part 2, pages 13- 19 Investigation 2, Part 3, pages 20-24
<u>SC.3.P.10.2: Recognize that energy has the ability to cause motion or create change.</u>	Physics of Sound Investigation 2, Part 1, pages 8- 12 Investigation 3, Part 1, pages 8-14
<u>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.</u>	Matter and Energy Investigation 2, Part 1, pages 93-102 Science Stories, pages 24-28, 29-33
<u>SC.3.P.10.4: Demonstrate that light can be reflected, refracted, and absorbed.</u>	Matter and Energy Investigation 2, Part 1, pages 93-102 Investigation 2, Part 2, pages 103-112 Science Stories, pages 24-28, 29-33

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.3.P.11.1: Investigate, observe, and explain that things that give off light often also give off heat.</u>	Magnetism and Electricity Investigation 2, Part 1, pages 8-13 Investigation 3, Parts 1-3, pages 10-26 Science Stories, pages 17 and 33
<u>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.</u>	Matter and Energy Investigation 1, Part 1, pages 50-62

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.3.L.14.1: Describe structures in plants and their roles in food production, support, water and nutrient</u>	Structures of Life Investigation 2, Part 3, pages 18-22

<u>transport, and reproduction.</u>	This benchmark is also covered in the Plants and Animals Module for grades 2 and 3.
<u>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.</u>	This benchmark is also covered in the Plants and Animals Module for grades 2 and 3.

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	
<u>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.</u>	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.3.L.17.1: Describe how animals and plants respond to changing seasons.</u>	
<u>SC.3.L.17.2: Recognize that plants use energy from the Sun, air, and water to make their own food</u>	Structures of Life Investigation 1, Part 2, pages 8-17 Investigation 1, Part 2, pages 18-27 This content is also covered in the Plants and Animals Module for grades 2 and 3

FOSS Correlations to Sunshine State Standards 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Physics of Sound Investigation 3, Language Extension, page 20 Magnetism and Electricity Investigation 2, Social Studies Extension, page 32 Sun, Moon and Stars Investigation 2, Science Extension, page 102 Investigation 3, Science Extension, page 134
<u>SC.4.N.1.2: Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Ideas and Inventions Investigation 3, Part 2, pages 14-17 Human Body Investigation 4, Part 2, pages 17-19 Structures of Life Investigation 2, Parts 2 and 3, pages 14-22 Investigation 3, Parts 3 and 4, pages 20-30 Sun, Moon and Stars Investigation 1, Parts 1-2, pages 42-64 Magnetism and Electricity Investigation 1, Part 4, pages 30-34 Investigation 2, Parts 1-2, pages 8-19
<u>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.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Physics of Sound Investigation 2, Parts 1-3, pages 8-24

	<p>Water Investigation 3, Parts 1-3, pages 8-20</p> <p>Magnetism and Electricity Investigation 4, Part 3, pages 19-22</p> <p>Ideas and Inventions Investigation 2, Parts 1 and 2, pages 8-19</p>
<p>SC.4.N.1.4: Attempt reasonable answers to scientific questions and cite evidence in support.</p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Water Investigation 1, Parts 1-3, pages 8-23 Investigation 2, Parts 1-3, pages 8-24 Investigation 3, Parts 1-4, pages 8-26 Investigation 4, Parts 1-3, pages 8-23</p>
<p>SC.4.N.1.5: Compare the methods and results of investigations done by other classmates.</p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Magnetism and Electricity Investigation 1, Part 3, pages 23-29 Investigation 2, Parts 1 and 2, pages 8-19 Investigation 3, Parts 1 and 2, pages 10-21 Investigation 5, Part 3, pages 20-25</p> <p>Water Investigation 4, Part 4, pages 24-28</p>
<p>SC.4.N.1.6: Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.</p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Human Body Investigation 4, Parts 1-3, pages 8-24</p> <p>Sun, Moon and Stars Investigation 2, Parts 1 and 2, pages 79-100</p> <p>Magnetism and Electricity Investigation 1, Part 3, pages 23-29 Investigation 4, Part 2, pages 14-18</p> <p>Measurement Investigation 4, Parts 1 and 2, pages 8-17</p> <p>Structures of Life Investigation 2, Part 3, pages 18-22</p>
<p>SC.4.N.1.7: Recognize and explain that scientists base their explanations on evidence.</p>	<p>All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include:</p> <p>Structures of Life Investigation 4, part 3, pages 20-24</p> <p>Water Investigation 4, Part 1, pages 8-13</p> <p>Magnetism and Electricity Investigation 4, Part 2, pages 17-19</p> <p>Sun, Moon and Stars Investigation 1, Part 2, pages 56-64</p>
<p>SC.4.N.1.8: Recognize that science involves creativity in designing experiments.</p>	<p>Earth Materials Investigation 4, Part 2, pages 14-18</p> <p>Magnetism and Electricity Investigation 3, Part 3, pages 22-26</p>

	Investigation 5, Part 3, pages 21-25 Water Investigation 4, Part 4, pages 24-28
--	----------------------------------------------------------------------------------------------

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.

<i>BENCHMARK</i>	<i>PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL</i>
SC.4.N.2.1: Explain that science focuses solely on the natural world.	All FOSS modules offer students an opportunity to engage in activities related to this benchmark.

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.

<i>BENCHMARK</i>	<i>PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL</i>
SC.4.N.3.1: Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.	Earth Materials Investigation 1, Part 1, pages 8-15 Human Body Investigation 1, Part 2, pages 16-20 Investigation 3, Part 1-3, pages 8-21 Magnetism and Electricity Investigation 5, Part 1, pages 8-14 Water Investigation 2, Part 1, pages 8-13 Investigation 4, Part 2, pages 14-18 Sun, Moon and Stars Investigation 2, Part 2, pages 89-100 Investigation 3, Part 1, pages 114-125

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.

<i>BENCHMARK</i>	<i>PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL</i>
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.	Sun, Moon, and Stars Investigation 3, pages 115-123 Science Stories pages 35-39
SC.4.E.5.2: Describe the changes in the observable shape of the moon over the course of about a month.	Sun, Moon, and Stars Investigation 2, Part 1, pages 79-87

	Investigation 2, Part 2, pages 89-100 Science Stories, pages 14-18 Science Stories, pages 19-29
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.	Sun, Moon, and Stars Investigation 1, Part 1, pages 47-55 Investigation 1, Part 2, pages 57-64 Science Stories, pages 1-3 Science Stories, pages 35-39
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.	Sun, Moon, and Stars Science Stories, pages 35-39
SC.4.E.5.5: Investigate and report the effects of space research and exploration on the economy and culture of 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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).	
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.	Earth Materials Investigation 1, Part 1, pages 8-15 Investigation 1, Part 2, pages 16-23 Investigation 1, Part 3, pages 24-29 Investigation 2, Part 1, pages 8-12 Investigation 2, Part 2, pages 14-21 Investigation 3, Part 1, pages 8-13 Investigation 3, Part 2, pages 14-19 Investigation 4, Part 1, pages 8-13
SC.4.E.6.3: Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.	
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).	Earth Materials Investigation 3, Science Extension, page 24 Science Stories, pages 1-7
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.	Sun Moon and Stars Investigation 3, Part 2, Pages 126-130 Science Stories, Pages 40-42
SC.4.E.6.6: Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).	

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Magnetism and Electricity Investigation 1, pages 8-17 Matter and Energy Investigation 3, Part 2, pages 139-149 Investigation 3, Part 3, pages 151-158 Science Stories, pages 47-48, 49-52
SC.4.P.8.2: Identify properties and common uses of water in each of its states.	Measurement Investigation 4, Part 1, pages 8-13 Investigation 4, Part 2, pages 14-17 Matter and Energy Investigation 4, Part 1, pages 174-180 Investigation 4, Part 2, pages 181-190 Science Stories, pages 54-56
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.	Measurement Investigation 2, Part 2, pages 14-17
SC.4.P.8.4: Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.	Magnetism and Electricity Investigation 1, Part 1, pages 8-17 Investigation 1, Part 2, pages 19-22 Science Stories, pages 1-4 and 5-9

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Matter and Energy Investigation 4, part 3, pages 196-203 Science Stories, pages 60-62, 63-65

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	PAGES(S) OR LOCATIOONS WHERE TAUGHT IN MAJOR TOOL
SC.4.P.10.1: Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion.	Magnetism and Electricity Investigation 1, Parts 1-4, pages 8-13 Investigation 2, Social Studies Extension, page 32 Investigation 3, Parts 1-3, pages 10-26

	Science Stories, pages 6-11, 23, 28-33 FOSS Web, Activity: Electromagnets Water Science Stories, page 23 Physics of Sound Investigation 1, Part 3, pages 21-29 Investigation 2, Parts 1-3, pages 8-24 Science Stories, pages 5-6, 11-14, 22-27 Ideas and Inventions Investigation 4, Parts 1-3, pages 8-21
SC.4.P.10.2: Investigate and describe that energy has the ability to cause motion or create change	Matter and Energy Investigation 1, part 3, pages 71-81 Science Stories, pages 14-17
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.	Physics of Sound Investigation 2, Part 1, pages 8-12 Investigation 2, Part 2, pages 12-19 Investigation 2, Part 3, pages 20-24 Investigation 4, Part 1, pages 6-15 Science Stories, pages 17-18
SC.4.P.10.4: Describe how moving water and air are sources of energy and can be used to move things.	Matter and Energy Investigation 1, Part 3, pages 71-81 Science Stories, pages 14-17

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Measurement Investigation 4, Part 1, Pages 8-13
SC.4.P.11.2: Identify common materials that conduct heat well or poorly.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.4.P.12.1: Recognize that an object in motion always changes its position and may change its direction.	
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.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.4.L.16.1: Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.	Structures of Life Investigation 1, Part 1, pages 8-17 Investigation 1, Part 2, pages 18-27 Investigation 1, Part 3, pages 28-33 Investigation 2, Part 1, pages 8-13 Investigation 2, Part 3, pages 18-22
SC.4.L.16.2: Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.	Structures of Life Investigation 3, Part 3, pages 20-23 Investigation 3, Part 4, pages 24-30
SC.4.L.16.3: Recognize that animal behaviors may be shaped by heredity and learning.	Structures of Life Investigation 3, Part 3, pages 20-23 Investigation 3, Part 4, pages 24-30
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.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.4.L.17.1: Compare the seasonal changes in Florida plants and animals to those in other regions of the country.	
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.	
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.	
SC.4.L.17.4: Recognize ways plants and animals, including humans, can impact the environment.	This material is covered in the Plants and Animals Module for grades 2 and 3

FOSS Correlations to Sunshine State Standards 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Mixtures and Solutions Investigation 1, Parts 1-4, pages 8-29 Models and Designs Investigations 2 and 3, All parts, pages 8- Levers and Pulleys Investigation 1, Parts 1, 2, and 3, pages 8-28
<u>SC.5.N.1.2: Explain the difference between an experiment and other types of scientific investigation</u>	
<u>SC.5.N.1.3: Recognize and explain the need for repeated experimental trials.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Environments Investigation 2, Parts 2-4, pages 16-30 Models and Designs Investigation 4, Parts 1 and 2, pages 6-15 Variables Investigation 1, Parts 1-3, pages 8-27 Levers and Pulleys Investigation 1, Parts 2 and 3, pages 18-24
<u>SC.5.N.1.4: Identify a control group and explain its importance in an experiment.</u>	Environments Investigation 6, Parts 1-3, pages 8-22 Mixtures and Solutions Investigation 3, Part 1, pages 8-14
<u>SC.5.N.1.5: Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."</u>	
<u>SC.5.N.1.6: Recognize and explain the difference between personal opinion/interpretation and verified observation.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark.

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	All FOSS modules offer students an opportunity to engage in activities related to this benchmark. Examples include: Environments Investigation 3, Part 3, pages 18-22 Variables Investigation 1, Part 2, pages 16-22 Levers and Pulleys Investigation 1, Parts 2 and 3, pages 18-28 Solar Energy Investigation 2, Part 2, pages 16-24
<u>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.</u>	Environments Investigation 3, parts 1-3, pages 8-22 Solar Energy Investigation 2, Parts 1 and 2, pages 8-22 Variables Investigation 3, parts 2 and 3, pages 14-23 Landforms Investigation 3, Parts 1-3, pages 8-24

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Water Planet Science Stories, pages 2-3, page 13, and pages 20-23 cb
<u>SC.5.E.5.2: Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.</u>	Water Planet Investigation 1, Part 1, pages 50-58 Science Stories, pages 4-13 and 20-23 Models and Designs Science Stories, page 6-9 Solar Energy Science Stories, pages 40-43
<u>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.</u>	Water Planet Investigation 1, Part 1, pages 50-58

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. 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Water Planet Investigation 2, Part 1, pages 80-85 Investigation 2, Part 2, pages 86-91 Investigation 2, Part 3, pages 92-99 Investigation 2, Part 4, pages 100-109 Investigation 4, Part 1, pages 184-197 Science Stories, pages 26-40 and pages 67-70
<u>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</u>	Water Planet Investigation 4, Part 1, pages 184-197 Science Stories, pages 63-70
<u>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.</u>	Water Planet Investigation 3, Part 3, pages 145-156 Investigation 4, Part 2, pages 200- 203 Science Stories, pages 46-51,52-57 and 58-61
<u>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.</u>	
<u>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.</u>	
<u>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.</u>	
<u>SC.5.E.7.7: Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.</u>	

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.5.P.8.1: Compare and contrast the basic</u>	Content covered in Matter and Energy Module

<u>properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.</u>	Mixtures and Solutions Investigation 1, Parts 1-3, pages 8-24
<u>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.</u>	Mixtures and Solutions Investigation 2, Parts 1-4, pages 8-28 Investigation 3, Parts 1-3, pages 8-24
<u>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.</u>	Mixtures and Solutions Investigation 1, Parts 1-4, pages 8-29
<u>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.</u>	

Big Idea 9: Changes in Matter

A. Matter can undergo a variety of changes.

B. Matter can be changed physically or chemically.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.5.P.9.1: Investigate and describe that many physical and chemical changes are affected by temperature.</u>	Content covered in Matter and Energy Module

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.5.P.10.1: Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.</u>	Content addressed in Magnetism and Electricity Module
<u>SC.5.P.10.2: Investigate and explain that energy has the ability to cause motion or create change.</u>	Content addressed in Matter and Energy Module
<u>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.</u>	Content addressed in Magnetism and Electricity Module
<u>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.</u>	Content addressed in Magnetism and Electricity, Physics of Sound, and Matter and Energy Modules

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.5.P.11.1: Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop).</u>	Content addressed in Magnetism and Electricity Module Grades 3 and 4

<u>SC.5.P.11.2: Identify and classify materials that conduct electricity and materials that do not.</u>	Content addressed in Magnetism and Electricity Module Grades 3 and 4
-------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>SC.5.P.13.1: Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.</u>	Levers and Pulleys Investigation 1, Parts 1, 2, and 3, pages 8-28 Investigation 3, Parts 1, 2, and 3, pages 8-24 Investigation 4, Parts 1, 2, and 3, pages 8-25 Variables Investigation 1, Parts 1-3, pages 8-27 Investigation 3, Parts 1-3, pages 8-23 Investigation 4, Parts 1-4, pages 8-28
<u>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.</u>	Levers and Pulleys Investigation 1, Parts 1, 2, and 3, pages 8-28 Investigation 3, Parts 1, 2, and 3, pages 8-24
<u>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.</u>	Levers and Pulleys Investigation 1, Parts 1 and 2, pages 18-29 Investigation 4, Part 1, pages 8-13 Variables Investigation 2, Parts 1-3, pages 8-23 Investigation 3, Part 1-3, pages 8-27 Investigation 4, Parts 1-3, pages 8-23
<u>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.</u>	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Living Systems Investigation 1, Part 1, pages 51-59 Investigation 1, Part 2, pages 61-65 Investigation 1, Part 3, pages 66-70 Science Stories, pages
<u>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</u>	

internal skeletons others with exoskeletons -- while some plants have stems for support.

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Environments Investigations 2, Parts 2 and 3, pages 16-25 Investigation 3, Parts 1-3, pages 8-22 Investigation 4, Parts 2 and 3, pages 13-22 Investigation 5, Parts 1-3, pages 8-22 Investigation 6, Parts 1-3, pages 8-22

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	Environments Investigation 1, Parts 1 and 2, pages 8-19 Investigation 2, Parts 2-4, pages 16-30 Investigation 3, Parts 1-3, pages 8-22 Investigation 4, Parts 1-3, pages 8-22 Investigation 5, Parts 1-3, pages 8-22 Investigation 6, Parts 1-3, pages 8-22

FOSS Correlations to Sunshine State Standards 2009 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	FOSS modules provide students opportunities to engage in this benchmark. Examples include: Models and Designs Investigation 1, Parts 2, and 3, pages 18-25 Investigation 2, Parts 1-3, pages 8-24 Investigation 3, Parts 1-3, pages 8-23 Investigation 4, Parts 1-3, pages 6-20 Landforms Investigation 3, Part 3, pages 20-24 Living Systems Investigation 2 Part 1, pages 86-97 Video: Plant Structure and Growth Investigation 3, Parts 2 and 3, pages 126-141 Force and Motion Activities 1-8, pages 47-300 Human Brain and Senses Investigation 7, Part 2, pages 219-225 Planetary Science Investigation 5, Parts 2 and 3, pages 158-167 Diversity of Life Investigation 6, Part 1, pages 219-225 Investigation 9, Part 2, pages 278-285
<u>SC.6.N.1.2: Explain why scientific investigations should be replicable</u>	Models and Designs Investigation 1, Part 2, pages 18-21 Investigation 2, Part 3, pages 22-24 Force and Motion Investigation 2, Part 3, pages 89-99 Planetary Science Investigation 5, Parts 2 and 3, pages 158-167 Human Brain and Senses Investigation 7, Part 2, pages 219-225
<u>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.</u>	FOSS modules provide students opportunities to engage in this benchmark.
<u>SC.6.N.1.4: Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.</u>	Models and Designs Investigation 1, Part 2, pages 18-21 Investigation 2, Part 2 and 3, pages 17-25 Living Systems Investigation 2, Part 1, pages 86-97

	Force and Motion Investigation 2, Part 3, pages 38-49 Planetary Science Investigation 5, Part 2, pages 158-163 Electronics Investigation 8, Part 4, pages 265-271
SC.6.N.1.5: Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Living Systems Investigation 2, Part 1, pages 86-97 Investigation 3, Parts 2 and 3, pages 126-141 Force and Motion Investigation 1, Part 2, pages 57-64 Earth History Investigation 1, Part 2, pages 45-48

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.6.N.2.1: Distinguish science from other activities involving thought.	FOSS modules provide students opportunities to engage in this benchmark.
SC.6.N.2.2: Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Models and Designs Science Stories, pages 3 and 4 Living Systems Investigation 2, Part 1, pages 86-97 Investigation 3, Parts 2 and 3, pages 126-141 Force and Motion Resources, pages 50-52 Populations and Ecosystems Resources, pages 46-55 Planetary Science Resources, pages 59-62 and 67-88
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.	Models and Designs Science Stories, pages 5-10, and pages 25-36 Force and Motion Resources, pages 50-52 Video, Galileo: On the Shoulders of Giants Earth History Resources, pages 50-54, 83-85 and 98-99 Populations and Ecosystems Resources, pages 46-55 and 58-61

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Force and Motion Resources, pages 50-52 Populations and Ecosystems Resources, pages 46-55 Planetary Science Resources, pages 59-62 and 67-68
SC.6.N.3.2: Recognize and explain that a scientific law is a description of a specific relationship under	Force and Motion Investigation 6, Parts 1-3, pages 218-241

given conditions in the natural world. Thus, scientific laws are different from societal laws.	Multimedia: Force Bench
SC.6.N.3.3: Give several examples of scientific laws.	Force and Motion Investigation 6, Parts 1-3, pages 218-241
SC.6.N.3.4: Identify the role of models in the context of the sixth grade science benchmarks.	Models and Designs Investigation 1, Parts 1-3, pages 6-25 Investigation 2, Parts 1 and 2, pages 17-21 Investigation 3, Parts 1-3, pages 8-23 Investigation 4, Parts 1-2, pages 6-15 Landforms Investigation 1, Parts 1-3, pages 8-24 Investigation 2, Parts 1 and 2, pages 8-22 Investigation 3, Parts 1 and 2, pages 8-19 Investigation 4, Part 1, pages 8-15

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Landforms Investigation 2, Parts 1 and 2, pages 8-21 Investigation 3, Parts 1, 2, and 3, pages 8-24 Earth History Investigation 3, Part 4, pages 109-111 Investigation 4, Parts 2 - 5, pages 132--155 Video: Weathering and Erosion Diversity of Life Resources, page 18 Populations and Ecosystems Resources, page 18
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.	Landforms Investigation 2, Parts 1 and 2, pages 8-21 Investigation 4, Parts 1 and 2, pages 8-20 Earth History Investigation 2, Parts 1-3, pages 60-70

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.6.E.7.1: Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.	Water Planet Investigation 3, Parts 1 and 2, pages 125-142 Science Stories, pages 42-45 and 46-51 Planetary Science Resources, page 99 Electronics Investigation 1, Parts 1-3, pages 55-70 Populations and Ecosystems Resources, pages 17-21 Weather and Water Investigation 4, Parts 1 and 2, pages 121-139 Investigation 5, Parts 2 and 3, pages 163-174 Resources, pages 22-26, 52-62 and 63-65
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.	Water Planet Investigation 2-4, pages 80-197 Science Stories, pages 26-40 and 67-70 Weather and Water

	Investigation 7, Parts 1 and 2, pages 232-243 Investigation 9, Part 3, pages 311-314 Video: Wonders of Weather
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.	Water Planet Investigation 4, Part 1, pages 184-197 Science Stories, pages 63-70 Weather and Water Investigation 6, Parts 1-5, pages 190-220 Investigation 7, Parts 1 and 2, pages 232-243 Investigation 8, Parts 1-4, pages 258-280 Investigation 9, Parts 1-3, pages 296-314 Resources, pages 53-55
SC.6.E.7.4: Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	Water Planet Investigation 3, Part1, pages 125-134 Science Stories, pages 42-45 Resources, pages 8-11 and 63-66
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.	Weather and Water Investigation 8, Part 2, pages 265-270
SC.6.E.7.6: Differentiate between weather and climate.	Weather and Water Investigation 9, Parts 1-3, pages 296-314
SC.6.E.7.7: Investigate how natural disasters have affected human life in Florida.	Weather and Water Investigation 1, Parts 1 and 2, pages 43-53 Video: "Wonders of Weather," part 4, "Things That Fall from the Sky," and part 2, "Hurricane." Resources:
SC.6.E.7.8: Describe ways human beings protect themselves from hazardous weather and sun exposure.	Weather and Water Investigation 1, Part 1, pages 43-47
SC.6.E.7.9: Describe how the composition and structure of the atmosphere protects life and insulates the planet.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Chemical Interactions Investigation 4, part 1, pages 122-129 Investigation 5, part 2, pages 159-164

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.6.P.12.1: Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.	Force and Motion Investigation 2, Parts 1 & 2, pages 78-88 Resources, pages 3-6, 8-10, 11-16, 17-19, 20-26, 27-31 & 32-40

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Models and Designs Science Stories, pages 40-43 Force and Motion Resources, pages 53-61
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.	Models and Designs Science Stories, pages 40-43 Force and Motion Investigation 7, Parts 1-3, Pages 256-272 Resources, pages 50, 62-63 and 67-68
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.	Models and Designs Science Stories, pages 48-55 Force and Motion Resources, pages 53-61

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Living Systems Investigation 1, Part 1, pages 52-59 Diversity of Life Investigation 3, Part 1, pages 102-107
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.	Living Systems Investigation 1, Part 1, pages 52-59 Diversity of Life Investigation 3, Part 1, pages 52-59 Investigation 4, Parts 1 and 2, pages 133-141 Resources, pages 27-30 CD, Cells and the Ribbon of Life
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.	Living Systems Investigation 1, parts 2-3, pages 60-70 Diversity of Life Investigation 3, Part 3, pages 116-124 Resources, pages 21-23 and 24-26
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.	Diversity of Life Investigation 4, Part 2, pages 137-141 Resources: pages 27-30
SC.6.L.14.5: Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive,	Living Systems Investigation 1, Parts 1-3, pages 50-70

excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.	Diversity of Life Investigation 6, Parts 1 and 2, pages 186-197 Resources, pages 31-39, 52-53, and 57-58
SC.6.L.14.6: Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Diversity of Life Investigation 1, parts 1 and 2, pages 43-63 Investigation 10, parts 1-3, pages 302-321 Resources, pages 16-17

FOSS Correlations to Florida's Sunshine State Standards 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	FOSS modules provide students the opportunity to engage in this benchmark. Examples include: Chemical Interactions Investigation 6, pages 178-187 Investigation 7, Parts 1-5, pages 204-234 Force and Motion Activities 1-8, pages 47-300 Human Brain and Senses Investigation 7, Part 2, pages 219-225 Planetary Science Investigation 5, Parts 2 and 3, pages 158-167 Diversity of Life Investigation 6, Part 1, pages 219-225 Investigation 9, Part 2, pages 278-285
SC.7.N.1.2: Differentiate replication (by others) from repetition (multiple trials)	Earth History Investigation 1, Part 2, pages 45-47
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.	Planetary Science Investigation 5, Parts 2 and 3, pages 158-169
SC.7.N.1.4: Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Planetary Science Investigation 5, Parts 2 and 3, pages 158-169 Diversity of Life Investigation 9, Part 2, pages 278-285
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.	FOSS modules provide students the opportunity to engage in this benchmark. Examples include: Chemical Interaction Resources, pages 80-83 Planetary Science Resources, pages 71-77 and 90-95 Populations and Ecosystems Resources, pages 46-55
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.	Human Brain and Senses Investigation 8, Part 1, pages 240-245 Force and Motion Investigation 3, Parts 1-3, pages 111/127
SC.7.N.1.7: Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Planetary Science Resources, pages 52-53 and 59-62 Earth History Resources, pages 83-85

	Populations and Ecosystems Resources, pages 46-55 and 58-61 Force and Motion Resources, pages 50-52 Video, Galileo: On the Shoulders of Giants
--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Chemical Interactions Resources, pages 69-72 Planetary Science Resources, pages 67-68 Population and Ecosystems Resources, pages 46-55 Force and Motion Resources, pages 50-52

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	FOSS modules give students opportunities to explore this benchmark. Examples include: Force and Motion Resources, pages 62-66 Electronics Resources, pages 9-11
SC.7.N.3.2: Identify the benefits and limitations of the use of scientific models.	FOSS modules give students opportunities to explore this benchmark.

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Earth History Resources, pages 100-105
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).	Earth History Investigation 3, Part 1, pages 88-95 Investigation 3, Part 4, pages 108-111 Investigation 4, Parts 1-6, pages 127-162 Investigation 8, Parts 1-4, pages 254-274 Video: Weathering and Erosion
SC.7.E.6.3: Identify current methods for measuring the	Earth History

age of Earth and its parts, including the law of superposition and radioactive dating.	Resources, pages 83-88 and 100-105
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.	Earth History Resources, pages 83-88 and 100-105
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.	Earth History Resources, pages 100-105
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.	
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.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.7.P.10.1: Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	Planetary Science Resources, page 99 Human Brain and Senses Resources, page 49 Weather and Water Investigation 4, Parts 1 and 2, Pages 121-139
SC.7.P.10.2: Observe and explain that light can be reflected, refracted, and/or absorbed.	
SC.7.P.10.3: Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Weather and Water Investigation 4, Part 2, pages 131-139 Investigation 5, Part 2, pages 163-168 CD, Matter and Energy: Heat Energy CD, Matter and Energy: Molecules in Solids, Liquids and Gases Chemical Interactions Investigation 6, pages 178-187 Investigation 7, Parts 1-5, pages 204-234
SC.7.P.11.2: Investigate and describe the transformation of energy from one form to another.	Electronics Investigation 1, Parts 1-3, pages 55-70 Investigation 4, Part 2, pages 149-151 Resources, pages 1-2 and 12-13

	Populations and Ecosystems Investigation 5, Part 1, pages 142-150 Resources, pages 14-16 and 20 Weather and Water Investigation 4, Parts 1 and 2, pages 121-139
SC.7.P.11.3: Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	Electronics Investigation 1, Parts 1-3, pages 55-70 Investigation 4, Part 2, pages 149-151 Resources, pages 1-2 and 12-13 Populations and Ecosystems Resources, page 20 Chemical Interactions Investigation 5, Part 3, pages 165-171
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.	Weather and Water Investigation 4, Parts 1 and 2, pages 121-139 Investigation 5, Parts 2 and 3, pages 163-174 Resources, pages 22-26 Video: Conduction Through Metals Chemical Interactions Investigation 5, Parts 2 and 3, pages 159-171

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.7.L.15.1: Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.	Earth History Investigation 7, Parts 1 and 2, pages 234-243 Resources, pages 83-88
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.	
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.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Populations and Ecosystems Resources: pages 46-52
SC.7.L.16.2: Determine the probabilities for genotype and phenotype combinations using Punnett Squares	Populations and Ecosystems Resources: pages 46-58

and pedigrees.	
SC.7.L.16.3: Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.	Populations and Ecosystems Investigation 6, Parts 1-3, pages 179-197
SC.7.L.16.4: Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.	Populations and Ecosystems Resources: pages 58-63

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Populations and Ecosystems Investigation 4, Part 2, pages 122-129 Investigation 5, Part 2, pages 151-155 Investigation 7, pages 211-218 Resources: pages 17-21
SC.7.L.17.2: Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.	Populations and Ecosystems Investigation 7, pages 211-218 Resources: pages 22-24
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.	Populations and Ecosystems Investigation 7, pages 210-218 Resources: pages 28-29 and 30-45

FOSS Correlations to Florida's Sunshine State Standards 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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
<u>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.</u>	FOSS modules provide students opportunities to engage in this benchmark. Examples include: Chemical Interactions Investigation 1, Parts 1 and 2, pages 41-58 Investigation 4, Part 1, pages 122-129 Planetary Science Investigation 5, Parts 2 and 3, pages 158-167 Diversity of Life Investigation 6, Part 1, pages 186-192 Investigation 9, Part 2, pages 278-285 Human Brain and Senses Investigation 7, Part 2, pages 219-225
<u>SC.8.N.1.2: Design and conduct a study using repeated trials and replication.</u>	FOSS modules provide students opportunities to engage in this benchmark. Examples include: Chemical Interactions Investigation 1, Parts 1 and 2, pages 41-58 Investigation 4, Part 1, pages 122-129
<u>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.</u>	FOSS modules provide students opportunities to engage in this benchmark. Examples include: Chemical Interactions
<u>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.</u>	FOSS modules give students opportunities to engage in this benchmark. Examples include: Chemical Interactions Investigation 4, Part 1, pages 122-129 Investigation 5, Part 1, pages 153-158 Human Brain and Senses Investigation 7, Part 2, pages 219-225 Planetary Science Investigation 5, Parts 2 and 3, pages 158-169 Diversity of Life Investigation 9, Part 2, pages 278-285
<u>SC.8.N.1.5: Analyze the methods used to develop a scientific explanation as seen in different fields of science.</u>	FOSS modules provide students opportunities to engage in this benchmark. Examples include: Human Brain and Senses Investigation 7, Part 2, pages 219-225 Planetary Science Investigation 5, Parts 2 and 3, pages 158-169 Diversity of Life Investigation 9, Part 2, pages 278-285 Earth History

	Investigation 1, Part 2, pages 45-48
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.	FOSS modules provide students opportunities to engage in this benchmark. Examples include: Chemical Interactions Investigation 4, Part 1, pages 122-129 Investigation 5, Part 1, pages 153-158 Earth History Investigation 1, Part 2, pages 45-48

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.8.N.2.1: Distinguish between scientific and pseudoscientific ideas.	
SC.8.N.2.2: Discuss what characterizes science and its methods.	Earth History Investigation 1, Part 2, pages 45-48

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
SC.8.N.3.1: Select models useful in relating the results of their own investigations.	Diversity of Life Investigation 6, part 1, pages 186-192
SC.8.N.3.2: Explain why theories may be modified but are rarely discarded.	Earth History Investigation 1, Part 2, pages 45-48

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	FOSS modules provide students the opportunity to engage in this benchmark.
SC.8.N.4.2: Explain how political, social, and economic concerns can affect science, and vice versa.	FOSS modules provide students the opportunity to engage in this benchmark. Examples include: Planetary Science Resources, pages 74-77 and 90-97 Human Brain and Senses Resources, page 49

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Planetary Science Resources, pages 84-89 Additional coverage in grade six
SC.8.E.5.2: Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.	Planetary Science Resources, pages 99-100 Additional coverage in grade six
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.	Content covered in grade six
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.	Content covered in grade six
SC.8.E.5.5: Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).	Planetary Science CD: Sun
SC.8.E.5.6: Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.	Weather and Water Investigation 3, Parts 1-3, pages 93-111
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.	Planetary Science Resources, pages 90-95 CD: Space Exploration
SC.8.E.5.8: Compare various historical models of the Solar System, including geocentric and heliocentric.	
SC.8.E.5.9: Explain the impact of objects in space on each other including: 1. the Sun on the Earth including seasons and gravitational attraction 2. the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.	Planetary Science Investigation 4, Parts 1 and 2, pages 120-131 Weather and Water Investigation 3, Parts 1-3, pages 93-111
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.	

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Weather and Water Investigation 4, Part 2, pages 131-139 Investigation 5, Parts 2 and 3, pages 169-174 Resources, pages 22-24 and 32 Matter and Energy CD: Molecules in Solids, Liquids and Gases Chemical Interactions Investigation 3, Parts 2 and 3, pages 99-113 Investigation 7, Parts 2-5, pages 210-234 Investigation 9, parts 1-4, pages 280-312
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.	Planetary Science Investigation 8, Parts 3 and 4, pages 260-270 Weather and Water Investigation 5, Part 1, pages 151-162
SC.8.P.8.3: Explore and describe the densities of various materials through measurement of their masses and volumes.	Chemical Interactions Investigation 8, Part 3, pages 263-268
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.	Planetary Science Investigation 8, Parts 3 and 4, pages 260-270 Weather and Water Investigation 4, Part 1, pages 121-131 Investigation 5, Part 1, pages 152-162 Chemical Interactions Investigation 1, pages 41-45
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.	Chemical Interactions Investigation 9, Parts 1 -4, pages 280-312 Investigation 10, Parts 1 and 2, pages 323-335
SC.8.P.8.6: Recognize that elements are grouped in the periodic table according to similarities of their properties.	Chemical Interactions Investigation 2, Parts 1 and 2, pages 70-80 Extensions, page 81
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).	Chemical Interactions Investigation 9, Parts 1-4, pages 280-312
SC.8.P.8.8: Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.	Chemical Interactions Investigation 9, Parts 2-4, pages 288-312 Investigation 10, Part 1, pages 323-329
SC.8.P.8.9: Distinguish among mixtures (including solutions) and pure substances.	Chemical Interactions Investigation 8, Parts 1-3, pages 248-268

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.

BENCHMARK	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Chemical Interactions Resources, pages 69-72
SC.8.P.9.2: Differentiate between physical changes	Chemical Interactions

and chemical changes.	Investigation 1, Part 2, pages 46-58 Investigation 7, Parts 1-5, pages 204-234 Investigation 9, Parts 1-4, pages 280-312 Investigation 10, Parts 1 and 2, pages 323-336
SC.8.P.9.3: Investigate and describe how temperature influences chemical changes.	

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	PAGE(S) OR LOCATION(S) WHERE TAUGHT IN MAJOR TOOL
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.	Diversity of Life Resources, page 36 Populations and Ecosystems Investigation 5, Parts 1-3, pages 142-160 Resources: pages 14-16 and 17-21
SC.8.L.18.2: Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.	Diversity of Life Resources, pages 24-26
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.	
SC.8.L.18.4: Cite evidence that living systems follow the Laws of Conservation of Mass and Energy	Chemical Interactions Investigation 9, Parts 2 and 3, pages 288-307