



## Grade 6

### Forces and Motion

Standards	FOSS Alignment	Assessment
<b>6.P.1 Understand the properties of waves and the wavelike property of energy in earthquakes, light and sound waves.</b>		
<p><b>6.P.1.1.</b> Compare the properties of waves to the wavelike property of energy in earthquakes, light and sound.</p>	<p><b>FOSS Next Generation Waves</b> (<i>Available Fall 2016</i>)                      Investigation 1: Make Waves                      Investigation 2: Wave Energy                      Investigation 3: Light Waves</p> <p><b>FOSS Science Resources</b> (<i>student edition</i>)</p>	<p>I-Check 1                      I-Check 2                      I-Check 3                      Survey/Posttest</p>
	<p><b>Delta Science Module Earth Processes</b>                      Activity 8: Earthquake pp. 71-80</p> <p><b>Delta Science Reader Earth Processes</b>                      Plate Movements pp. 7-10</p>	<p>Unit Test</p>
<p><b>6.P.1.2.</b> Explain the relationship among visible light, the electromagnetic spectrum, and sight.</p>	<p><b>FOSS Next Generation Waves</b> (<i>Available Fall 2016</i>)                      Investigation 3: Light Waves                      Investigation 4: Wave Communication</p> <p><b>FOSS Science Resources</b> (<i>student edition</i>)</p>	<p>I-Check 3                      Survey/Posttest</p>
<p><b>6.P.1.3.</b> Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound and hearing.</p>	<p><b>FOSS Next Generation Waves</b> (<i>Available Fall 2016</i>)                      Investigation 2: Wave Energy                      Investigation 4: Wave Communication</p> <p><b>FOSS Science Resources</b> (<i>student edition</i>)</p>	<p>I-Check 2                      Survey/Posttest</p>



## Grade 6

### Matters: Properties and Change

Standards	FOSS Alignment	Assessment
<b>6.P.2 Understand the structure, classifications and physical properties of matter.</b>		
<b>6.P.2.1.</b> Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.	<b>Delta Science Content Reader Properties of Matter</b> What is matter made of? pp. 14-20	Reflect on Reading pp. 23 Apply Science Concepts pp. 23 Unit Test
<b>6.P.2.2.</b> Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change in phase.	<b>Delta Science Content Reader Changes in Matter</b> What are physical changes? pp. 8-13	Reflect on Reading pp. 17 Apply Science Concepts pp. 17 Unit Test
<b>6.P.2.3.</b> Compare the physical properties of pure substances that are independent of the amount of matter present including density, melting point, boiling point, and solubility to properties that are dependent on the amount of matter present to include volume, mass and weight.	<b>Delta Science Content Reader Properties of Matter</b> What is matter? pp. 2-13	Apply Science Concepts pp. 13 Unit Test
	<b>Delta Science Content Reader Changes in Matter</b> What are physical changes? pp. 8-13	Unit Test



## Grade 6

### Energy: Conservation and Transfer

Standards	FOSS Alignment	Assessment
<b>6.P.3 Understand characteristics of energy transfer and interactions of matter and energy.</b>		
<b>6.P.3.1.</b> Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation and convection and the effects that may result.	<b>Delta Science Content Reader Heat and Light Energy</b> What is heat? pp. 2-9	
<b>6.P.3.2.</b> Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature.	<b>FOSS Next Generation Waves (Available Fall 2016)</b> Investigation 2: Wave Energy Investigation 3: Light Waves  <b>FOSS Science Resources (student edition)</b>	I-Check 2 I-Check 3 Survey/Posttest
	<b>Delta Science Content Reader Heat and Light Energy</b> What is light? pp. 10-15	
<b>6.P.3.3.</b> Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).	<b>FOSS Next Generation Waves (Available Fall 2016)</b> Investigation 2: Wave Energy Investigation 3: Light Waves Investigation 4: Wave Communication  <b>FOSS Science Resources (student edition)</b>	PA: Investigation 2 Survey/Posttest
	<b>Delta Science Content Reader Heat and Light Energy</b> What kinds of technology use light? pp. 20-23	

## Grade 6

### Earth in the Universe

Standards	FOSS Alignment	Assessment
<b>6.E.1 Understand the earth/moon/sun system, and the properties, structures and predictable motions of celestial bodies in the Universe.</b>		
6.E.1.1. Explain how the relative motion and relative position of the sun, Earth and moon affect the seasons, tides, phases of the moon, and eclipses.	<b>FOSS Second Edition Planetary Science</b> Investigation 3: Seasons Part 1: Summer Heat pp. 126-144	<b>FQA:</b> Students answer in writing "Why is it hotter in the summer?" including their reasoning and evidence.
	<b>FOSS Second Edition Planetary Science</b> Investigation 3: Seasons Part 2: Day Length pp. 151-164	<b>PA:</b> Students diagram why day and night occur on earth and write an explanation
	<b>FOSS Second Edition Planetary Science</b> <i>FOSS Digital Media:</i> "Seasons"  <i>FOSS Science Resources:</i> "Seasons on Earth"	<b>PA:</b> Students diagram and explain all factors that must be considered to understand why Earth has different seasons during a year.
	<b>FOSS Second Edition Planetary Science</b> Investigation 5: Phases of the Moon	
6.E.1.2. Explain why Earth sustains life while other planets do not based on their properties (including types of surface, atmosphere and gravitational force) and location to the Sun.	<b>FOSS Second Edition Planetary Science</b> Investigation 8: The Solar System Part 1: Where Are the Planets? pp. 358-364	<b>FQA:</b> Students apply proportional mathematics to solar system statistics to accurately calculate the sizes of the planets and their distances from the Sun.
	<b>FOSS Second Edition Planetary Science</b> Investigation 8: The Solar System Part 2: Comparing Temperatures and Atmospheres pp. 368-374  <i>FOSS Digital Media:</i> "Jupiter's Atmosphere" "Search for Water"	<b>FQA:</b> Students answer what planet is most like Earth and state their reasoning.
	<b>FOSS Second Edition Planetary Science</b> Investigation 8: The Solar System Part 3: Where is the Water pp. 378-384	<b>FQA:</b> Students use observations and comparisons of Earth landforms to provide evidence that water may have been present on other solar system objects.
6.E.1.3. Summarize space exploration and the understandings gained from them.	<b>FOSS Second Edition Planetary Science</b> Investigation 9: Space Exploration Part 1: Light Spectra pp. 398-405  <i>FOSS Science Resources:</i> "Hunt for Water Using Spectra"	<b>FQA:</b> Students compare space missions and identify key findings
	<b>FOSS Second Edition Planetary Science</b> Investigation 9: Space Exploration Part 2: Exploration of the Solar System pp. 411-405  <i>FOSS Science Resources:</i> "Space Missions"	



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*Earth in the Universe (cont.)*

Standards	FOSS Alignment	Assessment
<b>6.E.1 Understand the earth/moon/sun system, and the properties, structures and predictable motions of celestial bodies in the Universe.</b>		
<p><b>6.E.1.3.</b> Summarize space exploration and the understandings gained from them.</p>	<p><b>FOSS Second Edition Planetary Science</b>                      Investigation 10: Orbits and New Worlds                      Part 1: The Moons of Jupiter pp. 422-439</p> <p><i>FOSS Digital Media:</i>                      "Galileo's Notes"</p>	
	<p><b>FOSS Second Edition Planetary Science</b>                      Investigation 10: Orbits and New Worlds                      Part 2: Looking for Planets pp. 444-451</p> <p><i>FOSS Science Resources:</i>                      "Finding Planets Outside the Solar System"</p> <p><i>FOSS Digital Media:</i>                      "Exoplanet Transit Hunt"                      "Orrery Video 1"                      "Orrery Video 2"</p>	

## Grade 6

### Earth Systems, Structures and Processes

Standards	FOSS Alignment	Assessment
<b>6.E.2 Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans.</b>		
<b>6.E.2.1.</b> Summarize the structure of the earth, including the layers, the mantle and core based on the relative position, composition and density.	<b>Delta Science Module Earth Processes</b> Activity 1 pp. 9-20 Activity 2 pp. 23-27	Students label the parts of the Earth in a diagram and write a brief description of each layer.
	<b>Delta Science Module Earth Processes</b> Activity 11 pp. 97-102	Students define <i>isostasy</i> based on their observations.
	<b>Delta Science Reader Earth Processes</b> What is Inside Earth? pp. 2-3	End of Unit Test: Earth Processes
<b>6.E.2.2.</b> Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow and volcanoes to reflect forces within the earth.	<b>Delta Science Module Earth Processes</b> Activity 7 pp. 63-70 Activity 8 pp. 71-78	Students summarize what happens when an earthquake occurs.
	<b>Delta Science Module Earth Processes</b> Activity 9 pp. 81-86 Activity 10 pp. 89-95	Students report on the locations of earthquakes and volcanoes in relation to each other and describe their pattern of distribution.
	<b>Delta Science Module Earth Processes</b> Activity 11 pp. 97-103 Activity 12 pp. 105-108 Activity 13 pp. 111-119	Students describe the connection between sea-floor spreading and subduction.
	<b>Delta Science Module Earth Processes</b> Activity 14 pp. 121-129	Assessment - Section 1, Parts A and B; Section 2, Parts A and B, Section 3, Parts A and B
	<b>Delta Science Reader Earth Processes</b> How Has the Earth's Surface Changed Over Time? pp. 4-6 Plate Movements pp. 7-10	End of Unit Test: Earth Processes
<b>6.E.2.3.</b> Explain how the formation of soil is related to the parent rock type and the environment in which it develops.	<b>Delta Science Module Earth Processes</b> Activity 3 pp. 29-37	Students explain the connection between Earth's crust, rocks, weathering, and soil.
	<b>Delta Science Module Earth Processes</b> Activity 4 pp. 39-44 Activity 5 pp. 47-53 Activity 6 pp. 55-62	Students explain differences they observe between sedimentary and igneous rocks and how each is formed.
	<b>Delta Science Reader Earth Processes</b> Weathering, Erosion, and Deposition pp. 4-6 Plate Movements pp. 11-15 How Do Rocks and Soil Form? pp. 16-20	End of Unit Test: Earth Processes



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*Earth Systems, Structures and Processes (cont.)*

Standards	FOSS Alignment	Assessment
<b>6.E.2 Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans.</b>		
<p><b>6.E.2.4.</b> Conclude that the good health of humans requires: monitoring the lithosphere, maintaining soil quality and stewardship.</p>	<p><b>Delta Science Module Earth Processes</b>                      Activity 8: Science, Technology, and Society pp. 79                      Activity 11: Science, Technology, and Society pp. 103                      Activity 14: Science, Technology, and Society p. 129</p> <p><b>Delta Science Reader Earth Processes</b>                      Conserving Soil pp. 20</p>	



Grade 6

Structures and Functions of Living Organisms

Standards	FOSS Alignment	Assessment
<b>6.L.1 Understand the structures, processes and behaviors of plants that enable them to survive and reproduce.</b>		
<b>6.L.1.1.</b> Summarize the basic structures and functions of flowering plants required for survival, reproduction and defense.	<b>Delta Science Reader Plants in Our World</b> "What is a plant?" pp. 2 "How do plants grow, survive, and reproduce?" pp. 3-8	Investigations 4-5 I-Check
	<b>Delta Science Content Reader Plant Life Cycles</b> "How Do Plants Grow from Seeds?" pp. 6-15	
	<b>Delta Science Content Reader Plant Needs</b> "What Are Two Types of Plants?" pp. 8-15 "How Do Plants Make and Use Food?" pp. 16-19 "How Do Environments Affect Plants?:" pp. 20-23	
<b>6.L.1.2.</b> Explain the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms.	<b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 5: Producers	Investigations 4-5 I-Check
	<b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 5: Producers Part 1: Growing Producers pp. 266-277	<b>FQA:</b> Students answer in writing "What is the effect of light on producers?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 5: Producers Part 2: Biomass and Producers pp. 278-289	<b>FQA:</b> Students answer in writing "What do producers need to grow and increase biomass?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 5: Producers Part 3: Ecoscenario Producers pp. 290-293	<b>FQA:</b> Students answer in writing "What are the roles of specific producers in the ecosystem?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 5: Producers Part 4: Energy Transfer from Food pp. 294-310	<b>FQA:</b> Students answer in writing "How can we model and measure energy transfer from food?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> <i>FOSS Science Resources:</i> "Where Does Food Come From?" pp. 44-49	<b>FA:</b> Students write about their favorite food and record the path of how the sun's energy got into that food.
	<b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> <i>FOSS Science Resources:</i> "Energy and Life" pp. 50-52	<b>FA:</b> See Think Questions on page 49.



Grade 6

Ecosystems

Standards	FOSS Alignment	Assessment
<b>6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.</b>		
6.L.2.1. Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) Investigation 5: Producers	Investigations 4-5 I-Check
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) Investigation 5: Producers Part 1: Growing Producers pp. 266-277	<b>FQA:</b> Students answer in writing "What is the effect of light on producers?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) Investigation 5: Producers Part 2: Biomass and Producers pp. 278-289	<b>FQA:</b> Students answer in writing "What do producers need to grow and increase biomass?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) Investigation 5: Producers Part 3: Ecoscenario Producers pp. 290-293	<b>FQA:</b> Students answer in writing "What are the roles of specific producers in the ecosystem?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) Investigation 5: Producers Part 4: Energy Transfer from Food pp. 294-310	<b>FQA:</b> Students answer in writing "How can we model and measure energy transfer from food?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) <i>FOSS Science Resources:</i> "Where Does Food Come From?" pp. 44-49	<b>FA:</b> Students write about their favorite food and record the path of how the sun's energy got into that food.
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) <i>FOSS Science Resources:</i> "Energy and Life" pp. 50-52	<b>FA:</b> See Think Questions on page 49.
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) Investigation 6: Following the Energy Part 1: Using Energy pp. 321-328	<b>FQA:</b> Students answer in writing "What are the kinds of work that you do that require energy?" including their reasoning and evidence.
	<b>FOSS First Edition Populations and Ecosystems</b> ( <i>pre-publication</i> ) Investigation 6: Following the Energy Part 2: Food-Chain Game pp. 329-343	<b>FQA:</b> Students answer in writing "What is needed to sustain a food chain?" including their reasoning and evidence.

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Ecosystems (cont.)

Standards	FOSS Alignment	Assessment
<b>6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.</b>		
<p><b>6.L.2.1.</b> Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.</p>	<p><b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 6: Following the Energy Part 3: Trophic Levels pp. 344-363</p>	<p><b>FQA:</b> Students answer in writing "How does energy and biomass flow through an ecosystem?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 6: Following the Energy Part 4: Decomposers pp. 364-370</p> <p><i>FOSS Digital Media:</i> "Food Webs" "Mono Lake Food Web"</p> <p><i>FOSS Science Resources:</i> "Energy and Life" pp. 50-52 "Rachel Carson and the Silent Spring" pp. 53-55 "Trophic Levels" pp. 58-62 "Decomposers" pp. 63-64</p>	<p><b>FQA:</b> Students answer in writing "What happens to the energy stored in the biomass of an organism when it dies?" including their reasoning and evidence.</p>
	<p><b>Delta Science Reader Plants in Our World</b> "What Is a Plant?" pp. 2 "How Do Plants Grow, Survive, and Reproduce?" pp. 3-8</p>	
<p><b>6.L.2.2.</b> Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment.</p>	<p><b>Delta Science Reader Plant Needs</b> "What Do Plants Need?" pp. 2-7 "How Do Environments Affect Plants?" pp. 20-23</p>	
	<p><b>Delta Science Reader Plants in Our World</b> "How Do Plants Grow, Survive, and Reproduce?" pp. 3-8</p>	
<p><b>6.L.2.3.</b> Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.</p>	<p><b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 2: Sorting Out Life Part 1: Ecosystem Card Sort pp. 123-131</p>	<p><b>FQA:</b> Students answer in writing "How is the milkweed-bug-habitat study similar to and different from Jane Goodall's population study?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 2: Sorting Out Life Part 2: Video Population Study pp. 132-137</p>	<p><b>FQA:</b> Students answer in writing "What are the kinds of work that you do that require energy?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems (pre-publication)</b> Investigation 2: Sorting Out Life Part 3: Ecoscenarios pp. 138-154</p>	<p><b>FQA:</b> Students answer in writing "What are the defining characteristics of your ecosystem?" including their reasoning and evidence.</p>

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Ecosystems (cont.)

Standards	FOSS Alignment	Assessment
<b>6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.</b>		
<p><b>6.L.2.3.</b> Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.</p>	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 2: Sorting Out Life <i>FOSS Science Resources Populations and Ecosystems</i> <i>Life in a Community pp. 9-10</i> <i>Ecoscenario Introductions pp. 11-22</i> <i>Defining a Biome pp. 23-24</i></p>	<p><b>PA:</b> Ecoscenarios Project</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 4: Minihabitats Part 1: The Physical Environment pp. 219-229</p>	<p><b>FQA:</b> Students answer in writing "What abiotic factors should be considered when setting up aquatic and terrestrial habitats?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 4: Minihabitats Part 2: Introducing Life pp. 230-241</p>	<p><b>FQA:</b> Students answer in writing "What interactions are likely for the organisms in the minihabitat?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 4: Minihabitats Part 3: Observing Minihabitats pp. 242-251  <i>FOSS Science Resources Populations and Ecosystems</i> <i>Biosphere 2: An Experiment in Isolation pp. 30-40</i></p>	<p><b>FQA:</b> Students answer in writing "What changes have taken place in the terrariums and the class aquariums?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 7: Population Size Part 1: Reproductive Potential pp. 383-396</p>	<p><b>FQA:</b> Students answer in writing "How many milkweed bugs could be in your habitat at the end of the year?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 7: Population Size Part 2: Limiting Factors pp. 397-410</p>	<p><b>FQA:</b> Students answer in writing "What are the limiting factors that affect algae and brine shrimp populations at Mono Lake?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 7: Population Size Part 3: Population Dynamics pp. 411-424  <i>FOSS Digital Media:</i> <i>"Milkweed Bugs Limited"</i> <i>"Unlimited"</i>  <i>FOSS Science Resources:</i> <i>"Limiting Factors" pp. 65-71</i> <i>"Mono Lake Throughout the Year" pp. 72-73</i></p>	<p><b>FQA:</b> Students answer in writing "How does predicted population growth compare to actual population growth?" including their reasoning and evidence.</p>



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Ecosystems (cont.)

Standards	FOSS Alignment	Assessment
<b>6.L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.</b>		
<p><b>6.L.2.3.</b> Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.</p>	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 8: Human Impact Part 1: Biodiversity pp. 439-455</p>	<p><b>FQA:</b> Students answer in writing "Why is biodiversity important in an ecosystem?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 8: Human Impact Part 2: Invasive Species pp. 456-462</p>	<p><b>FQA:</b> Students answer in writing "What can happen when a species is introduced into an ecosystem?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 8: Human Impact Part 3: Mono Lake Revisited pp. 463-475</p> <p><i>FOSS Science Resources:</i> "Biodiversity" pp.74-78 "Invasive Species" pp. 79-84</p>	<p><b>FQA:</b> Students answer in writing "What impact have people had on Mono Lake?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 9: Ecoscenarios Part 1: Human Involvement pp. 487-495</p>	<p><b>FQA:</b> Students answer in writing "How have humans affected your ecoscenario, and what efforts have humans made to lessen this impact?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 9: Ecoscenarios Part 2: Evaluating Solutions pp. 496-503</p>	<p><b>FQA:</b> Students answer in writing "How have humans affected your ecoscenario, and what efforts have humans made to lessen this impact?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>) Investigation 9: Ecoscenarios Part 3: Presentations pp. 504-514</p> <p><i>FOSS Digital Media:</i> "Ecoscenarios"</p> <p><i>FOSS Science Resources:</i> "Invasive Species" pp. 79-84</p>	<p><b>FQA:</b> Students answer in writing "How have humans affected your ecoscenario, and what efforts have humans made to lessen this impact?" including their reasoning and evidence.</p>
	<p><b>FOSS First Edition Populations and Ecosystems</b> (<i>pre-publication</i>)</p> <p><i>FOSS Science Resources Populations and Ecosystems</i> Invasive Species pp. 79-84</p>	<p>Unit Survey/Post Test</p>

Grade 7

**Forces and Motion**

Standards	FOSS Alignment	Assessment
<b>7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.</b>		
<p><b>7.P.1.1.</b> Explain how the motion of an object can be described by its position, direction of motion, and speed with respect to some other object.</p>	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 1: Here to There                      Scientific and Historical Background pp. 40-45                      Part 1: Fly Air Trolleys pp. 47-56</p>	<p><b>FQA:</b> Students build a "trolley" and move it across a string to demonstrate <i>initial position</i> and <i>final position</i> and develop equations to help they describe and calculate distance moved.</p> <p>Mid-Summative Exam 1                      Mid-Summative Exam 3                      Mid-Summative Exam 7</p> <p>Final Summative Exam</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 1: Here to There                      Part 2: Air—Trolleys Graphs pp. 57-62</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 1: Here to There                      Part 3: Road Race pp. 63-65</p> <p><i>FOSS Science Resources:</i>                      "First in Flight"                      "How Fast Do Things Do?"</p> <p><i>FOSS Digital Media:</i>                      "Moving Along"</p>	<p><b>FQA:</b> Students identify reference point, use the distance equation and compare distance traveled to determine which vehicle went farthest in a road race.</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 1: Here to There                      Part 3: Measuring Time and distance pp. 89-99</p> <p><i>FOSS Science Resources:</i>                      "How Fast Do Things Do?"</p>	<p><b>FQA:</b> Student roll cars down ramps with various heights, record and graph elevation, time and distance, and use the graph to help compute and compare average speed per elevation.</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 2: Speed                      Part 1: Who Got There First? pp. 78-82                      Part 2: Time Travel pp. 83-88</p>	<p><b>FQA:</b> Students "invent" an equation for speed after discussions on problems with distance traveled in a period of time. Students use their equations to solve problems.</p> <p>Mid-Summative Exam 2</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 4: Representing Motion                      Part 1: Show Time pp. 138-145</p>	<p><b>FQA:</b> Students define "displacement" and create data tables and graphs from a story about a character's, Clancy's, afternoon walk.</p> <p>Mid-Summative Exam 4</p>

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**Forces and Motion (cont.)**

Standards	FOSS Alignment	Assessment
<b>7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.</b>		
<p><b>7.P.1.1.</b> Explain how the motion of an object can be described by its position, direction of motion, and speed with respect to some other object.</p>	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 4: Representing Motion                      Part 2: Leisurely Walks pp. 146-151                      Part 3: Motion Stories pp. 152-155</p> <p><i>FOSS Science Resources:</i>                      "Motion Review"                      "Boston Treasure Hunt"                      "Riding on Springer Hill"</p> <p><i>FOSS Digital Resources:</i>                      "Motion Graphs"</p>	<p><b>FQA:</b> Students develop position graphs from a leisurely walk.</p>
<p><b>7.P.1.2.</b> Explain the effects of balanced and unbalanced forces acting on an object (including friction, gravity and magnets).</p>	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 6: Forces                      Part 1: Push and Pull pp. 218-228</p>	<p><b>FQA:</b> Students experiment with push and pulls and discover the net forces applied to a mass cause it to move/accelerate.</p> <p>Mid-Summative Exam 6</p> <p>Final Summative Exam</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 6: Forces                      Part 2: Friction pp. 229-235</p>	<p><b>FQA:</b> Students investigate the amount of force needed to lift several different masses on a sled with and without roller and conclude that: Friction is a force. A certain amount of friction must be overcome to put a mass into motion.</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 6: Forces                      Part 3: Forces in Action pp. 236-241</p>	<p><b>FQA:</b> Students demonstrate pushing of heavy objects and describe the interactions in several scenarios in terms of positive, negative and zero net force and the resulting change in motion.</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 6: Forces                      Part 4: Multimedia Force Bench pp. 242-245</p> <p><i>FOSS Science Resources:</i>                      "Aristotle, Galileo, &amp; Newton"                      "The Force Bench Free Experimentation"</p> <p><i>FOSS Digital Resources:</i>                      "Force Bench"</p>	



Grade 7

**Forces and Motion (cont.)**

Standards	FOSS Alignment	Assessment
<b>7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.</b>		
<p><b>7.P.1.2.</b> Explain the effects of balanced and unbalanced forces acting on an object (including friction, gravity and magnets).</p>	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 7: Gravity                      Part 1: Force of Gravity pp. 256-261                      Part 2: Life Raft Drop pp. 262-266                      Part 3: Galileo's Discovery pp. 267-272</p> <p><i>FOSS Science Resources:</i>                      "Gravity: It's the Law"                      "How to Get and Hold on to a Moon"</p> <p><i>FOSS Digital Resources:</i>                      "Galileo: On the Shoulders of Giants"</p>	<p><b>FAQ:</b> Students conduct experiments to confirm Galileo's three odd-number rule, revise their understanding of Gravity as a universal force of attraction between masses and discuss acceleration due to gravity.</p> <p>Mid-Summative Exam 7</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 8: Momentum                      Part 1: Crashes and Momentum pp. 284-293                      Part 2: Bean Brains pp. 294-301</p> <p><i>FOSS Science Resources:</i>                      "How Much Oomph?"</p> <p><i>FOSS Digital Resources:</i>                      "Understanding Car Crashes"</p>	<p><b>FQA:</b> Students describe both in words and algebraically the relationship between an object's mass and momentum, and it's velocity and momentum.</p>
<p><b>7.P.1.3.</b> Illustrate the motion of an object using a graph to show a change in position over a period of time.</p>	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 1: Here to There                      Part 2: Air-Trolleys Graphs pp. 57-62</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p> <p>Final Summative Exam</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 2: Speed                      Part 3: Measuring Time and Distance pp. 89-99</p>	<p><b>FQA:</b> Student roll cars down ramps with various heights, record and graph elevation, time and distance, and use the graph to help compute and compare average speed per elevation.</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 4: Representing Motion                      Part 1: Show Time pp. 138-145</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p> <p>Mid-Summative Exam 4</p>

Grade 7

**Forces and Motion (cont.)**

Standards	FOSS Alignment	Assessment
<b>7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.</b>		
<p><b>7.P.1.3.</b> Illustrate the motion of an object using a graph to show a change in position over a period of time.</p>	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 4: Representing Motion                      Part 2: Leisurely Walks pp. 146-151                      Part 3: Motion Stories pp. 152-155</p> <p><i>FOSS Science Resources:</i>                      "Motion Review"                      "Boston Treasure Hunt"                      "Riding on Springer Hill"</p> <p><i>FOSS Digital Resources</i>                      "Motion Graphs"</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p>
<p><b>7.P.1.4.</b> Interpret distance versus time graphs for constant speed and variable motion.</p>	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 3: Comparing Speeds                      Part 1: Walk/Run Race pp. 111-118                      Part 2: Boat Races pp. 119-124                      Part 3: The Iditarod pp. 125-127</p> <p><i>FOSS Science Resources:</i>                      "Iditarod: The Last Great Race on Earth"</p> <p><i>FOSS Digital Resources:</i>                      "Photo Finish"                      "Graphing"                      "Sled Dogs: An Alaska Epic"</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p> <p>Mid-Summative Exam 3</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 5: Acceleration                      Part 1: Faster and Faster pp. 169-176                      Part 2: Mechanical Dotcar pp. 177-186</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p> <p>Mid-Summative Exam 5</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b>                      Investigation 5: Acceleration                      Part 3: Dots and Motion pp. 187-193                      Part 4: Cars and Loads pp. 194-201</p> <p><i>FOSS Science Resources:</i>                      "Faster and Faster" pp. 32-35                      "Other Great Race: Armadillo and Hare" pp. 36-40                      "The Making of a Dotcar" pp. 41-49</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p> <p>Mid-Summative Exam 5</p>



Grade 7

Energy: Conservation and Transfer

Standards	FOSS Alignment	Assessment
<b>7.P.2 Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.</b>		
<p><b>7.P.2.1.</b> Explain how kinetic and potential energy contribute to the mechanical energy of an object.</p>	<p><b>FOSS Middle School First Edition Force and Motion</b> Investigation 6: Forces Part 1: Push and Pull pp. 218-228</p>	<p><b>FQA:</b> Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p> <p>Mid-Summative Exam 6</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b> Investigation 6: Forces Part 2: Friction pp. 229-235</p>	<p><b>FQA:</b> Students investigate the amount of force needed to lift several different masses on a sled with and without roller and conclude that: Friction is a force. A certain amount of friction must be overcome to put a mass into motion.</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b> Investigation 6: Forces Part 3: Forces in Action pp. 236-241</p>	<p><b>FQA:</b> Students model pushing of heavy objects and describe the interactions in several scenarios in terms of positive, negative and zero net force and the resulting change in motion.</p>
	<p><b>Delta Science Reader Newton's Toy Box</b> Work, Energy, and Power pp. 14 Machines and Work pp. 15-21</p>	
<p><b>7.P.2.2.</b> Explain how energy can be transformed from one form to another (specifically potential energy and kinetic energy) using a model or diagram of a moving object (roller coaster, pendulum, or cars on ramps as examples).</p>	<p><b>FOSS Middle School First Edition Force and Motion</b> Investigation 6: Forces Part 1: Push and Pull pp. 218-228 Part 2: Friction pp. 229-235</p>	<p><b>FQA:</b> Students experiment with push and pulls and discover the net forces applied to a mass cause it to move/accelerate. Require students to add details related to energy transformation in their explanation and/or illustration.</p> <p>Mid-Summative Exam 6</p>
	<p><b>FOSS Middle School First Edition Force and Motion</b> Investigation 6: Forces Part 3: Forces in Action pp. 236-241 Part 4: Multimedia Force Bench pp. 242-245</p>	<p><b>FQA:</b> Students investigate the amount of force needed to lift several different masses on a sled with and without roller and conclude that: Friction is a force. A certain amount of friction must be overcome to put a mass into motion.</p>
	<p><b>Delta Science Reader Newton's Toy Box</b> Work, Energy, and Power pp. 14 Machines and Work pp. 15-21</p>	
<p><b>7.P.2.3.</b> Recognize that energy can be transferred from one system to another when two objects push or pull on each other over a distance (work) and electrical circuits require a complete loop through which an electrical current can pass.</p>	<p><b>Delta Science Reader Newton's Toy Box</b> Work, Energy, and Power pp. 14 Machines and Work pp. 15-21</p>	



Grade 7

Energy: Conservation and Transfer (cont.)

Standards	FOSS Alignment	Assessment
<b>7.P.2 Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.</b>		
7.P.2.4. Explain how simple machines such as inclined planes, pulleys, levers and wheel and axles are used to create mechanical advantage and increase efficiency.	<b>FOSS Levers and Pulleys</b> Investigation 1: Levers	Investigation 1 I-Check
	<b>FOSS Levers and Pulleys</b> Investigation 1: Levers Part 1: Introduction to Levers pp. 9-17 Part 2: Lever Experiment A pp. 18-23	<b>FQA:</b> Through experimentation with lever systems, students discover benefits of levers: The farther from the fulcrum the effort is applied, the greater the advantage to the lever user.
	<b>FOSS Levers and Pulleys</b> Investigation 1: Levers Part 3: Lever Experiment B pp. 24-31  <i>FOSS Science Resources:</i> "Simple Machines" pp. 1-4 "Class-1 Levers" pp. 5-6 "Wheels and Axles" pp. 7-9	<b>FQA:</b> Through experimentation with lever systems, students discover benefits of levers: The effort needed to lift the load decreases as the load gets closer to the fulcrum; the effort increases as the load gets farther from the fulcrum.
	<b>FOSS Levers and Pulleys</b> Investigation 2: More Leverage	Investigation 2 I-Check
	<b>FOSS Levers and Pulleys</b> Investigation 2: More Leverage Part 1: Lever Classes pp. 9-17 Part 2: Lever Diagrams pp. 14-17	<b>FQA:</b> Students agree to open the clothespin, the end of the clothespin is the effort and the fulcrum is in the middle, so it is a class-1 lever. When the clothespin is holding clothes, the effort is in the middle (the arm of the spring), which makes it a class-2 lever.
	<b>FOSS Levers and Pulleys</b> Investigation 2: More Leverage Part 3: Real-World Levers pp.18-22 Part 4: Lever Pictures pp. 23-25  <i>FOSS Science Resources:</i> "Class-2 Levers" pp. 10-11 "Class-3 Levers" pp. 12-13 "Inclined Plane" pp. 14-15	<b>FQA:</b> Students set up and can identify the 3 lever class of tools.
	<b>FOSS Levers and Pulleys</b> Investigation 3: Pulleys	Investigation 3 I-Check
	<b>FOSS Levers and Pulleys</b> Investigation 3: Pulleys Part 1: One-Pulley Systems pp. 8-13 Part 2: Two-Pulley Systems pp. 16-20 Part 3: Pulley Game pp. 21-27  <i>FOSS Science Resources:</i> "Pulleys" pp. 16-17 "The Wedge" pp. 21-22	<b>FQA:</b> Students build pulley systems (single-fixed and single-moveable) and determine moveable pulley required about half as much effort to lift the load.



Grade 7

Energy: Conservation and Transfer (cont.)

Standards	FOSS Alignment	Assessment
<b>7.P.2 Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.</b>		
<p><b>7.P.2.4.</b> Explain how simple machines such as inclined planes, pulleys, levers and wheel and axles are used to create mechanical advantage and increase efficiency.</p>	<p><b>FOSS Levers and Pulleys</b> Investigation 4: Pulleys at Work</p>	<p>Summative Assessment: Survey/Posttest</p>
	<p><b>FOSS Levers and Pulleys</b> Investigation 4: Pulleys at Work Part 1: Effort in Pulley Systems pp. 8-13 Part 2: Measuring Distance pp. 14-20</p>	<p><b>FQA:</b> Students determine that the greater the number of ropes supporting the load, the less the effort needed to lift the load and the effort needed can be predicted from the weight of the load and the number of ropes supporting the load.</p>
	<p><b>FOSS Levers and Pulleys</b> Investigation 4: Pulleys at Work Part 3: Choosing Your Own Investigation pp. 21-25</p> <p><i>FOSS Science Resources:</i> "The Work of Pulleys" pp. 23-25 "The Screw" pp. 26-27</p> <p><i>FOSS Digital Resources:</i> "Diagraming Levers" "The Treasure of Panther Island"</p>	<p>This activity could be used as a performance assessment.</p>



Grade 7

Earth Systems, Structures and Processes

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
7.E.1.1. Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 2: Where's the Air?	Investigations 1-2 I-Check
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 2: Where's the Air? Part 1: The Air Around Us pp. 90-112 Part 2: Earth's Atmosphere pp. 113-127  <i>FOSS Science Resources:</i> "What's in the Air?" pp. 20-22 "A Thin Blue Veil" pp. 23-28  <i>FOSS Digital Resources:</i> "Gas in a Syringe" "Elevator to Space"	<b>FQA:</b> Students explain that atmosphere is a layer of gases that surround the earth, describe the composition of the atmosphere and how it changes as you travel up through Earth's atmosphere
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 3: Air Pressure and Wind	Investigation 3 I-Check
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 3: Air Pressure and Wind Part 1: Air-Pressure Inquiry pp. 130-153 Part 2: Pressure Maps pp. 154-163  <i>FOSS Science Resources:</i> "What is Air Pressure?" pp. 29-33  <i>FOSS Digital Resources:</i> "Weather Balloon Simulation"	<b>FQA:</b> Students explain the phenomenon of a bottle appearing squashed when transported from a higher level to a lower level being due to air trapped at high elevation being a lower density (air pressure) and when it was transported to the lower elevation it was being compressed by surrounding air which was at a higher density or air pressure.
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 4: Convection	Investigation 4 I-Check
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 4: Convection Part 1: Density of Fluids pp. 168-192 Part 2: Convection in Water pp. 193-206	<b>FQA:</b> Students explain how heat affects the density of fluids and provide their evidence.



Grade 7

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
<p><b>7.E.1.1.</b> Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 4: Convection                      Part 3: Convection in Air pp. 207-216</p> <p><i>FOSS Science Resources:</i>                      “Density and Convection”</p> <p><i>FOSS Digital Resources:</i>                      “Fluid Convection”                      “Particles in Solids, Liquids, and Gases”                      “Convection Chamber Preparation”                      “Convection Chamber in Action”                      “Convection Animation”</p>	<p><b>FQA:</b> Students explain how and area of warming near Earth’s surface and an area of cooling high in the atmosphere could create a convection cell on Earth.</p>
<p><b>7.E.1.2.</b> Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 7: Water in the Air</p>	<p>Investigation 7 I-Check</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 7: Water in the Air                      Part 1: Is Water Really There? pp. 324-340                      Part 2: Phase Change and Energy Transfer pp. 341-349                      Part 3: Clouds and Precipitation pp. 350-364</p> <p><i>FOSS Science Resources:</i>                      “Observing Clouds” pp. 64-68</p> <p><i>FOSS Digital Resources:</i>                      “Cloud in a Bottle”</p>	<p><b>FQA:</b> Students explain how energy transfers when water changes phase.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 9: The Water Planet</p>	<p>Investigations 8-9 I-Check</p>



Grade 7

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
<p><b>7.E.1.2.</b> Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 9: The Water Planet                      Part 1: The Water-Cycle Simulation pp. 400-423                      Part 2: Ocean Currents pp. 424-433                      Part 3: Ocean Climate pp. 434-444</p> <p><i>FOSS Science Resources:</i>                      “Earth: The Water Planet” pp. 74-77                      “Ocean Currents and Gyres” pp. 78-82                      “El Nino” pp. 83-84</p> <p><i>FOSS Digital Resources:</i>                      “Water Cycle and Perpetual Ocean”</p>	<p><b>FQA:</b> Students explain how ocean currents affect climate on land and provide evidence</p>
<p><b>7.E.1.3.</b> Explain the relationship between the movements of air masses, high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 3: Air Pressure and Wind</p>	<p>Investigation 3 I-Check</p>

Grade 7

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
<p><b>7.E.1.3.</b> Explain the relationship between the movements of air masses, high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 3: Air Pressure and Wind                      Part 1: Air-Pressure Inquiry pp. 130-153                      Part 2: Pressure Maps pp. 154-163</p> <p><i>FOSS Science Resources:</i>                      “What is Air Pressure?” pp. 29-33</p> <p><i>FOSS Digital Resources:</i>                      “Weather Balloon Simulation”</p>	<p><b>FQA:</b> Students study isobar lines, interpret the map data and draw conclusions about what happens when two areas of air have different pressures.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 4: Convection                      Part 3: Convection in Air pp. 207-216</p> <p><i>FOSS Science Resources:</i>                      “Density” pp. 34-38                      “Convection” pp. 39</p> <p><i>FOSS Digital Resources:</i>                      “Fluid Convection”                      “Particles in Solids, Liquids, and Gases”                      “Convection Chamber Preparation”                      “Convection Chamber in Action”                      “Convection Animation”</p>	<p>Investigation 4 I-Check</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 6: Air Flow</p>	<p>Investigation 6 I-Check</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 6: Air Flow                      Part 1: Conduction pp. 270-294                      Part 2: Local Winds pp. 295-301                      Part 3: Global Winds pp. 302-319</p> <p><i>FOSS Science Resources:</i>                      “Heating the Atmosphere” pp. 47-51                      “Wind on Earth” pp. 58-63</p> <p><i>FOSS Digital Resources:</i>                      “Energy Transfer by Collision”                      “Particles in Solids, Liquids, and Gases”                      “Local Wind”                      “Coriolis on Jupiter”</p>	<p>Students demonstrate understanding of the wind movement due to the Earth’s rotation.</p>

Grade 7

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
<p><b>7.E.1.4.</b> Predict weather conditions and patterns based on information obtained from:</p> <ul style="list-style-type: none"> <li>Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure)</li> <li>Weather maps, satellites and radar</li> <li>Cloud shapes and types and associated elevation</li> </ul>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 1: What is Weather?                      Part 1: Into the Weather pp. 54-73                      Part 2: Local Weather pp. 74-86</p> <p><i>FOSS Science Resources:</i>                      “Traditional Weather Tools”</p>	<p><b>FQA:</b> Students write an answer to the focus question, “How can we measure the weather?” providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 7: Water in the Air</p>	<p>Investigation 7 I-Check</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 7: Water in the Air                      Part 3: Clouds and Precipitation pp. 350-363</p> <p><i>FOSS Science Resources:</i>                      “Observing Clouds” pp. 64-68</p>	<p><b>FQA:</b> Students write an answer to the focus question, “What causes clouds to form?” providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 8: Meteorology</p>	<p>Investigations 8-9 I-Check</p> <p><b>Performance Assessment:</b> Students write and deliver a TV-style weather report.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 8: Meteorology                      Part 1: Weather Balloons pp. 368-381</p>	<p><b>FQA:</b> Students write an answer to the focus question, “What information can you get from a weather balloon?” providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 8: Meteorology                      Part 2: Weather Maps pp. 382-396</p> <p><i>FOSS Science Resources:</i>                      “Weather Balloons and Upper Air Sounding” pages 69-70                      “Severe Weather” pp. 3-15</p> <p><i>FOSS Digital Resources:</i>                      “Weather-Balloon Video”                      “Weather-Balloon Simulation”                      “Reading Weather Maps”</p>	<p><b>FQA:</b> Students write an answer to the focus question, “What information can you get from a weather map?” providing evidence and reasoning to support their claim.</p>



Grade 7

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
7.E.1.5. Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 4: Convection	Investigation 4 I-Check
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 4: Convection Part 3: Convection in Air pp. 207-216  <i>FOSS Science Resources:</i> “Convection” pp. 39  <i>FOSS Digital Resources:</i> “Fluid Convection” “Convection Chamber Preparation” “Convection Chamber in Action” “Convection Animation”	<b>FQA:</b> Students write an answer to the focus question, "How do gases flow in the atmosphere?" providing evidence and reasoning to support their claim.
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 6: Air Flow	Investigation 6 I-Check
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 6: Air Flow Part 1: Conduction pp. 270-294	<b>FQA:</b> Students write an answer to the focus question, "How does the atmosphere heat up?" providing evidence and reasoning to support their claim.
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 6: Air Flow Part 2: Local Winds pp. 295-301	<b>FQA:</b> Students write an answer to the focus question, "How does energy from the sun affect wind on Earth?" providing evidence and reasoning to support their claim.
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 6: Air Flow Part 3: Global Winds pp. 302-319  <i>FOSS Science Resources:</i> “Heating the Atmosphere” pp. 47-51 “Wind on Earth” pp. 58-63  <i>FOSS Digital Resources:</i> “Local Wind”	<b>FQA:</b> Students write an answer to the focus question, "What affects the direction of global winds?" providing evidence and reasoning to support their claim.
	<b>FOSS Middle School Second Edition Weather and Water</b> Investigation 8: Meteorology	Investigations 8-9 I-Check

Grade 7

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
<p><b>7.E.1.5.</b> Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 8: Meteorology?                      Part 2: Weather Maps pp. 382-396</p> <p><i>FOSS Science Resources:</i>                      “Weather Balloons and Upper Air Sounding” pp. 69-70                      “Severe Weather” pp. 3-15</p> <p><i>FOSS Digital Resources:</i>                      “Weather-Balloon Video”                      “Weather-Balloon Simulation”                      “Reading Weather Maps”</p>	<p><b>FQA:</b> Students write an answer to the focus question, “What information can you get from a weather map?” providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 9: The Water Planet</p>	<p>Investigations 8-9 I-Check</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 9: The Water Planet                      Part 2: Ocean Currents pp. 424-433</p> <p><i>FOSS Science Resources:</i>                      “Ocean Currents and Gyres” pp. 78-82</p>	<p><b>FQA:</b> Students write an answer to the focus question, “What affects the direction that ocean water flows?” providing evidence and reasoning to support their claim.</p>
<p><b>7.E.1.6.</b> Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 10: Climate over Time</p>	<p>Summative Assessment: Survey/Posttest</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 10: Climate over Time                      Part 1: Climate Change pp. 452-470</p>	<p><b>FQA:</b> Students cite climate differences over two time spans based on evidence from two sets of data from a specific city and relate it to what they learn about paleoclimatology.</p>
	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 10: Climate over Time                      Part 2: The Role of Carbon Dioxide pp. 471-484</p>	<p><b>FQA:</b> Students correlate the increase of greenhouse-gas concentration over time to the global average surface temperature and offer their explanation of why temperatures rise as a result.</p>



Grade 7

Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<b>7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather and climate and the effects of the atmosphere on humans.</b>		
<p><b>7.E.1.6.</b> Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.</p>	<p><b>FOSS Middle School Second Edition Weather and Water</b>                      Investigation 10: Climate over Time                      Part 3: Climate in the News pp. 485                      Part 4: Identify Key Ideas pp. 495-500</p> <p><i>FOSS Science Resources:</i>                      “Climates: Past, Present, and Future” pp. 85-88</p> <p><i>FOSS Digital Resources:</i>                      “Climate Over Time Slideshow”                      “CO2 in the Ice Core”                      “Climate Blog”                      “Greenhouse-Gas Simulator”                      “Carbon Cycle Video”                      “Human Sources”                      “Climate Change Basics”</p>	<p><b>FQA:</b> Students explain the effects of a slight rise in global temperatures and record some possible solutions for stopping climate change.</p>

Grade 7

**Structures and Functions of Living Organisms**

Standards	FOSS Alignment	Assessment
<b>7.L.1 Understand the processes, structures and functions of living organisms that enable them to survive, reproduce and carry out the basic functions of life.</b>		
<p><b>7.L.1.1.</b> Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including:</p> <ul style="list-style-type: none"> <li>• Euglena</li> <li>• Amoeba</li> <li>• Paramecium</li> <li>• Volvox</li> </ul>	<p><b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 3: The Cell</p>	<p>Investigations 1-3 I-Check</p>
	<p><b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 3: The Cell Part 2: Paramecia pp. 162-174 Part 3: Microworld pp. 175-182</p> <p><i>FOSS Science Resources:</i> "The Amazing Paramecium" pp. 10-13 "Cells" pp. 14-19 "Microorganism Guide" pp. 70-73</p> <p><i>FOSS Digital Resources:</i> "Lab Techniques: Making a Wet Mount" "Organism Database: Elodea Cytoplasmic Streaming" "Organism Database: Paramecium Collection" "Organism Database: Microorganism Collection - Amoeba, Euglena, and Volvox"</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How are elodea and paramecium alike, and how are they different?" providing evidence and reasoning to support their claim.</p>
<p><b>7.L.1.2.</b> Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).</p>	<p><b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 3: The Cell</p>	<p>Investigations 1-3 I-Check  Investigation 4 I-Check</p>
	<p><b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 3: The Cell Part 1: Discovering Cells pp. 144-161</p>	<p><b>FQA:</b> Students write an answer to the focus question, "What microscopic structures make up organisms such as elodea?" providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 3: The Cell Part 2: Paramecia pp. 162-174</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How are elodea and paramecium alike, and how are they different?" providing evidence and reasoning to support their claim.</p>

Grade 7

Structures and Functions of Living Organisms (cont.)

Standards	FOSS Alignment	Assessment
<p><b>7.L.1 Understand the processes, structures and functions of living organisms that enable them to survive, reproduce and carry out the basic functions of life.</b></p>		
<p><b>7.L.1.2.</b> Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).</p>	<p><b>FOSS Middle School Second Edition Diversity of Life</b>                      Investigation 3: The Cell                      Part 4: Human Cheek Tissue pp. 183-205</p> <p><i>FOSS Science Resources:</i>                      "Cells" pp. 14-19</p> <p><i>FOSS Digital Resources:</i>                      "Levels of Complexity"</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How are elodea and paramecium alike, and how are they different?" providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Middle School Second Edition Diversity of Life</b>                      Investigation 5: Plants: The Vascular System</p>	<p>Investigation 5 I-Check</p>
	<p><b>FOSS Middle School Second Edition Diversity of Life</b>                      Investigation 5: Plants: The Vascular System                      Part 2: Looking at Plant Structure pp. 302-312</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How is water transported through a plant?" providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Middle School Second Edition Diversity of Life</b>                      Investigation 5: Plants: The Vascular System                      Part 3: Transpiration and Photosynthesis pp. 313-327</p> <p><i>FOSS Science Resources:</i>                      "Water, Light, and Energy" pp. 35-39</p> <p><i>FOSS Digital Resources:</i>                      "Organism Database: The Stomata Collection"                      "The Stem Collection"</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How do plants use water?" providing evidence and reasoning to support their claim.</p>
<p><b>7.L.1.3.</b> Summarize the hierarchical organization of multi-cellular organisms from cells to tissues to organs to systems to organisms.</p>	<p><b>FOSS Middle School Second Edition Diversity of Life</b>                      Investigation 4: Domains</p>	<p>Investigation 4 I-Check</p>
	<p><b>FOSS Middle School Second Edition Diversity of Life</b>                      Investigation 4: Domains                      Part 1: Comparing Living Things pp. 210-236                      Part 3: Fungi pp. 258-267</p> <p><i>FOSS Digital Resources:</i>                      "Levels of Complexity Card Sort"</p>	<p><b>FQA:</b> Students write an answer to the focus question, "What are the building blocks of cell structures?" providing evidence and reasoning to support their claim.</p>

## Grade 7

### Structures and Functions of Living Organisms (cont.)

Standards	FOSS Alignment	Assessment
<b>7.L.1 Understand the processes, structures and functions of living organisms that enable them to survive, reproduce and carry out the basic functions of life.</b>		
<p><b>7.L.1.3.</b> Summarize the hierarchical organization of multi-cellular organisms from cells to tissues to organs to systems to organisms.</p>	<p><b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 5: Plants: The Vascular System Part 3: Transpiration and Photosynthesis pp. 313-327</p> <p>FOSS Digital Resources: <i>"Levels of Complexity"</i></p>	<p>Students use multimedia to complete a level of complexity sequence for organ systems and vascular plant systems.</p> <p>Science Notebook Sheet 42.</p>
<p><b>7.L.1.4.</b> Summarize the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, and excretion) and ways that these systems interact with each other to sustain life.</p>	<p><b>Delta Science Content Reader Human Body Systems</b> How is the human body organized? pp. 2-5 How do the body's systems work? pp. 6-23</p>	<p>Delta Science Content Readers Human Body Systems Unit Test.</p>



Grade 7

Evolution and Genetics

Standards	FOSS Alignment	Assessment
<b>7.L.2 Understand the relationship of the mechanisms of cellular reproduction, patterns of inheritance and external factors to potential variation among offspring.</b>		
7.L.2.1. Explain why offspring that result from sexual reproduction (fertilization and meiosis) have greater variation than offspring that result from asexual reproduction (budding and mitosis).	<b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 4: Domains Part 3: Fungi pp. 258-267	Discussion of mushrooms as an example of sexual reproduction (containing genetic information from two parents) and single cell fungi (yeast) as an example of asexual reproduction without spores by forming buds.
	<b>FOSS Middle School Second Edition Diversity of Life</b> <i>FOSS Science Resources:</i> "Bacteria Around Us" pp. 22	Students discuss the advantages of asexual reproduction .
	<b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 6: Plant Reproduction and Growth	Investigation 6 I-Check
	<b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 6: Plant Reproduction and Growth Part 3: Flowering-Plant Reproduction pp. 359-371	<b>FQA:</b> Students write a paragraph explain flowering plant reproduction for a friend referencing the plant reproduction sequence.
	<b>FOSS Middle School Second Edition Diversity of Life</b> Investigation 6: Plant Reproduction and Growth Part 4: Flowers and Pollinators pp. 372-380  <i>FOSS Science Resources:</i> "The Making of a New Plant: A Story about Sexual Reproduction" pp. 49-50 "Flower Information" pp. 82-85 "Flowers and Pollinators" pp. 86-92  <i>FOSS Digital Resources:</i> "Non-flowering Plants and Pollinators Game"	<b>FQA:</b> Students write an answer to the focus question, "What adaptations do flowering plants have to accomplish pollination?" providing evidence and reasoning to support their claim.
	<b>Delta Science Reader DNA: From Genes to Proteins</b> How do cells grow and reproduce? pp. 12-14 Heredity and Genetics pp. 15-20	
7.L.2.2. Infer patterns of heredity using information from Punnett squares and pedigree analysis.	<b>Delta Science Reader DNA: From Genes to Proteins</b> Heredity and Genetics pp. 15-20	



## Grade 7

### Evolution and Genetics (cont.)

Standards	FOSS Alignment	Assessment
<b>7.L.2 Understand the relationship of the mechanisms of cellular reproduction, patterns of inheritance and external factors to potential variation among offspring.</b>		
<p><b>7.L.2.3.</b> Explain the impact of the environment and lifestyle choices on biological inheritance (to include common genetic diseases) and survival.</p>	<p><b>FOSS Middle School Second Edition Diversity of Life</b>                      Investigation 6: Plant Reproduction and Growth                      Part 2: Environmental and Genetic Factors pp. 347-348</p> <p><i>FOSS Science Resources:</i>                      "Breeding Salt Tolerant Wheat" pp. 40-42</p>	<p><b>FQA:</b> Students investigate and compare plant growth in 4 solutions with different salt concentrations to determine the impact of environmental factors</p>
	<p><b>Delta Science Reader DNA: From Genes to Proteins</b>                      Heredity and Genetics pp. 15-20</p>	



Grade 8

**Matter: Properties and Changes**

Standards	FOSS Alignment	Assessment
<p><b>8.P.1 Understand the properties of matter and changes that occur when matter interacts in an open and closed container.</b></p>		
<p><i>The new FOSS Second Edition Chemical Interactions, scheduled for release March 2016, will cover this Clarifying Objective. See below for current FOSS First Edition Chemical Interactions assessments.</i></p>		
<p><b>8.P.1.1.</b> Classify matter as elements, compounds, or mixtures based on how the atoms are packed together in arrangements.</p>	<p><b>FOSS First Edition Chemical Interactions</b>                      Investigation 3: Particles                      Part 2: Air is Matter pp. 99-107                      Part 3: Air as Particles pp. 108-113</p> <p><b>FOSS Second Edition Chemical Interactions</b>                      Investigation 2: Elements                      Investigation 3: Particles                      Investigation 4: Kinetic Energy                      Investigation 7: Solutions</p>	<p>Investigation 3 Mid-Summative Exam</p>
	<p><b>FOSS First Edition Chemical Interactions</b>  <i>FOSS Science Resources:</i>                      "Particles" pp. 14-15                      "Three Phases of Matter" pp. 16-22</p> <p><i>FOSS Digital Resources:</i>                      "Gas in a Syringe"</p>	<p>Lab Notebook, page 31 - Students answer review questions after reading the article, Three Phases of Matter</p>
	<p><b>FOSS First Edition Chemical Interactions</b>                      Investigation 4: Kinetic Energy</p>	<p>Investigation 4 Mid-Summative Exam,</p>
	<p><b>FOSS First Edition Chemical Interactions</b>                      Investigation 4: Kinetic Energy                      Part 1: Gas Expansion pp. 122-129</p>	<p>Lab Notebook Sheets, pages 32-33 - have students complete parts 4 and 5.</p>
	<p><b>FOSS First Edition Chemical Interactions</b>                      Investigation 4: Kinetic Energy                      Part 2: Liquid Expansion pp. 130-138                      Part 3: Solid Expansion pp. 139-142</p> <p><i>FOSS Science Resources:</i>                      "Particles in Motion" pp. 23-27                      "Expansion and Contraction" pp. 28-31</p> <p><i>FOSS Digital Resources:</i>                      "Particles in Solid, Liquid, and Gas"</p>	<p>Response Sheet - Kinetic Energy</p>
	<p><b>FOSS First Edition Chemical Interactions</b>                      Investigation 7: Phase Change</p>	<p>Investigation 7 Mid-Summative Exam</p>
	<p><b>FOSS First Edition Chemical Interactions</b>                      Investigation 7: Phase Change                      Part 1: Dissolve and Melt pp. 204-209</p>	<p>Lab Notebook Sheet, page 61</p>
	<p><b>FOSS First Edition Chemical Interactions</b>                      Investigation 7: Phase Change                      Part 2: Melting Temperature pp. 210-214</p>	<p>Quick-Write Self-Assessment</p>

Grade 8

Matter: Properties and Changes (cont.)

Standards	FOSS Alignment	Assessment
<b>8.P.1 Understand the properties of matter and changes that occur when matter interacts in an open and closed container.</b>		
8.P.1.1. Classify matter as elements, compounds, or mixtures based on how the atoms are packed together in arrangements.	<b>FOSS First Edition Chemical Interactions</b> Investigation 7: Phase Change Part 3: More Heat pp. 215-221	Response Sheet - Phase Change
	<b>FOSS First Edition Chemical Interactions</b> Investigation 7: Phase Change Part 4: Freeze Water pp. 222-228 Part 5: Gas to Solid pp. 229-234  <i>FOSS Science Resources:</i> "Rock Solid" pp. 42-48  <i>FOSS Digital Resources:</i> "Particles in Solid, Liquid, and Gas"	Lab Notebook Sheet, page 63 - Rock Solid Questions
	<b>FOSS First Edition Chemical Interactions</b> Investigation 8: Solutions	Investigation 8 Mid-Summative Exam
	<b>FOSS First Edition Chemical Interactions</b> Investigation 8: Solutions Part 1: Mixtures pp. 248-255 Part 2: Saturation pp. 256-262	Lab Notebook Sheet 61 - Solutions
	<b>FOSS First Edition Chemical Interactions</b> Investigation 8: Solutions Part 3: Concentration pp. 263-268  <i>FOSS Science Resources:</i> "Concentration" pp. 54-63	Lab Notebook Sheet, page 85 - Concentration Questions
<i>The new FOSS Second Edition Chemical Interactions, scheduled for release March 2016, will cover this Clarifying Objective. See below for current FOSS First Edition Chemical Interactions assessments.</i>		
8.P.1.2. Explain how the physical properties of elements and their reactivity have been used to produce the current model of the Periodic Table of elements.	<b>FOSS First Edition Chemical Interactions</b> Investigation 2: Elements  <b>FOSS Second Edition Chemical Interactions</b> Investigation 2: Elements	Investigations 1-2 Mid-Summative Exam
	<b>FOSS First Edition Chemical Interactions</b> Investigation 2: Elements Part 1: Periodic Table pp. 70-74 Part 2: Elements in the World pp. 75-80  <i>FOSS Science Resources:</i> "Elements" pp. 3-8 "Elements in the Universe" pp. 9-13 "The Periodic Table" pp. 90-91  <i>FOSS Digital Resources:</i> "Periodic Table"	Response Sheet - Elements

Grade 8

**Matter: Properties and Changes (cont.)**

Standards	FOSS Alignment	Assessment
<p><b>8.P.1 Understand the properties of matter and changes that occur when matter interacts in an open and closed container.</b></p>		
<p><i>The new FOSS Second Edition Chemical Interactions, scheduled for release March 2016, will cover this Clarifying Objective. See below for current FOSS First Edition Chemical Interactions assessments.</i></p>		
<p><b>8.P.1.3.</b> Compare physical changes such as size, shape and state to chemical changes that are the result of a chemical reaction to include changes in temperature, color, formation of a gas or precipitate.</p>	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 7: Phase Change</p> <p><b>FOSS Second Edition Chemical Interactions</b> Investigation 1: Substances Investigation 8: Phase Change Investigation 9: Reaction Investigation 10: Limiting Factors</p>	<p>Investigation 7 Mid-Summative Exam</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 7: Phase Change Part 1: Dissolve and Melt pp. 204-209</p>	<p>Lab Notebook Sheet, page 61</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 7: Phase Change Part 2: Melting Temperature pp. 210-214</p>	<p>Quick-Write Self-Assessment</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 7: Phase Change Part 3: More Heat pp. 215-221</p>	<p>Response Sheet - Phase Change</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 7: Phase Change Part 4: Freeze Water pp. 222-228 Part 5: Gas to Solid pp. 229-234</p> <p><i>FOSS Science Resources:</i> "Rock Solid" pp. 42-48</p> <p><i>FOSS Digital Resources:</i> "Particles in Solid, Liquid, and Gas"</p>	<p>Lab Notebook Sheet, page 63 - Rock Solid Questions</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction</p>	<p>Investigation 9 Mid-Summative Exam</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction Part 1: Substance Models pp. 280-287</p>	<p>Lab Notebook Sheet, page 87 - Analyzing Substances</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction Part 2: Limewater Reaction pp. 288-297</p>	<p>Lab Notebook Sheet, page 89 - Limewater Reaction - B</p>
	<p><b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction Part 3: Baking Soda and Acid pp. 298-307</p>	<p>Lab Notebook, page 95 - Response Sheet - Reaction</p>

## Grade 8

## Matter: Properties and Changes (cont.)

Standards	FOSS Alignment	Assessment
<b>8.P.1 Understand the properties of matter and changes that occur when matter interacts in an open and closed container.</b>		
<b>8.P.1.3.</b> Compare physical changes such as size, shape and state to chemical changes that are the result of a chemical reaction to include changes in temperature, color, formation of a gas or precipitate.	<b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction Part 4: Antacid pp. 308-312  <i>FOSS Science Resources:</i> "Antoine-Laurent Lavoisier: The Father of Modern Chemistry" pp. 69-72  <i>FOSS Digital Resources:</i> "Limewater Reaction Set-up Video"	Lab Notebook Sheet, page 97 - Antoine-Laurent Lavoisier: The Father of Modern Chemistry Questions
	<b>FOSS First Edition Chemical Interactions</b> Investigation 10: More Reactions	Unit Summative Exam
	<b>FOSS First Edition Chemical Interactions</b> Investigation 10: More Reactions Part 1: Citric Acid and Baking Soda pp. 323-329 Part 2: Rust pp. 330-336  <i>FOSS Digital Resources:</i> "Atoms and Molecules Video"	Lab Notebook, page 101 - Citric Acid/Baking Soda Reaction
<i>The new FOSS Second Edition Chemical Interactions, scheduled for release March 2016, will cover this Clarifying Objective. See below for current FOSS First Edition Chemical Interactions assessments.</i>		
<b>8.P.1.4.</b> Explain how the idea of atoms and a balanced chemical equation support the law of conservation of mass.	<b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction  <b>FOSS Second Edition Chemical Interactions</b> Investigation 9: Reaction Investigation 10: Limiting Factors	Investigation 9 Mid-Summative Exam
	<b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction Part 2: Limewater Reaction pp. 288-297	Lab Notebook Sheet, page 89 - Limewater Reaction - B
	<b>FOSS First Edition Chemical Interactions</b> Investigation 9: Reaction Part 3: Baking Soda and Acid pp. 298-307  <i>FOSS Science Resources:</i> "How Do Atoms Rearrange?" pp. 63-68 "Organic Compounds" pp. 73-77	Lab Notebook, page 95 - Response Sheet - Reaction
	<b>FOSS First Edition Chemical Interactions</b> Investigation 10: More Reactions Part 2: Rust pp. 330-336  <i>FOSS Digital Resources:</i> "Atoms and Molecules Video"	Unit Summative Exam



Grade 8

Energy: Conservation and Transfer

Standards	FOSS Alignment	Assessment
<b>8.P.2 Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.</b>		
<p><b>8.P.2.1.</b> Explain the environmental consequences of the various methods of obtaining, transforming and distributing energy.</p>	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios</p>	<p><b>Performance Assessment:</b> Students put into practice the concepts and tools learned throughout the course to collect and analyze geological evidence. Their goal is to tell a geological story of a specified location, selected for their geological significance: glaciers, coal, Yellowstone hotspot, and oil. Students conduct research to understand the story of the place, the processes that shape the place, and the implications for human interests. See Earth History Teacher Resources book, Notebook Masters, pages 46-49.</p>
	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios Part 1: Introduction to the Project? pp. 489-499</p>	<p><b>FQA:</b> Students conduct research to answer the question, "What do we need to know to tell the geological story of a place?" providing evidence and reasoning to support their claim through the eyes of an expert.</p>
	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios Part 2: Research and Writing pp. 500-509</p>	<p><b>FQA:</b> Students conduct research to answer the question, "What do we need to know to tell the geological story of a place?" providing evidence and reasoning to support their claim through the eyes of an expert.</p>
	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios Part 3: Presentations pp. 510-516</p> <p><i>FOSS Digital Resources:</i> "Geoscenarios"</p> <p><i>FOSS Science Resources:</i> "Geoscenario Introduction – Glaciers" pp. 81-85 "Geoscenario Introduction – Coal" 86-89 "Geoscenario Introduction - Yellowstone Hotspot" pp. 90-93 "Geoscenario Introduction – Oil" pp. 94-97</p>	<p><b>FQA:</b> Students conduct research to answer the question, "What do we need to know to tell the geological story of a place?" providing evidence and reasoning to support their claim through the eyes of an expert.</p>



Grade 8

Energy: Conservation and Transfer (cont.)

Standards	FOSS Alignment	Assessment
<b>8.P.2 Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.</b>		
<p><b>8.P.2.2.</b> Explain the implications of the depletion of renewable and nonrenewable energy resources and the importance of conservation.</p>	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios</p>	<p><b>Performance Assessment:</b> Students put into practice the concepts and tools learned throughout the course to collect and analyze geological evidence. Their goal is to tell a geological story of a specified location, selected for their geological significance: glaciers, coal, Yellowstone hotspot, and oil. Students conduct research to understand the story of the place, the processes that shape the place, and the implications for human interests. See Earth History Teacher Resources book, Notebook Masters, pages 46-49.</p>
	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios Part 1: Introduction to the Project? pp. 489-499</p>	<p><b>FQA:</b> Students conduct research to answer the question, "What do we need to know to tell the geological story of a place?" providing evidence and reasoning to support their claim through the eyes of an expert.</p>
	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios Part 2: Research and Writing pp. 500-509</p>	<p><b>FQA:</b> Students conduct research to answer the question, "What do we need to know to tell the geological story of a place?" providing evidence and reasoning to support their claim through the eyes of an expert.</p>
	<p><b>FOSS Second Edition Earth History</b> Investigation 8: Geoscenarios Part 3: Presentations pp. 510-516</p> <p><i>FOSS Digital Resources:</i> "Geoscenarios"</p> <p><i>FOSS Science Resources:</i> "Geoscenario Introduction – Glaciers" pp. 81-85 "Geoscenario Introduction – Coal" 86-89 "Geoscenario Introduction - Yellowstone Hotspot" pp. 90-93 "Geoscenario Introduction – Oil" pp. 94-97</p>	<p><b>FQA:</b> Students conduct research to answer the question, "What do we need to know to tell the geological story of a place?" providing evidence and reasoning to support their claim through the eyes of an expert.</p>

## Grade 8

### Earth Systems, Structures and Processes

Standards	FOSS Alignment	Assessment
<b>8.E.1 Understand the hydrosphere and the impact of humans on local systems and the effects of the hydrosphere on humans.</b>		
<b>8.E.1.1.</b> Explain the structure of the hydrosphere including: <ul style="list-style-type: none"> <li>• Water distribution on earth</li> <li>• Local river basins and water availability</li> </ul>	<i>Partially covered in FOSS Weather and Water, Investigation 9, The Water Planet (Grade Seven)</i>	
<b>8.E.1.2.</b> Summarize evidence that Earth's oceans are a reservoir of nutrients, minerals, dissolved gases, and life forms: <ul style="list-style-type: none"> <li>• Estuaries</li> <li>• Marine ecosystems</li> <li>• Upwelling</li> <li>• Behavior of gases in the marine environment</li> <li>• Value and sustainability of marine resources</li> <li>• Deep ocean technology and understandings gained</li> </ul>	<i>Partially covered in FOSS Populations and Ecosystems, Investigation 9, Ecoscenarios (Grade Six)</i>	
<b>8.E.1.3.</b> Predict the safety and portability of water supplies in North Carolina based on physical and biological factors, including: <ul style="list-style-type: none"> <li>• Temperature</li> <li>• Dissolved oxygen</li> <li>• pH</li> <li>• Nitrates and phosphates</li> <li>• Turbidity</li> <li>• Bio-indicators</li> </ul>		
<b>8.E.1.4.</b> Conclude that the good health of humans requires: <ul style="list-style-type: none"> <li>• Monitoring of the hydrosphere</li> <li>• Water quality standards</li> <li>• Methods of water treatment</li> <li>• Maintaining safe water quality</li> <li>• Stewardship</li> </ul>	<i>Partially covered in FOSS Weather and Water, Investigations 9 and 10, and FOSS Science Resources - Earth the Water Planet and Climates: Past, Present, and Future (Grade Seven)</i>	



Grade 8

Earth History

Standards	FOSS Alignment	Assessment
<b>8.E.2 Understand the history of Earth and its life forms based on evidence of change recorded in fossil records and landforms.</b>		
8.E.2.1. Infer the age of Earth and relative age of rocks and fossils from index fossils and ordering of rock layers (relative dating and radioactive dating).	<b>FOSS Second Edition Earth History</b> Investigation 1: Earth is a Rock	Investigations 1-2 I-Check
	<b>FOSS Second Edition Earth History</b> Investigation 1: Earth is a Rock Part 1: What's the Story of This Place? pp. 61-76 Part 2: Grand Canyon Rocks pp. 77-93  <i>FOSS Science Resources:</i> "Seeing Earth" pp. 2-5 "Getting to Know the Grand Canyon" pp. 6-7	<b>FQA:</b> Students write an answer to the focus question, "Why do there appear to be stripes on the walls of the Grand Canyon?" providing evidence and reasoning to support their claim.
	<b>FOSS Second Edition Earth History</b> Investigation 1: Earth is a Rock Part 3: Correlating Grand Canyon Rocks pp. 94-108  <i>FOSS Digital Resources:</i> "Grand Canyon Flyover and Index Fossil Correlation"	<b>FQA:</b> Students write an answer to the focus question, "How are the rocks from the two Grand Canyon sites related to one another?" providing evidence and reasoning to support their claim.
	<b>FOSS Second Edition Earth History</b> Investigation 3: Deposition	Investigation 3 I-Check
	<b>FOSS Second Edition Earth History</b> Investigation 3: Deposition Part 3: Interpreting Sedimentary Layers pp. 224-234	<b>FQA:</b> Students write an answer to the focus question, "What do sedimentary rock layers reveal about ancient environments?" providing evidence and reasoning to support their claim.
	<b>FOSS Second Edition Earth History</b> Investigation 4: Fossils and Past Environments	Investigation 4 I-Check
	<b>FOSS Second Edition Earth History</b> Investigation 4: Fossils and Past Environments Part 1: Fossils pp. 240-265	<b>FQA:</b> Students write an answer to the focus question, "How do fossils get in rocks?" providing evidence and reasoning to support their claim.



Grade 8

Earth History (cont.)

Standards	FOSS Alignment	Assessment
<b>8.E.2 Understand the history of Earth and its life forms based on evidence of change recorded in fossil records and landforms.</b>		
<p><b>8.E.2.1.</b> Infer the age of Earth and relative age of rocks and fossils from index fossils and ordering of rock layers (relative dating and radioactive dating).</p>	<p><b>FOSS Second Edition Earth History</b>                      Investigation 4: Fossils and Past Environments                      Part 2: A Long Time Ago pp. 266-274                      Part 3: Student Time Lines pp. 275-284                      Part 4: Index Fossils pp. 285-300</p> <p><i>FOSS Science Resources:</i>                      "A Fossil Primer" pp. 41-43                      "Rocks, Fossils, and Time" pp. 48-56                      "The Geological Time Scale" pp. 14,8                      "Index Fossil Key" pp. 149-150</p> <p><i>FOSS Digital Resources:</i>                      "Dating Rock Layers"                      "Fearless Planet"                      "Rock Column Movie Maker"                      "Limestone Formation"                      "Shale Formation"                      "Sandstone Formation"                      "Timeliner"</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How old are fossils?" providing evidence and reasoning to support their claim.</p>
<p><b>8.E.2.2.</b> Explain the use of fossils, ice cores, composition of sedimentary rocks, faults, and igneous rock formations found in rock layers as evidence of the history of the Earth and its changing life forms.</p>	<p><b>FOSS Second Edition Earth History</b>                      Investigation 3: Deposition</p>	<p>Investigation 3 I-Check</p>
	<p><b>FOSS Second Edition Earth History</b>                      Investigation 3: Deposition                      Part 3: Interpreting Sedimentary Layers pp. 224-234</p>	<p><b>FQA:</b> Students write an answer to the focus question, "What do sedimentary rock layers reveal about ancient environments?" providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Second Edition Earth History</b>                      Investigation 4: Fossils and Past Environments</p>	<p>Investigation 4 I-Check</p>
	<p><b>FOSS Second Edition Earth History</b>                      Investigation 4: Fossils and Past Environments                      Part 1: Fossils pp. 240-265</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How do fossils get in rocks?" providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Second Edition Earth History</b>                      Investigation 4: Fossils and Past Environments                      Part 2: A Long Time Ago pp. 266-274</p> <p><i>FOSS Science Resources:</i>                      "A Fossil Primer" pp. 41-43                      "Rocks, Fossils, and Time" pp. 48-56</p>	<p><b>FQA:</b> Students write an answer to the focus question, "How old are fossils?" providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Second Edition Earth History</b>                      Investigation 5: Igneous Rocks</p>	<p>Investigation 5 I-Check</p>

Grade 8

Earth History (cont.)

Standards	FOSS Alignment	Assessment
<b>8.E.2 Understand the history of Earth and its life forms based on evidence of change recorded in fossil records and landforms.</b>		
<p><b>8.E.2.1.</b> Infer the age of Earth and relative age of rocks and fossils from index fossils and ordering of rock layers (relative dating and radioactive dating).</p>	<p><b>FOSS Second Edition Earth History</b> Investigation 5: Igneous Rocks Part 2: Salol Crystals pp. 321-332</p>	<p><b>FQA:</b> Students write an answer to the focus question, "What affects crystal formation in igneous rocks?" providing evidence and reasoning to support their claim.</p>
	<p><b>FOSS Second Edition Earth History</b> Investigation 5: Igneous Rocks Part 3: Types of Igneous Rocks pp. 333-342</p> <p><i>FOSS Science Resources:</i> "Minerals, Crystals, and Rocks" pp. 61-64</p> <p><i>FOSS Digital Resources:</i> "Dating Rock Layers" "Salol Crystal Formation" "Extrusive Rock Formation" "Intrusive Rock Formation" "Timeliner"</p>	<p><b>FQA:</b> Students write an answer to the focus question, "What can crystal size tell us about where an igneous rock formed?" providing evidence and reasoning to support their claim.</p>

Grade 8

**Structures and Functions of Living Organisms**

Standards	FOSS Alignment	Assessment
<b>8.L.1 Understand the hazards caused by agents of diseases that affect living organisms.</b>		
<p><b>8.L.1.1.</b> Summarize the basic characteristics of viruses, bacteria, fungi and parasites relating to the spread, treatment and prevention of disease.</p>	<p><i>Also covered in FOSS Diversity of Life, Investigation 4, Domains and Investigation 8, Biodiversity (Grade Seven)</i></p> <p><b>FOSS Second Edition Human Systems Interactions</b> Investigation 1: Systems Connections</p> <p><i>FOSS Science Resources: Disease Information</i></p>	
<p><b>8.L.1.2.</b> Explain the difference between epidemic and pandemic as it relates to the spread, treatment and prevention of disease.</p>		
<b>8.L.2 Understand how biotechnology is used to affect living organisms.</b>		
<p><b>8.L.2.1.</b> Summarize aspects of biotechnology including:</p> <ul style="list-style-type: none"> <li>• Specific genetic information available</li> <li>• Careers</li> <li>• Economic benefits to North Carolina</li> <li>• Ethical issues</li> <li>• Implications for agriculture</li> </ul>	<p><b>FOSS Second Edition Heredity and Adaptation</b> Investigation 3: Evolution Part 3: Genetic Technology</p>	

Grade 8

Ecosystems

Standards	FOSS Alignment	Assessment
<b>8.L.3 Understand how organisms interact with and respond to the biotic and abiotic components of their environment.</b>		
<b>8.L.3.1.</b> Explain how factors such as food, water, shelter and space affect populations in an ecosystem.	Covered in FOSS Populations and Ecosystems, Investigation 7, Population Size (Grade Six)	
<b>8.L.3.2.</b> Summarize the relationships among producers, consumers, and decomposers including the positive and negative consequences of such interactions including: <ul style="list-style-type: none"> <li>• Coexistence and cooperation</li> <li>• Competition (predator/prey)</li> <li>• Parasitism</li> <li>• Mutualism</li> </ul>	Covered in FOSS Populations and Ecosystems, Investigation 7, Population Size (Grade Six)	
<b>8.L.3.3.</b> Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide and oxygen).	<b>FOSS Chemical Reactions</b> FOSS Science Resources: "Organic Compounds" pp. 73-77 (carbon)	
	Covered in FOSS Populations and Ecosystems, Investigations 5 and 6 (Grade Six)	



Grade 8

Evolution and Genetics

Standards	FOSS Alignment	Assessment
<b>8.L.4. Understand the evolution of organisms and landforms based on evidence, theories and processes that impact the Earth over time.</b>		
<p><b>8.L.4.1.</b> Summarize the use of evidence drawn from geology, fossils, and comparative anatomy to form the basis for biological classification systems and the theory of evolution.</p>	<p><b>FOSS Second Edition Heredity and Adaptation</b>                      Investigation 1: The History of Life on Earth                      Part 1: The Fossil Record                      Part 2: Transitions</p> <p><b>FOSS Second Edition Heredity and Adaptation</b>                      Investigation 2: Heredity                      Part 1: Lines of Descent</p> <p>Investigation 3: Evolution                      Part 1: Adaptation                      Part 2: Natural Selection</p>	
	<p><i>Also covered in FOSS Diversity of Life, Investigation 4, Domains (Grade Seven)</i></p>	
<p><b>8.L.4.2.</b> Explain the relationship between genetic variation and an organism’s ability to adapt to its environment.</p>	<p><b>FOSS Second Edition Heredity and Adaptation</b>                      Investigation 2: Heredity                      Part 2: Inheriting Traits                      Part 3: Modeling Heredity                      Part 4: Punnett Squares</p> <p>Investigation 3: Evolution                      Part 1: Adaptation                      Part 2: Natural Selection</p>	



Grade 8

**Molecular Biology**

Standards	FOSS Alignment	Assessment
<b>8.L.5 Understand the composition of various substances as it relates to their ability to serve as a source of energy and building materials for growth and repair of organisms.</b>		
8.L.5.1. Summarize how food provides the energy and the molecules required for building materials, growth and survival of all organisms (to include plants).	<b>FOSS Second Edition Heredity and Adaptation</b> Investigation 2: Supporting Cells	
8.L.5.2. Explain the relationship among a healthy diet, exercise, and the general health of the body (emphasis on the relationship between respiration and digestion).	<b>FOSS Second Edition Heredity and Adaptation</b> Investigation 2: Supporting Cells	