

Grade 7

Forces and Motion

Standards	FOSS Alignment	Assessment
7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.		
<p>7.P.1.1. 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>FOSS Middle School First Edition Force and Motion Investigation 1: Here to There Scientific and Historical Background pp. 40-45 Part 1: Fly Air Trolleys pp. 47-56</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 1: Here to There Part 2: Air—Trolleys Graphs pp. 57-62</p>	<p>FQA: Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p>
	<p>FOSS Middle School First Edition Force and Motion 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>FQA: Students identify reference point, use the distance equation and compare distance traveled to determine which vehicle went farthest in a road race.</p>
	<p>FOSS Middle School First Edition Force and Motion 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>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 2: Speed Part 1: Who Got There First? pp. 78-82 Part 2: Time Travel pp. 83-88</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 4: Representing Motion Part 1: Show Time pp. 138-145</p>	<p>FQA: 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
7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.		
<p>7.P.1.1. 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>FOSS Middle School First Edition Force and Motion 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>FQA: Students develop position graphs from a leisurely walk.</p>
<p>7.P.1.2. Explain the effects of balanced and unbalanced forces acting on an object (including friction, gravity and magnets).</p>	<p>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 1: Push and Pull pp. 218-228</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 2: Friction pp. 229-235</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 3: Forces in Action pp. 236-241</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 4: Multimedia Force Bench pp. 242-245</p> <p><i>FOSS Science Resources:</i> "Aristotle, Galileo, & Newton" "The Force Bench Free Experimentation"</p> <p><i>FOSS Digital Resources:</i> "Force Bench"</p>	



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Forces and Motion (cont.)

Standards	FOSS Alignment	Assessment
7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.		
<p>7.P.1.2. Explain the effects of balanced and unbalanced forces acting on an object (including friction, gravity and magnets).</p>	<p>FOSS Middle School First Edition Force and Motion 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>FAQ: 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>FOSS Middle School First Edition Force and Motion 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>FQA: Students describe both in words and algebraically the relationship between an object's mass and momentum, and it's velocity and momentum.</p>
<p>7.P.1.3. Illustrate the motion of an object using a graph to show a change in position over a period of time.</p>	<p>FOSS Middle School First Edition Force and Motion Investigation 1: Here to There Part 2: Air-Trolleys Graphs pp. 57-62</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 2: Speed Part 3: Measuring Time and Distance pp. 89-99</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 4: Representing Motion Part 1: Show Time pp. 138-145</p>	<p>FQA: 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>

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Forces and Motion (cont.)

Standards	FOSS Alignment	Assessment
7.P.1 Understand motion, the effects of forces on motion and the graphical representations of motion.		
<p>7.P.1.3. Illustrate the motion of an object using a graph to show a change in position over a period of time.</p>	<p>FOSS Middle School First Edition Force and Motion 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>FQA: Students interpret a graph developed after they conduct a systematic inquiry to determine the relationship of wind and distance.</p>
<p>7.P.1.4. Interpret distance versus time graphs for constant speed and variable motion.</p>	<p>FOSS Middle School First Edition Force and Motion 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>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 5: Acceleration Part 1: Faster and Faster pp. 169-176 Part 2: Mechanical Dotcar pp. 177-186</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion 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>FQA: 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
7.P.2 Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.		
<p>7.P.2.1. Explain how kinetic and potential energy contribute to the mechanical energy of an object.</p>	<p>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 1: Push and Pull pp. 218-228</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 2: Friction pp. 229-235</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 3: Forces in Action pp. 236-241</p>	<p>FQA: 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>Delta Science Reader Newton's Toy Box Work, Energy, and Power pp. 14 Machines and Work pp. 15-21</p>	
<p>7.P.2.2. 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>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 1: Push and Pull pp. 218-228 Part 2: Friction pp. 229-235</p>	<p>FQA: 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>FOSS Middle School First Edition Force and Motion Investigation 6: Forces Part 3: Forces in Action pp. 236-241 Part 4: Multimedia Force Bench pp. 242-245</p>	<p>FQA: 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>Delta Science Reader Newton's Toy Box Work, Energy, and Power pp. 14 Machines and Work pp. 15-21</p>	
<p>7.P.2.3. 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>Delta Science Reader Newton's Toy Box Work, Energy, and Power pp. 14 Machines and Work pp. 15-21</p>	



Grade 7

Energy: Conservation and Transfer (cont.)

Standards	FOSS Alignment	Assessment
7.P.2 Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.		
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.	FOSS Levers and Pulleys Investigation 1: Levers	Investigation 1 I-Check
	FOSS Levers and Pulleys Investigation 1: Levers Part 1: Introduction to Levers pp. 9-17 Part 2: Lever Experiment A pp. 18-23	FQA: 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.
	FOSS Levers and Pulleys 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	FQA: 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.
	FOSS Levers and Pulleys Investigation 2: More Leverage	Investigation 2 I-Check
	FOSS Levers and Pulleys Investigation 2: More Leverage Part 1: Lever Classes pp. 9-17 Part 2: Lever Diagrams pp. 14-17	FQA: 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.
	FOSS Levers and Pulleys 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	FQA: Students set up and can identify the 3 lever class of tools.
	FOSS Levers and Pulleys Investigation 3: Pulleys	Investigation 3 I-Check
	FOSS Levers and Pulleys 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	FQA: 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
7.P.2 Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.		
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.	FOSS Levers and Pulleys Investigation 4: Pulleys at Work	Summative Assessment: Survey/Posttest
	FOSS Levers and Pulleys Investigation 4: Pulleys at Work Part 1: Effort in Pulley Systems pp. 8-13 Part 2: Measuring Distance pp. 14-20	FQA: 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.
	FOSS Levers and Pulleys Investigation 4: Pulleys at Work Part 3: Choosing Your Own Investigation pp. 21-25 <i>FOSS Science Resources:</i> "The Work of Pulleys" pp. 23-25 "The Screw" pp. 26-27 <i>FOSS Digital Resources:</i> "Diagraming Levers" "The Treasure of Panther Island"	This activity could be used as a performance assessment.



Grade 7

Earth Systems, Structures and Processes

Standards	FOSS Alignment	Assessment
<p>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.</p>		
<p>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.</p>	<p>FOSS Middle School Second Edition Weather and Water Investigation 2: Where's the Air?</p>	<p>Investigations 1-2 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 2: Where's the Air? Part 1: The Air Around Us pp. 90-112 Part 2: Earth's Atmosphere pp. 113-127</p> <p><i>FOSS Science Resources:</i> "What's in the Air?" pp. 20-22 "A Thin Blue Veil" pp. 23-28</p> <p><i>FOSS Digital Resources:</i> "Gas in a Syringe" "Elevator to Space"</p>	<p>FQA: 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</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 3: Air Pressure and Wind</p>	<p>Investigation 3 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: 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.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 4: Convection</p>	<p>Investigation 4 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 4: Convection Part 1: Density of Fluids pp. 168-192 Part 2: Convection in Water pp. 193-206</p>	<p>FQA: Students explain how heat affects the density of fluids and provide their evidence.</p>



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Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
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.		
<p>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.</p>	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: 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>7.E.1.2. Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.</p>	<p>FOSS Middle School Second Edition Weather and Water Investigation 7: Water in the Air</p>	<p>Investigation 7 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: Students explain how energy transfers when water changes phase.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 9: The Water Planet</p>	<p>Investigations 8-9 I-Check</p>



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Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
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.		
<p>7.E.1.2. Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.</p>	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: Students explain how ocean currents affect climate on land and provide evidence</p>
<p>7.E.1.3. 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>FOSS Middle School Second Edition Weather and Water Investigation 3: Air Pressure and Wind</p>	<p>Investigation 3 I-Check</p>



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Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
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.		
<p>7.E.1.3. 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>FOSS Middle School Second Edition Weather and Water 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>FQA: Students study isobar lines, interpret the map data and draw conclusions about what happens when two areas of air have different pressures.</p>
	<p>FOSS Middle School Second Edition Weather and Water 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>FOSS Middle School Second Edition Weather and Water Investigation 6: Air Flow</p>	<p>Investigation 6 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water 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>



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Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
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.		
<p>7.E.1.4. Predict weather conditions and patterns based on information obtained from:</p> <ul style="list-style-type: none"> Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure) Weather maps, satellites and radar Cloud shapes and types and associated elevation 	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: Students write an answer to the focus question, “How can we measure the weather?” providing evidence and reasoning to support their claim.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 7: Water in the Air</p>	<p>Investigation 7 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: Students write an answer to the focus question, “What causes clouds to form?” providing evidence and reasoning to support their claim.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 8: Meteorology</p>	<p>Investigations 8-9 I-Check</p> <p>Performance Assessment: Students write and deliver a TV-style weather report.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 8: Meteorology Part 1: Weather Balloons pp. 368-381</p>	<p>FQA: 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>FOSS Middle School Second Edition Weather and Water 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>FQA: 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>

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Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
<p>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.</p>		
<p>7.E.1.5. Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.</p>	<p>FOSS Middle School Second Edition Weather and Water Investigation 4: Convection</p>	<p>Investigation 4 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 4: Convection Part 3: Convection in Air pp. 207-216</p> <p><i>FOSS Science Resources:</i> “Convection” pp. 39</p> <p><i>FOSS Digital Resources:</i> “Fluid Convection” “Convection Chamber Preparation” “Convection Chamber in Action” “Convection Animation”</p>	<p>FQA: Students write an answer to the focus question, "How do gases flow in the atmosphere?" providing evidence and reasoning to support their claim.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 6: Air Flow</p>	<p>Investigation 6 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 6: Air Flow Part 1: Conduction pp. 270-294</p>	<p>FQA: Students write an answer to the focus question, "How does the atmosphere heat up?" providing evidence and reasoning to support their claim.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 6: Air Flow Part 2: Local Winds pp. 295-301</p>	<p>FQA: 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.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 6: Air Flow 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> “Local Wind”</p>	<p>FQA: Students write an answer to the focus question, "What affects the direction of global winds?" providing evidence and reasoning to support their claim.</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 8: Meteorology</p>	<p>Investigations 8-9 I-Check</p>



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Earth Systems, Structures and Processes (cont.)

Standards	FOSS Alignment	Assessment
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.		
<p>7.E.1.5. Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.</p>	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: 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>FOSS Middle School Second Edition Weather and Water Investigation 9: The Water Planet</p>	<p>Investigations 8-9 I-Check</p>
	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: 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>7.E.1.6. Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.</p>	<p>FOSS Middle School Second Edition Weather and Water Investigation 10: Climate over Time</p>	<p>Summative Assessment: Survey/Posttest</p>
	<p>FOSS Middle School Second Edition Weather and Water Investigation 10: Climate over Time Part 1: Climate Change pp. 452-470</p>	<p>FQA: 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>FOSS Middle School Second Edition Weather and Water Investigation 10: Climate over Time Part 2: The Role of Carbon Dioxide pp. 471-484</p>	<p>FQA: 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
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.		
<p>7.E.1.6. Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.</p>	<p>FOSS Middle School Second Edition Weather and Water 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>FQA: 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
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.		
<p>7.L.1.1. 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"> • Euglena • Amoeba • Paramecium • Volvox 	<p>FOSS Middle School Second Edition Diversity of Life Investigation 3: The Cell</p>	<p>Investigations 1-3 I-Check</p>
	<p>FOSS Middle School Second Edition Diversity of Life 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>FQA: 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>7.L.1.2. Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).</p>	<p>FOSS Middle School Second Edition Diversity of Life Investigation 3: The Cell</p>	<p>Investigations 1-3 I-Check Investigation 4 I-Check</p>
	<p>FOSS Middle School Second Edition Diversity of Life Investigation 3: The Cell Part 1: Discovering Cells pp. 144-161</p>	<p>FQA: 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>FOSS Middle School Second Edition Diversity of Life Investigation 3: The Cell Part 2: Paramecia pp. 162-174</p>	<p>FQA: 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>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.</p>		
<p>7.L.1.2. Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).</p>	<p>FOSS Middle School Second Edition Diversity of Life 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>FQA: 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>FOSS Middle School Second Edition Diversity of Life Investigation 5: Plants: The Vascular System</p>	<p>Investigation 5 I-Check</p>
	<p>FOSS Middle School Second Edition Diversity of Life Investigation 5: Plants: The Vascular System Part 2: Looking at Plant Structure pp. 302-312</p>	<p>FQA: 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>FOSS Middle School Second Edition Diversity of Life 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>FQA: Students write an answer to the focus question, "How do plants use water?" providing evidence and reasoning to support their claim.</p>
<p>7.L.1.3. Summarize the hierarchical organization of multi-cellular organisms from cells to tissues to organs to systems to organisms.</p>	<p>FOSS Middle School Second Edition Diversity of Life Investigation 4: Domains</p>	<p>Investigation 4 I-Check</p>
	<p>FOSS Middle School Second Edition Diversity of Life 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>FQA: 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
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.		
<p>7.L.1.3. Summarize the hierarchical organization of multi-cellular organisms from cells to tissues to organs to systems to organisms.</p>	<p>FOSS Middle School Second Edition Diversity of Life 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>7.L.1.4. 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>Delta Science Content Reader Human Body Systems 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
7.L.2 Understand the relationship of the mechanisms of cellular reproduction, patterns of inheritance and external factors to potential variation among offspring.		
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).	FOSS Middle School Second Edition Diversity of Life 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.
	FOSS Middle School Second Edition Diversity of Life <i>FOSS Science Resources:</i> "Bacteria Around Us" pp. 22	Students discuss the advantages of asexual reproduction .
	FOSS Middle School Second Edition Diversity of Life Investigation 6: Plant Reproduction and Growth	Investigation 6 I-Check
	FOSS Middle School Second Edition Diversity of Life Investigation 6: Plant Reproduction and Growth Part 3: Flowering-Plant Reproduction pp. 359-371	FQA: Students write a paragraph explain flowering plant reproduction for a friend referencing the plant reproduction sequence.
	FOSS Middle School Second Edition Diversity of Life 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"	FQA: 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.
	Delta Science Reader DNA: From Genes to Proteins 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.	Delta Science Reader DNA: From Genes to Proteins Heredity and Genetics pp. 15-20	



Grade 7

Evolution and Genetics (cont.)

Standards	FOSS Alignment	Assessment
7.L.2 Understand the relationship of the mechanisms of cellular reproduction, patterns of inheritance and external factors to potential variation among offspring.		
<p>7.L.2.3. Explain the impact of the environment and lifestyle choices on biological inheritance (to include common genetic diseases) and survival.</p>	<p>FOSS Middle School Second Edition Diversity of Life 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>FQA: Students investigate and compare plant growth in 4 solutions with different salt concentrations to determine the impact of environmental factors</p>
	<p>Delta Science Reader DNA: From Genes to Proteins Heredity and Genetics pp. 15-20</p>	