

## Fifth Grade: FOSS Life Science - Living Systems



Investigation Title and Synopsis	Concepts	Assessments and TE Page Numbers
<p><b>1. Living Cells</b> Students study four related human/body transport systems that provide all the cells water, food, gas exchange, and waste disposal. The structures and functions of the circulatory, respiratory, digestive, and excretory systems are explored through a variety of multimedia activities. Students observe and analyze an investigation of gastric juice in the stomach.</p>	<ul style="list-style-type: none"> <li>• Cells require water, food, gases, and waste removal to live</li> <li>• In humans, oxygen is transported to the blood and carbon dioxide is transported from the blood in the respiratory system</li> <li>• In the human circulatory system, blood transports resources to the cells and wastes from the cells</li> <li>• Cells use simple substances for energy and building blocks</li> <li>• The digestive system breaks down complex substances into simple substances which move into the bloodstream</li> <li>• Kidneys filter wastes from blood and convert them into urine for excretion</li> <li>• The respiratory, circulatory, digestive, and excretory systems work together to ensure that cells receive the resources they need to live</li> </ul>	<ul style="list-style-type: none"> <li>• Pretest (pages 237-241)</li> <li>• Part 1 Embedded Assessment: (pages 186-187)/ Science Notebook Sheet 1 <i>Circulatory System Review</i> (page 143)</li> <li>• Part 2 Embedded Assessment: (pages 188-189)/ Science Notebook Sheet 2 <i>The Disassembly Review</i> (page 144)</li> <li>• Benchmark Assessment I-Check 1 (pages 242-245)</li> </ul>
<p><b>2. Vascular Plants</b> Students investigate the transport system in vascular plants and learn about the specialized structures xylem and phloem tubes. Students design and conduct a scientific investigation and discover that leaves play an important role in the transport of water to cells in vascular plants. They use multimedia resources to gather information about plants. They collect and classify plant leaves, based on appropriate criteria.</p>	<ul style="list-style-type: none"> <li>• Life happens in cells</li> <li>• Vascular plants have two transport systems, one to transport water and minerals from roots to leaves, and one to transport sugar from leaves to cells that need it</li> <li>• In vascular plants, water and minerals are transported to cells in xylem tubes: sugar is transported to cells in phloem tubes</li> </ul>	<ul style="list-style-type: none"> <li>• Part 1 Embedded Assessment: (pages 190-193)/Science Notebook Sheet 4 <i>Celery Experiment A</i> (page 146)/Science Notebook Sheet 5 <i>Celery Experiment B</i> (page 147)/ Science Notebook Sheet 6 <i>Response Sheet-Vascular Plants</i> (page 148)</li> </ul>

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<p><b>2. Vascular Plants (cont'd)</b></p>	<ul style="list-style-type: none"> <li>• Vascular bundles are arranged in predictable patterns of veins in the leaves of vascular plants</li> <li>• Scientists classify objects and information by organizing them into groups with similar attributes</li> </ul>	<ul style="list-style-type: none"> <li>• Part 2 Embedded Assessment: (pages 186-187)/Science Notebook Sheet 6 <i>Circulatory System Review</i> (page 148)</li> <li>• Benchmark Assessment I-Check 2 (pages 246-248)</li> </ul>
<p><b>3. Sugar and Cells</b> Students analyze an experiment to determine the conditions under which plants produce food (photosynthesis). They design an investigation to determine what conditions are needed to activate an organism (yeast) and are introduced to the process by which plant and animal cells obtain energy from food (cellular respiration). They design and conduct an experiment to determine the sugar content of common foods.</p>	<ul style="list-style-type: none"> <li>• Chlorophyll absorbs sunlight</li> <li>• Photosynthesis requires carbon dioxide, water, and light</li> <li>• Photosynthesis produces sugar and oxygen gas</li> <li>• Plant and animal cells break down sugar and oxygen into carbon dioxide and water to obtain energy (cellular respiration)</li> <li>• Animals obtain six classes of nutrients from food: protein, carbohydrate, fat, minerals, vitamins, and water</li> <li>• The volume of gas produced by yeast is proportional to the amount of sugar present</li> </ul>	<ul style="list-style-type: none"> <li>• Part 1 Embedded Assessment: (pages 194-195)/Science Notebook Sheet 8 <i>Making Food Experiment</i> (page 150)</li> <li>• Part 2 Embedded Assessment: (pages 196-197)/Science Notebook Sheet 10 <i>Response Sheet-Sugar and Cells</i> (page 152)</li> <li>• Benchmark Assessment I-Check 3 (pages 249-252)</li> <li>• Posttest (pages 237-241)</li> </ul>

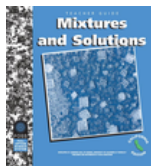


## Fifth Grade: FOSS Earth Science - Water Planet



Investigation Title and Synopsis	Concepts	Assessments and TE Page Numbers
<p><b>1. Solar System</b> Students use solar system cards to organize the Sun and other bodies into a representation of the system and categorize the bodies in different ways, based on their properties. Students learn how gravity keeps planets in orbit.</p>	<ul style="list-style-type: none"> <li>The solar system comprises eight planets and various other bodies orbiting the Sun, a typical star composed mostly of hydrogen and helium</li> <li>Solar-system bodies can be put into categories, such as gas giants, terrestrial planets, and satellites</li> <li>Gravity is a pulling force that constantly changes the direction of travel of planets to maintain them in orbits around the Sun</li> </ul>	<ul style="list-style-type: none"> <li>Pretest (pages 427-434)</li> <li>Part 1 Embedded Assessment: (pages 350-351) Science Notebook Sheet 1 <i>Solar-System Data</i> (page 251)</li> <li>Benchmark Assessment I-Check 1 (pages 435-436)</li> </ul>
<p><b>2. Swingers</b> Students experiment with pendulums to learn the basics of controlled experimentation, and learn to identify independent, dependent, and controlled variables. They represent data with a two-coordinate graph.</p>	<ul style="list-style-type: none"> <li>A pendulum is a mass that is free to swing around a point</li> <li>A variable is anything that you can change in an experiment that might affect the outcome</li> <li>In a controlled experiment the independent variable is changed in order to determine how that variable affects the outcome of the experiment. All other variables are controlled.</li> </ul>	<ul style="list-style-type: none"> <li>Part 1 Embedded Assessment: (page 352)/ Teacher Observation: <i>Swinger Construction</i></li> <li>Part 2 Embedded Assessment: (pages 353-354)/ Science Notebook Sheet 5 <i>Response Sheet-Swingers</i> (page 255)/ Teacher Observation: Makes accurate measurements, and demonstrate intuitive sense of experimentation</li> <li>Benchmark Assessment for Part 3: I-Check 2 (pages 437-439)</li> </ul>
<p><b>3. Water Vapor</b> Students experiment with water to determine how temperature and surface area affect evaporation. They also investigate the conditions that produce liquid condensation and frost.</p>	<ul style="list-style-type: none"> <li>Evaporation is the process by which liquid water changes into water vapor, a gas</li> <li>Temperature and surface area affect the rate of evaporation</li> <li>Condensation occurs when water vapor touches a cool surface and changes into liquid</li> <li>Evaporation and condensation contribute to the movement of water through the water cycle</li> </ul>	<ul style="list-style-type: none"> <li>Part 1 Embedded Assessment: (pages 355-356) Science Notebook Sheet 7 <i>Wet Paper Towels</i> (page 257)</li> <li>Part 2 Embedded Assessment: (pages 357-358) Science Notebook Sheet 8 <i>Evaporation Location Charts</i> (page 258)</li> <li>Part 3 Embedded Assessment: (pages 359-360) Science Notebook Sheet 12 <i>Water Vapor</i> (page 262)</li> </ul>

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<p><b>3. Water Vapor (cont'd)</b></p>		<ul style="list-style-type: none"> <li>Part 4 Embedded Assessment: (pages 361-362)/ Science Notebook Sheet 12 Response Sheet Water Vapor (page 262)/Science Notebook Sheet 13 <i>Condensation Observations</i> (page 263)</li> <li>Benchmark Assessment I-Check 3 (pages 440-442)</li> </ul>
<p><b>4. Heating Earth</b> Students learn about uneven heating by monitoring the temperature of water and soil in the sunshine. They discover how uneven heating can cause convection currents. Students use syringes to investigate air pressure.</p>	<ul style="list-style-type: none"> <li>The different energy-absorbing properties of earth materials can lead to uneven heating of Earth's surface</li> <li>Cold fluids are denser than warm fluids</li> <li>Convection currents result from uneven heating of Earth's surface</li> <li>Compressed air exerts pressure equally in all directions</li> <li>Earth's atmospheric pressure decreases with distance above Earth's surface</li> </ul>	<ul style="list-style-type: none"> <li>Part 1 Embedded Assessment: (page 363)/ Science Notebook Sheet 14 Heating Earth Materials A (page 264)/Science Notebook Sheet 15 Heating Earth Materials B (page 265)/</li> <li>Part 2 Embedded Assessment: (pages 364-365) Science Notebook Sheet 20 <i>Atmospheric Pressure at Work</i> (page 270)</li> <li>Benchmark Assessment I-Check 4 (pages 443-445)</li> </ul>
<p><b>5. Weather</b> Students inventory Earth's water and learn that the water cycle redistributes water worldwide. They investigate weather, learning the causes and effects of severe weather, and learn how to make weather maps and use them to forecast weather.</p>	<ul style="list-style-type: none"> <li>Most of Earth's water (97%) is salt water</li> <li>Weather is the condition of the atmosphere at a given place and time: the amount of heat, moisture, pressure, and movement</li> <li>Solar energy drives weather</li> <li>Severe weather occurs when one or more variables is extreme, resulting in conditions that are dangerous or destructive</li> <li>Weather maps display weather conditions and can be used to forecast weather</li> </ul>	<ul style="list-style-type: none"> <li>Part 1 Embedded Assessment: (page 368) Quick write Students describe and draw the water cycle.</li> <li>Part 2 Embedded Assessment: (pages 369-370) Science Notebook Sheet 22 <i>Severe Weather Questions</i> (page 272)</li> <li>Part 3 Embedded Assessment: (pages 371-372) Science Notebook Sheet 23 <i>Weather Maps Questions</i> (page 273)</li> <li>Benchmark Assessment I-Check 5 (pages 446-449)</li> <li>Part 4 Posttest (pages 427-434)</li> </ul>



## Fifth Grade: FOSS

### Physical Science - Mixtures and Solutions



Investigation Title and Synopsis	Concepts	Assessments and TE Page Numbers
<p><b>1. Separating Mixtures</b>            Students make mixtures of water and solid materials (salt, gravel, and diatomaceous earth) and separate the mixtures with screens and filters. They find that water and salt make a special kind of mixture, a solution, that cannot be separated with a filter but only through evaporation.</p>	<ul style="list-style-type: none"> <li>• A mixture combines two or more materials that retain their own properties</li> <li>• A solution forms when a material dissolves in a liquid (solvent) and can not be retrieved with a filter</li> <li>• All mixtures can be separated based on the properties of the constituent substances</li> <li>• Evaporation can separate a liquid from a solid in solution</li> <li>• Crystal form can be used to identify substances</li> </ul>	<ul style="list-style-type: none"> <li>• Pretest (pages 333-339)</li> <li>• Part 1 Embedded Assessment: (pages 266-267)/ Science Notebook Sheet 2 <i>Thinking About Mixtures</i> (page 204)</li> <li>• Part 2 Embedded Assessment: (pages 268-269)/ Science Notebook Sheet 5 <i>Response Sheet- Separating Mixtures</i> (page 207)</li> <li>• Part 3 Embedded Assessment: (pages 270-271)/ Teacher Observation: /Science Notebook Sheet 6 <i>Separating a Dry Mixture</i> (page 208)</li> <li>• Benchmark Assessment I-Check 1 (pages 340-341)</li> </ul>
<p><b>2. Reaching Saturation</b>            Students make a saturated solution by adding salt to water until no more salt will dissolve. They also make a saturated Epsom-salts solution. Using a balance, they compare the solubility of the two solid materials by comparing the mass of the salt and Epsom-salts dissolved in saturated solutions. They use the property of solubility to identify an unknown material.</p>	<ul style="list-style-type: none"> <li>• Solubility is the property that substances have of dissolving in solvents</li> <li>• Solubility is different for different materials and can change with temperature and solvent</li> <li>• Solubility can be used to differentiate and identify substances</li> <li>• A solution is saturated when a solvent has dissolved as much solute as possible</li> <li>• Decompression sickness is caused by supersaturation of the gas nitrogen in blood</li> </ul>	<ul style="list-style-type: none"> <li>• Part 1 Embedded Assessment: (page 272)/ Teacher Observation: <i>Gather and Interpret Data</i></li> <li>• Part 2 Embedded Assessment: (pages 273-274) Science Notebook <i>Response Sheet Reaching Saturation</i> (page 210)</li> <li>• Part 3 Embedded Assessment: (page 275) Teacher Observation: <i>Apply Collected Data</i></li> <li>• Benchmark Assessment I-Check 2 (pages 342-344)</li> </ul>

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<p><b>3. Fizz Quiz</b> Students systematically mix combinations of solid materials (calcium chloride, baking soda, and citric acid) with water and observe changes that occur. The changes (formation of a gas and a white precipitate) are identified as evidence of a chemical reaction. Students investigate these reactions and the chemicals they produce.</p>	<ul style="list-style-type: none"> <li>• When a change results from mixing two or more materials, that change is a chemical reaction, which can be represented with chemical formulas and chemical equations</li> <li>• Atoms are the fundamental building blocks of matter; all substances are composed of atoms</li> <li>• Atoms in reactants rearrange during reactions to form new substances</li> <li>• Atoms combine to form molecules</li> <li>• Molecules are the fundamental units of substances</li> </ul>	<ul style="list-style-type: none"> <li>• Part 1 Embedded Assessment: (pages 276-277)/ Science Notebook Sheet 10 <i>Fizz Quiz Observations</i> (page 212)</li> <li>• Part 2 Embedded Assessment: (pages 278-279)/ Science Notebook Sheet 11 <i>Reaction Analysis</i> (page 213)</li> <li>• Part 3 Embedded Assessment: (pages 280-281)/ Science Notebook Sheet 13 <i>Response Sheet-Fizz Quiz</i> (page 215)</li> <li>• Part 4 Embedded Assessment: (page 282)/ Teacher Observation: <i>Understand Results of Chemical Reaction</i></li> <li>• Benchmark Assessment I-Check 3 (pages 345-348)</li> </ul>
<p><b>4. Elements</b> Students are introduced to the periodic table as a as a graphic display of the elements showing increasing atomic number in rows and and similar chemical properties in columns. They learn about metals and alloys and that most matter on Earth is made from a small number of elements.</p>	<ul style="list-style-type: none"> <li>• Earth has 90 naturally occurring elements, each defined by a unique atom</li> <li>• Most matter on Earth is made from only a few elements</li> <li>• Most elements on Earth are metals; metals share properties of malleability and conduction of heat and electricity</li> <li>• The periodic table provides information about the composition of an element's atom and the elements chemical properties</li> <li>• Atoms and molecules can be imaged with scanning tunneling microscopes</li> </ul>	<ul style="list-style-type: none"> <li>• Part 1 Embedded Assessment: (page 282) Teacher Observation: <i>Know Difference Between Element and Compound</i></li> <li>• Part 2 Embedded Assessment: (pages 284-285) Science Notebook Sheet 15 <i>Proerties of Materials</i> (page 217)</li> <li>• Part 3 Embedded Assessment: (page 286) Teacher Observation: <i>Ability to Analyze Products based on Their Elements</i></li> <li>• Benchmark Assessment I-Check 4 (pages 349-353)</li> <li>• Posttest (pages 333-339)</li> </ul>