

**Grade: 5 Unit 1: Introduction to the Scientific Method**

**Foss Kit: Variables**

**Timeline: September-October**

**FOSS Lessons:**

Swingers

Life Boats

Plane Sense

Flippers

**Pearson packet: "Think like a scientist"**

Think like a scientist

Science Inquiry

**Grade 5 Unit 2: Water Cycle & Earth's systems**

**Mystery Science: Watery Planet**

**Timeline: November-December**

<b>Mystery</b>	<b>Supplies</b>
Unit Starter: Interaction of Earth's Spheres & Modeling	Printouts
Mystery 1: Water on Earth's Surface	<p>Small, removable sticky-glue dots or Post-its in 3 colors to represent fresh, frozen, and salt water</p> <p>You'll need at least 80 stickers for salt water and 10 for frozen water, but just 1 for fresh water. You can cut 2" x 2" Post-its into 1/2" strips with a paper cutter or buy 2" x 1/2" Post-its.</p> <p>Printouts</p>
Mystery 2: Water as a Natural Resource	One printout for each Group of 4
Mystery 3: Water Cycle	<p>Small, removable sticky-glue dots or Post-its in 3 colors to represent fresh, frozen, and salt water</p> <p>You'll need at least 80 stickers for salt water and 10 for frozen water, but just 1 for fresh water. You can cut 2" x 2" Post-its into 1/2" strips with a paper cutter or buy 2" x 1/2" Post-its.</p> <p>Each group will also need:</p> <ul style="list-style-type: none"><li>4 Dixie cups</li><li>4 large clear plastic cups</li></ul> <p><i>These must be clear; frosted cups won't work. Cup must be tall enough to extend at least an inch above the top of the Dixie cup. If the clear cups are too short, there'll be nowhere for the condensation to collect.</i></p> <ul style="list-style-type: none"><li>4 heavy-duty paper plates</li></ul> <p><i>The heavy paper plates, like Chinex brand, work well. The thick paper acts as insulation below each hot or cold set-up.</i></p> <p>Paper towels to clean up any spills</p> <p><u>Optional</u>: Cafeteria-type trays to hold the materials for each group</p> <p><u>Optional</u>: Oven mitts (for you to handle the hot water bottles as they come out of the microwave)</p>

Mystery 4: Natural disasters & Engineering	Printouts
Performance Task: Interaction of Earth's Spheres & Argumentation	Printouts

**Grade: 5 Unit: 3 Chemical Reactions & Properties of Matter**

**Mystery Science: Chemical Magic**

**Timeline: January- February**

<b>Mystery</b>	<b>Supplies</b>
Unit Starter: Argument from Evidence	Printouts
Mystery 1: Introduction to Chemistry	<p>You'll need:</p> <ul style="list-style-type: none"><li>• pre-1982 tarnished pennies (You'll need at least one for each student, plus a few extras—that's about 40 pennies for a class of 32. If you have a small group or solo student, you'll need at least 20 pennies.)</li><li>• measuring spoons and cups</li><li>• 4 plastic food-storage containers that hold just over 3 cups each, like <a href="#">these</a>. (You'll need one container for each test station.)</li><li>• tape for labeling containers</li><li>• 4 cups of water</li><li>• 2 tablespoons of liquid detergent</li><li>• 4 cups of white vinegar (You'll use vinegar again in Chemistry Mysteries 3, 4, and 5, so we suggest getting a gallon.)</li><li>• 1 cup of salt (You'll use another cup of salt in Chemistry Mystery 3, so we suggest getting a 26-ounce container.)</li><li>• steel nails (Note that it's important that you get steel nails <a href="#">like these</a>—NOT stainless-steel nails, and NOT galvanized nails. We recommend asking at your local hardware store. If you can't find steel nails, you can substitute steel washers as long as they are not galvanized and not stainless steel. You can also substitute jumbo paper clips.)</li><li>• optional: an orange and a brown colored pencil for each group of students (For coloring dull and shiny pennies on worksheets.)</li></ul>
Mystery 2: Particulate Nature of Matter	<p>For the classroom, you'll need:</p> <ul style="list-style-type: none"><li>• the penny-filled salt-and-vinegar liquid from Mystery 1</li><li>• the "Alchemist's Potion, Part 1" worksheets students completed in Mystery 1</li></ul>

	<ul style="list-style-type: none"> <li>• 4 plastic spoons (for students to scoop up the solution and pennies)</li> <li>• a plastic box or bin, plus binder clips or clothespins (to keep bags for students who need to leave their experiments overnight)</li> <li>• paper towels (for cleanup)</li> </ul> <p>Each student will need:</p> <ul style="list-style-type: none"> <li>• one copy of the <a href="#">“Alchemist’s Potion, Part 2”</a> worksheet</li> </ul> <p>Each group of four students will need:</p> <ul style="list-style-type: none"> <li>• a plastic or paper plate</li> <li>• 2 stick-on labels (or one label and a strip of masking tape)</li> <li>• a ziplock bag (either snack-size or sandwich-size will work)</li> <li>• a steel nail (As noted in Mystery 1 Activity Prep, it’s important to use steel nails <a href="#">like these</a>—NOT stainless-steel nails, and NOT galvanized nails. If you can’t find steel nails, you can substitute steel washers as long as they are not galvanized and not stainless steel. You can also substitute jumbo paper clips.)</li> <li>• a 3-ounce paper cup (we use bathroom cups, also known as Dixie cups)</li> <li>• orange, brown, and grey pencils, crayons, or markers for drawing and to write on labels (optional)</li> </ul>
<p>Mystery 3: Acids, Reactions &amp; Properties of Matter</p>	<p>To prepare for class, you’ll need:</p> <ul style="list-style-type: none"> <li>• measuring spoons and cups</li> <li>• scissors</li> <li>• a sharpie or permanent marker</li> <li>• 1 cup of dry black beans or 2 cups of chopped raw purple cabbage</li> <li>• 2 cups of water</li> <li>• a container that can hold at least 4 cups of water (for making purple indicator liquid; see Step 4 for instructions)</li> <li>• 20 drinking straws (you’ll be modifying these so students can use them for transferring liquids; see Step 4 for instructions)</li> <li>• at least two foods or drinks that students can test for acidity (Anything in the kitchen is fair game. You can keep it simple and have students all test the same foods, or give every group something different to test. We recommend choosing at least one acid, such as lemonade, ketchup, mustard, pickle juice,</li> </ul>

	<p>yogurt, or sour cream, and one non-acid, such as mayonnaise, milk, or soy sauce. You'll need about 1 cup of each for a class of 32.)</p> <p>For each group of four students (or each solo student), you'll also need:</p> <ul style="list-style-type: none"> <li>• newspaper or plastic to cover work areas</li> <li>• baking soda (about 1 tablespoon; 8 groups need about half of a 1-pound box)</li> <li>• baking powder (about 1 tablespoon; 8 groups need about 7 ounces)</li> <li>• vinegar (about 2 tablespoons; 8 groups need about 2 cups)</li> <li>• water (about 2 tablespoons; 8 groups need about 2 cups)</li> <li>• 2 craft sticks or spoons (for spooning out powders; 8 groups need 16 craft sticks or spoons)</li> <li>• 7 small paper cups: 5 for testing known substances, and 2 for testing unknowns (We used 3-ounce bathroom cups, also known as Dixie cups. For 8 groups, you'll need a total of 56 cups.)</li> </ul> <p>For each pair of students working together (or each solo student) you'll need:</p> <ul style="list-style-type: none"> <li>• a sheet of <a href="#">Press'n Seal</a> sealable plastic wrap; you can also substitute taped-down waxed paper (For 8 groups, you'll need 16 sheets.)</li> <li>• a few toothpicks (for mixing samples)</li> <li>• paper towels (for cleanup)</li> </ul> <p><b>Step 3: Print out materials</b></p>
<p>Mystery 4: Chemical Reactions</p>	<p>To prepare for the activity, you'll need:</p> <ul style="list-style-type: none"> <li>• a permanent marker</li> <li>• a ruler</li> <li>• a measuring cup</li> <li>• a teaspoon for measuring (abbreviated as tsp)</li> <li>• a tablespoon for measuring (abbreviated as Tbsp)</li> <li>• a bottle that holds at least a half gallon (check the recycling bin)</li> <li>• a bottle that holds at least a pint (check the recycling bin)</li> <li>• a large jar or bowl for mixing glue and water</li> <li>• lots of water</li> </ul> <p>See chart for Supplies for Part 1 &amp; 2</p>
<p>Mystery 5: Gases &amp; Particulate Nature of Matter</p>	<ul style="list-style-type: none"> <li>• a ¼-cup measure</li> <li>• a plastic cup or container to hold the vinegar for each table of students (see Step 2)</li> </ul>

	<ul style="list-style-type: none"> <li>• a plastic or paper cup to hold the baking soda for each table of students (see Step 2)</li> <li>• paper towels for cleanup</li> </ul> <p>Each student needs:</p> <ul style="list-style-type: none"> <li>• scissors</li> <li>• 3-oz Dixie cup (or similar cup)</li> <li>• <a href="#">ziplock snack bag</a>. (Use snack bags rather than sandwich bags. Sandwich bags need more vinegar and baking soda, and the resulting explosion is likely to overflow the plastic plate.)</li> <li>• eye protection is strongly recommended</li> </ul> <p>Each pair of students needs:</p> <ul style="list-style-type: none"> <li>• a plastic plate like <a href="#">these</a>, or a large, sturdy paper plate (Note: You can wash and reuse plastic plates for future activities)</li> <li>• at least <math>\frac{1}{4}</math> cup of vinegar (1 quart for a class of 32)</li> <li>• at least <math>\frac{1}{4}</math> cup of baking soda (about <math>1\frac{1}{2}</math> pounds for a class of 32)</li> <li>• 2 plastic spoons, each holding about 1 teaspoon (students will use one for measuring vinegar, and the other for measuring baking soda)</li> </ul> <p><b>Step 2: Print worksheets and prepare supplies</b></p>
Performance Task: Particle Model & Argumentation	Printouts

**Grade: 5 Unit: 4 Sun, Moon, Stars, and Planets**

**Mystery Science: Spaceship Earth**

**Timeline: February-April**

<b>Mystery</b>	<b>Supplies</b>
Unit Starter: Sky Patterns & Modeling	Printouts
Mystery 1: Day, Night & Earth's Rotation	Printouts
Mystery 2: Earth's Rotation & Time	Each student will need: <ul style="list-style-type: none"><li>• a <a href="#">Shadow Clock template</a> designed for your location — Print the right one for you. (There are 2 templates per page.)</li><li>• 1 stiff white paper plate (at least 10" across)</li><li>• 1 piece of sticky tack (or clay/Play Doh) that's about the size of a pea. (For a class, you need a small pack, available at a hardware store or through <a href="#">Amazon</a>)</li><li>• 1 toothpick</li><li>• Pencil</li><li>• Scissors</li><li>• Glue or tape</li><li>• Ruler</li><li>• Flashlight</li></ul>
Mystery 3: Seasonal Changes & Sun's Path	N/A
Mystery 4: Seasons & Earth's Revolution	Printouts
Mystery 5: Moon Phases, Lunar Cycle	Styrofoam balls
Mystery 6: Planets & Solar System	Chalk
Mystery 7: Gravity	Printouts
Mystery 8: Star Brightness & Habitable Planets	Printouts
Performance Task: Night Sky	Printouts



**Grade: 5 Unit: 5 Ecosystems and Food Web**

**Mystery Science: Web of Life**

**Timeline: April-June**

<b>Mystery</b>	<b>Supplies</b>
Unit Starter: Ecosystem Design & Modeling	Printouts
Mystery 1: Food Chains, Predators, Herbivores & Carnivores	Printouts
Mystery 2: Matter Cycle, Food Chain	Latex balloon, each Small binder clip, each Supplies on hand
Mystery 3: Decomposers & Matter Cycle	For each mold terrarium, you will need the following supplies: <ul style="list-style-type: none"><li>• a sturdy paper or plastic plate <a href="#">like this</a> that you can throw away when the experiment is done</li><li>• a ziplock baggie that is large enough to hold the plate <a href="#">like these</a></li><li>• half a slice of bread (Ask at a bakery or grocery store for day-old or expired bread.)</li><li>• pieces of fruit (oranges and strawberries both mold well)</li><li>• a strip of packing tape or duct tape for sealing the baggie</li><li>• a label large enough for the team name, date, and starting conditions</li><li>• a cup of water for moistening food</li></ul> Handouts
Mystery 4: Decomposers, Nutrients, & Matter Cycle	To give your worms a place to live before the activity and to make the worm station where students get their worms, you'll need: <ul style="list-style-type: none"><li>• 1 plastic food storage container (A plastic shoe box or food storage pan measuring 10" x 14" works well for about 300 red worms. For more worms, we suggest a larger bin.)</li><li>• worm bedding (You can use peat moss, torn-up newsprint [not colored], shredded brown cardboard, straw or hay, fall leaves, wood chips, or a mixture of any of these. You need enough to fill one container.)</li><li>• a few plastic spoons for digging in the bedding to find worms</li><li>• newspaper or plastic to cover the table where you set up your worm station</li><li>• (optional) a few plastic gloves or plastic bags for students who are really reluctant to pick up a worm with their bare hands</li></ul>

Mystery 5: Ecosystems & Matter Cycle	Printouts
Mystery 6: Flow of energy	Printouts Construction paper
Performance Task: Ecosystem Argument	Printouts