



## Fourth Grade: FOSS Earth Science - Solid Earth



Investigation Title and Synopsis	Concepts	Assessments and TE Page Numbers
<p><b>1. Mock Rocks</b> Students record observations of mock rocks. They take the rocks apart and sort ingredients. They place some rock material in water, evaporate the liquid, and identify the crystals that form. Students learn that rocks are made of minerals.</p>	<ul style="list-style-type: none"> <li>Rocks have many properties, including shape, color, and texture</li> <li>Rocks are made of ingredients called minerals; minerals are made of only one substance</li> <li>Mineral crystals have identifiable shapes</li> </ul>	<ul style="list-style-type: none"> <li>Pretest (pages 397-402)</li> <li>Embedded Assessment: Teacher observation for Part 1 <i>Observing Mock Rocks</i> (page 332)</li> <li>Part 2 Embedded Assessment: (pages 333-334) Science Notebook Sheet 5 Response Sheet- Mock Rocks (page 227)</li> <li>Embedded Assessment: Teacher observation for Part 3, <i>Observing Crystals</i> (page 335)</li> <li>Benchmark Assessment I-Check 1 (pages 403-404)</li> </ul>
<p><b>2. Scratch Test</b> Students investigate four unknown minerals and use the property of hardness to make confident identification of the rock-forming minerals. Students learn one important diagnostic property of minerals.</p>	<ul style="list-style-type: none"> <li>A mineral is an earth material that cannot be physically broken down any further</li> <li>Hardness, a mineral property, is the resistance of a mineral to being scratched; minerals can be identified and seriated by hardness</li> </ul>	<ul style="list-style-type: none"> <li>Part 1 Embedded Assessment: (pages 336-337) Science Notebook Sheet 7 <i>Scratch Test Minerals</i> (page 229)</li> <li>Part 2 Embedded Assessment: (pages 338-339) Science Notebook Sheet 9 Reponse Sheet- Scratch Test (page 231)</li> <li>Benchmark Assessment I-Check 2 (pages 405-406)</li> </ul>
<p><b>3. Calcite Quest</b> Students investigate the mineral calcite and its special property of reacting in vinegar. They place four rock samples in vinegar and look for evidence that calcite is an ingredient. Students are introduced to common sedimentary and metamorphic rocks.</p>	<ul style="list-style-type: none"> <li>Rocks are made of minerals</li> <li>Calcite is one of the most common minerals on Earth</li> <li>Sometimes more than one test is needed to provide conclusive evidence</li> <li>Crystal patterns can help us identify certain minerals</li> <li>Limestone and marble are two rocks that contain calcite</li> </ul>	<ul style="list-style-type: none"> <li>Part 1 Embedded Assessment: (pages 340-341)/ Science Notebook Sheet 10 <i>Calcite Quest</i> (page 232) and Science Notebook Sheet 11 <i>Vinegar Test</i> (page 233)</li> <li>Part 2 Embedded Assessment: (pages 342-343) Science Notebook Sheet 13 <i>Response Sheet Calcite Quest</i> (page 235)</li> <li>Benchmark Assessment I-Check 3 (pages 407-408)</li> </ul>

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<p><b>4. Take It For Granite</b> Students investigate more mineral properties—streak and luster—and use a diagnostic table to identify several unknown minerals. Students are introduced to the rock cycle and the processes that form the three types of rocks.</p>	<ul style="list-style-type: none"> <li>• Rocks are made of ingredients called minerals.</li> <li>• Minerals can be identified by their properties (e.g. hardness, luster, streak, fizzing in acid)</li> <li>• The three basic rock types are igneous, sedimentary, and metamorphic</li> <li>• The rock cycle is a way to describe how the three types of rocks form from one another</li> </ul>	<ul style="list-style-type: none"> <li>• Part 1 Embedded Assessment: (pages 344-345)/ Science Notebook Sheet 18 <i>Response Sheet Take it for Granite C</i> (page 240)</li> <li>• Part 2 Embedded Assessment: (pages 346-347)/ Science Notebook Sheet 19 <i>Granite Minerals</i> (page 241)</li> <li>• Benchmark Assessment I-Check 4 (pages 409-410)</li> </ul>
<p><b>5. Landforms</b> Students investigate chemical weathering by soaking limestone in vinegar, and physical weathering by shaking granite in a jar. They investigate erosion and deposition in a stream table. They learn about processes that cause rapid changes to Earth’s surface—earthquakes, volcanism, landslides, and floods.</p>	<ul style="list-style-type: none"> <li>• Chemical weathering of rock changes minerals into different minerals</li> <li>• Physical weathering breaks rocks into smaller particles by physical forces</li> <li>• Erosion wears away and transports earth materials by water, wind, or ice; deposition relocates eroded earth materials</li> <li>• Volcanoes, earthquakes, and landslides contribute to rapid changes in landform</li> </ul>	<ul style="list-style-type: none"> <li>• Part 1 Embedded Assessment: (pages 348-349)/ Science Notebook Sheet 21 <i>Rocks in Acid Rain</i> (page 243)/Science Notebook Sheet 22 <i>Acid Rain Evaporation</i> (page 244)</li> <li>• Part 2 Embedded Assessment: (page 350) Erosion</li> <li>• Part 3 Embedded Assessment: (page 351) Deposition</li> <li>• Part 4 Embedded Assessment: (pages 352-353) Science Notebook Sheet 24 <i>Stream Table Observations</i> (page 246)</li> <li>• Part 5 Embedded Assessment: (page 354) Investigation and Experimentation</li> <li>• Benchmark Assessment I-Check 5 (pages 411-414)</li> <li>• Posttest (pages 397- 402)</li> </ul>