

**Grade Level Expectations (5<sup>th</sup> Grade)  
Stories in Stone**

DRAFT

FOSS Investigations	Essential Learning Indicators Targeted
<p><b>Investigation 1: Properties of Rocks and Minerals</b></p> <p><b>Investigation 2: Distinguishing Rocks from Minerals</b></p> <p><b>Investigation 3: Shapes of Mineral Crystals</b></p> <p><b>Investigation 4: Formation of Igneous Rocks</b></p> <p><b>Investigation 5: Formation of Sedimentary Rocks</b></p>	<p>1.1.5 Understand physical properties of Earth materials including rocks, soil, water, and air. W</p> <ul style="list-style-type: none"> <li>• Describe and sort rocks based on physical properties (e.g. color, shape, size, texture).</li> <li>• Describe and sort soils based on physical properties (e.g. color, particle size, ability to retain or drain water, texture, smell, support plant growth, source of mineral nutrients [not food] for plants).</li> </ul> <p>1.2.3 Know that substances are made of small particles. (Inv. 1-5, &amp; 8)</p> <ul style="list-style-type: none"> <li>• Identify small parts of a substance as still being that substance (e.g. a drop of water is still water, a speck of sugar is still sugar).</li> <li>• Observe and describe that some particles can only be seen with magnification.</li> <li>• Describe objects that are made of only one kind of material and objects made of several kinds of material.</li> </ul> <p>1.2.4 Understand that Earth’s system includes a mostly solid interior, landforms, bodies of water, and an atmosphere. W (Inv. 1,4-7)</p> <ul style="list-style-type: none"> <li>• Describe how one part of Earth’s system depends on or connects to another part of Earth’s system.</li> <li>• Identify and describe various landmasses, bodies of water, and landforms.</li> <li>• Construct a model that demonstrates understanding of Earth’s structure as a system made of parts.</li> </ul> <p>1.3.4 Know processes that change the surface of Earth. W (Inv. 4-7)</p> <ul style="list-style-type: none"> <li>• Describe how weathering and erosion change the surface of the Earth.</li> <li>• Describe how earthquakes, landslides, and volcanic eruptions change Earth’s surface.</li> </ul> <p>2.1.1 Understand how to ask a question about objects, organisms, and events in the environment. (Inv.3-5)</p> <ul style="list-style-type: none"> <li>• Identify the question being answered in an investigation.</li> <li>• Ask questions about objects, organisms, and events based on observations of the natural world.</li> <li>• Develop a new question that can be investigated with the same materials and/or data as a given investigation.</li> </ul> <p>2.1.2 Understand how to plan and conduct simple investigations. (Inv. 3-5)</p> <ul style="list-style-type: none"> <li>• Make predictions of the results of an investigation.</li> <li>• Generate a logical plan for, and conduct, a simple controlled investigation with the following attributes: prediction; appropriate materials, tools, and available computer technology; variables kept the same (controlled); one changed variable (manipulated); measured/responding) variable; gather, record, and organize data using appropriate units, charts, and/or graphs; multiple trials.</li> <li>• Identify and use simple equipment and tools (such as magnifiers, rulers, balances, scales, and thermometers) to gather data and extend the senses.</li> <li>• Follow all safety rules during investigations.</li> </ul>

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<p><b>Investigation 6: Formation of Metamorphic Rocks</b></p> <p><b>Investigation 7: Recycling the Earth's Crust</b></p> <p><b>Investigation 8: Classifying Rocks and Minerals</b></p>	<p>2.1.3 Understand how to construct a reasonable explanation using evidence. W</p> <ul style="list-style-type: none"> <li>• Generate a scientific conclusion including supporting data from an investigation.</li> <li>• Describe a reason for a given conclusion using evidence from an investigation.</li> <li>• Generate a scientific explanation of observed phenomena using given data.</li> <li>• Predict what logically might occur if an investigation lasted longer or was changed.</li> </ul> <p>2.1.4 Understand how to use simple models to represent objects, events, and processes. W (Inv. 3-7)</p> <ul style="list-style-type: none"> <li>• List similarities and differences between a model and what the model represents.</li> <li>• Create a simple model to represent common objects, events, systems, or processes (e.g. diagram or map and/or physical model).</li> <li>• Investigate phenomena using a simple physical or computer model or simulation.</li> <li>• Describe reasons for using a model to investigate phenomena (e.g. processes that happen very slowly or quickly, things that are too small or too large for direct observation; phenomena that cannot be controlled or potentially dangerous).</li> </ul> <p>2.1.5 Understand how to report investigations, and explanations of objects, events, systems, and processes. W</p> <ul style="list-style-type: none"> <li>• Report observations or data of simple investigations without making inferences.</li> <li>• Summarize an investigation by describing: reasons for selecting the investigation plan; materials used in the investigation; observations, data, results; explanations and conclusions in written, mathematical, oral, and information technology presentation formats; safety procedures used.</li> </ul> <p>2.2.1 Understand that all scientific observations are reported accurately and honestly even when the observations contradict expectations. W ( Inv.3-5)</p> <ul style="list-style-type: none"> <li>• Explain why scientific observations are recorded accurately and honestly.</li> <li>• Explain why scientific records of observations are not changed even when the records do not match initial expectations.</li> <li>• Explain why honest acknowledgement of the contribution of others and information sources are necessary.</li> </ul> <p>2.2.3 Understand why similar investigations may not produce similar results. (Inv. 3 - 7)</p> <ul style="list-style-type: none"> <li>• Describe reasons why two similar investigations can produce different results (e.g. identify possible sources of error).</li> <li>• Explain whether sufficient information has been obtained to make a conclusion.</li> </ul> <p>2.2.4 Understand how to make the results of scientific investigations reliable. (Inv. 3-4)</p> <ul style="list-style-type: none"> <li>• Describe how the method of investigation insures reliable results.</li> <li>• Identify and describe ways to increase the reliability of the results of an investigation.</li> </ul>