

Stories In Stone  
Geology  
Session 4  
Instructor: Laura Erlig

Overview: Students will find and collect interesting rocks and minerals, observe them with magnifying lenses and compare different samples, how they change and are related to each other. In addition, the students conduct simulations and experiments to find out more about how rocks and minerals are formed. Students will learn about the rock cycle and the different classifications of rocks.

Course Expectations:

- Come prepared with materials needed (spiral notebook for note taking, pen, pencil, and highlighter)
- Complete homework
- Participate in the class in a positive way
- Allow others to enjoy and learn

Schedule:

**Lesson 1:** Properties of Rocks and Minerals – Students examine a class collection of rock and mineral samples. The focus is on observing and appreciating the properties of rocks and minerals, as well as evoking curiosity about how different kinds of rocks and minerals might be formed.

**Lesson 2:** Distinguishing Rocks from Minerals – Student are introduced to the distinction between a rock and a mineral. They create mineral crystals of sodium chloride. The cubic structure of these salt crystals is also the same as that seen on halite.

**Lesson 3:** The Shapes of Minerals Crystals – Students will be engaged in an activity folding paper templates to make a model of crystalline shapes. This connects to the crystals to geometry and topology. We might work also on crystallography.

**Lesson 4:** Formation of Igneous Rocks – Students will conduct an experiment that simulates how igneous rocks form when molten material (magma) cools and solidifies. Students will use phenyl salicylate to create a molten material, then observe the formation of crystals at two different temperature.

**Lesson 5:** Formation of Sedimentary Rocks – Students investigate sediments of different grain sizes-sand, silt and clay. Learning the layering process and how sedimentary rock was formed.

**Lesson 6:** Formation of Metamorphic Rocks – Students will model the process that produces the intense heat and pressure which create metamorphic rocks. Students create clay models from listening to a rock formation story, which establishes the conditions for the changes that need to take place for metamorphic rocks to form.

**Lesson 7:** Recycling the Earth's Crust – Students will continue to use clay to actively model the rock cycle – how one rock is transformed over time into another. Students will be learning about the modern theory of plate tectonics.

**Lesson 8:** Classifying Rocks and Minerals – Students use the knowledge that they have gained to draw conclusions about samples of rocks. They will classify all samples as to whether or not they are rocks or minerals, and if they are rock, then if they are igneous, sedimentary, or metamorphic. Students will create poem-riddles for each rock and the class will try to figure them out.