



Classroom Teacher Preparation

Earth Science 9: The Rock Cycle

Please use the following to prepare for the next SfS lesson.

Description:

This lesson provides an overview of the Rock Cycle, highlighting common rocks and the processes that form them. Students will identify a set of rocks using a dichotomous key. They will then classify the rocks as igneous, sedimentary, or metamorphic based on additional information and place their assigned rock on a rock cycle map. The class will review the rocks through mini-presentations given by each group.

Lesson Objectives – SWBAT (“Students Will Be Able To...”):

3rd-5th

- Identify the characteristics of rocks, such as color, crystal size, and the presence or absence of layers, that geologists use to determine the identity of a rock
- Explain how sedimentary, igneous, and metamorphic rocks form

Disciplinary Core Idea (DCI):

ESS2 Earth’s Systems – ESS2.A Earth’s Materials and Systems

- (3rd-5th) Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around.

Science & Engineering Practice (SEP)

- (3rd-5th) *Constructing Explanations* – Identify the evidence that supports particular points in an explanation.
- (3rd-5th) *Obtaining, Evaluating, and Communicating Information* – Read and comprehend grade-appropriate complex texts and/or other reliable media to summarize and obtain scientific and technical ideas and describe how they are supported by evidence.

Crosscutting Concept (CCC)

- (3rd-5th) *Patterns* – Patterns can be used as evidence to support an explanation
- (3rd-5th) *Structure and Function* – Different materials have different substructures, which can sometimes be observed

Preparation:

This module provides a broad overview of rock identification, the three rock types (igneous, sedimentary, and metamorphic), and the rock cycle.

Room Set Up for Activities:

Students will work in pairs or trios at their desks, ten groups max.

Safety:

Care should be taken when handling the rock samples to prevent breakage.



Related Modules:

This lesson may be taught as part of a sequence or group of related modules on **Earth Science**, particularly Geology. Other modules in this sequence include:

Earth Science 2: Introduction to Tectonics - Students work in pairs to construct a puzzle model of Pangea. They then analyze a modern-day map of the tectonic plates, model the plate boundaries using putty and tiles, and then return to the opening question about mountain formation.

Earth Science 10: Fossils - This module briefly explores the various time periods known to humans and provides students the opportunity to excavate fossils from rock, reconstruct, and analyze a fossilized skeleton for clues to the type of creature that existed during the late Jurassic period.

Earth Science 14: Soil Properties - This lesson introduces students to the characteristics and formation of soil. Students will examine the color, texture, and field capacity of soil, and discuss the importance of soil for plant life.

Engineering 7: Earthquake Resistant Buildings - This module focuses on model testing of various earthquake-resistant designs. Students will build different block configurations and test them using shake tables to determine which model provides the best protection in a simulated earthquake.

For other module sequences and groups, look here: www.sciencefromscientists.org/sequences

Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state: www.sciencefromscientists.org/standards/

Lessons are matched to both national NGSS and local state standards.

After Our Visit:

Extend this lesson by modeling the rock cycle with crayons.

Access this Extension activity by visiting the Classroom Post found on our website at sciencefromscientists.org/cohorts. Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at sciencefromscientists.org/open-response-questions. They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

Additional Resources:

For further resources and activities, we recommend these webpages by the Mineralogical Society of America:

- Detailed information, and an extensive dichotomous key that will identify most common rocks: http://www.minsocam.org/msa/collectors_corner/id/rock_key.htm
- Their page for kids: <http://www.mineralogy4kids.org/>