

# Rushmore Rocks!

## Lesson Plan Description:

### Objectives:

1. Students will learn the three types of rocks, how they are formed, and their common attributes.
2. Students will use evidence and observations to identify the three types of rocks.
3. Students will think critically, communicate opinion and ideas, and use teamwork to record their observations in a small group setting.

**Standards:** <https://doe.sd.gov/contentstandards/>

### 4th Grade

4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (SEP: 6; DCI: ESS1.C; CCC: Patterns)

### 5th Grade

5-PS1-3 Make observations and measurements to identify materials based on their properties. (SEP: 3; DCI: PS1.A; CCC: Scale/Prop.)

## Materials List

- Two to three rocks per student (teacher provided or student collected)
- Rock sorting worksheet
- Rushmore Rocks! PowerPoint
- Optional:* Method of measuring rocks that you prefer or have on hand (string and ruler, scales, water displacement)

## Lesson Plan

### Phase One

In preparation for this lesson, provide or have students collect two to three rocks per person. Rocks should be able to be held in one hand, with an emphasis on diversity. Encourage students to find different, unique rocks.

Start by passing around a teacher provided rock, giving each student a chance to hold it and make their own observations. Write these observations on the board as it is passed around. This will help students begin to think of ways to classify rocks in the next stage of phase one.

In small groups of 3-4 students, students will sort their rocks based on things they can observe by sight or touch. Examples include color, pattern, or texture etc. This will be an open sort, meaning students will create their own categories, recording their observations and ideas using the worksheet provided.

*Optional categorization by measurement:* Students will then compare and categorize the same rocks by using a method of measuring. Examples include a string and ruler to measure the longest part of each rock, using a scale to measure the weight of the rock, or dropping a rock in a beaker of water to find its volume. Use the method you prefer and have materials for. Students can sort

rocks individually or in groups (shortest to longest; rocks under one inch, between one and two inches, over two inches). Use the back of page one of the worksheets to record these observations.

Ask student groups how they sorted their rocks as well as their observations with the class. Ask students **“how did you sort your rocks? Why do you think rocks can be so different from one another? Why is there so much diversity?”**

### **Phase Two**

How rocks are made can be a big answer to these questions. There are three types of rocks: igneous, metamorphic, and sedimentary. Each type is formed from a different process. Show the “Rushmore Rocks!” PowerPoint to learn about how these rocks form and examples found in the Black Hills of South Dakota. The PowerPoint starts with a YouTube video from Learning Junction that introduces the rock cycle. You must be connected to the internet for it to play within the presentation- if you have difficulties, use the link in the source list below and continue the PowerPoint when ready.

### **Phase Three / Post Assessment:**

With the last slide of the PowerPoint being shown, have the student groups sort their rocks once more into the three different types: sedimentary, igneous, and metamorphic. Encourage students to use their best guess, there may be characteristics that fit multiple rock types. Students will again record their observations and answers using the worksheet provided. Ask students **“how did this sort compare to your first one?”**

### **Sources:**

<https://www.nps.gov/subjects/geology/rocks.htm>

<https://www.nps.gov/moru/learn/nature/geologicactivity.htm>

<https://www.flickr.com/photos/donahos/10297131796/>

[https://commons.wikimedia.org/wiki/File:Precambrian\\_sea.JPG](https://commons.wikimedia.org/wiki/File:Precambrian_sea.JPG)

[Coal Image](#)

[Chalk Image](#)

[Sandstone Image](#)

[Granite Image](#)

[Basalt Image](#)

[Schist Image](#)

[Gneiss Image](#)

[Marble Image](#)

[Learning Junction Rock Cycle YouTube Video](#)