

Name: _____

Period: _____

Date: _____



Activity: Analyzing geologic visuals

Question: How can we visually represent the rocks of a given location?

Materials:

- [Bedrock Map of Acadia National Park](#)
- [Cross section of Acadia National Park](#)
- Colored pencils
- Ruler

Background:

Representing rocks visually helps geologists study the Earth. They can show the shape of the Earth's surface, the types of rocks and structures that are at the surface, which are hidden underneath the surface, and, most importantly, the geologic history of a given location.

One type of visual aid is a **bedrock map**, which shows what kind of rock would be found below the soil. Geologists create these maps by observing the type of rock exposed at the surface and recording its location. Rock units are illustrated on the maps by color to indicate where they are exposed.

Another important visual is a **cross-section**, which provides a vertical, two-dimensional slice below the Earth's surface and shows the different layers of rocks. Most cross-sections cannot be observed directly as they show the types of rocks that can be deep below the surface; instead, geologists must observe deep canyons or high mountains where layers of rocks have been exposed, then make an inference on what is underneath the ground.

Both maps provide important information about ground-water quality; predicting earthquakes, volcano, and landslide hazards; and the location of different mineral resources.

Part 1 - Bedrock Map:

1. Take a look at the bedrock map of Mount Desert Island, which is home to Acadia National Park. Notice how the map has been labeled with letter abbreviations - these letters designate different types of rocks.
2. Color in the rock units on your map using the key below. This is a bit like a “color by numbers” activity, so look carefully for the boundaries between the different rocks.
 - a. S- Schist: Gray
 - b. G - Granite: Pink
 - c. B - Gabbro: Green
 - d. V - Tuff (a rock made from volcanic ash): Yellow
 - e. M - Mudstone: Brown
 - f. Sz - Shatter zone: Red
 - g. W - Water: Blue

Analysis:

1. Which types of rocks are most common in the bedrock of Mount Desert Island? What does that tell you about the geologic history of the area? Think about if those rocks are igneous, sedimentary, or metamorphic AND how that rock would have formed. (hint: use your rock classification [guide](#) from the previous lesson)

2. Where are most of the sedimentary rocks located in Mount Desert Island? Why do you think they can be found here?

- Schist is a metamorphic rock that forms when sedimentary rock such as mudstone or shale is subject to intense heat and pressure for millions of years. What can you infer about the island's geologic history by the presence of schist at the surface?

Part 2 - Cross Section:

- Now look at the cross-section of Mount Desert Island. Each rock layer has been labeled with similar abbreviations as the bedrock maps; that's because they are made up of the same types of rock! Instead of which rocks are at the surface, this shows the rocks deep beneath our feet. This cross-section runs from the Northwest to the left to the Southeast to the right.
- Color in the rock units on the cross-section using the key below. This is a bit like a "color by numbers" activity, so look carefully for the boundaries between the different rocks.
 - S- Schist: Gray
 - g - Granite: Pink
 - L - Gabbro: Green
 - V - Tuff (a rock made from volcanic ash): Yellow
 - m- Mudstone: Brown
 - SZ - Shatter zone: Red
 - Note: There are several different types of granites shown in this cross-section. Feel free to color them all slightly different.

Analysis:

- Which rock layer do you think is the oldest? Explain your answer by citing evidence from the cross-section.

2. Igneous rocks can be either intrusive, when magma deep inside the Earth cools and crystallizes, or extrusive, when magma makes it to the surface, usually via an erupting volcano. Do you think the granite found in Acadia National Park would be considered intrusive or extrusive? Explain your answer by citing evidence from the cross-section.

3. Where do you think the Atlantic Ocean is located on this map - to the Northwest (left) or the Southeast (right)? Explain your answer by citing evidence from the cross-section.
