

Observing Rocks

5th Grade

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Benchmark:

SLC 12: Students will classify rocks by their characteristics.

Objectives:

Students will use the processes of inquiry to discover properties of earth materials.

Materials:

- Rocks
- Cup of water
- Paper towels
- Hand lens
- Color crayons or markers
- Pencils
- Observing rocks worksheets
- Communicating about rocks worksheets

Initial Demonstration/Initial Observation:

Hold a rock in your hands and have the students play “20 Questions” to figure out what you are holding. After they have determined that you are holding a rock ask them to tell you how they were able to narrow their guess down. Explain that in much the same way scientists have to answer questions about rocks to determine what properties they have and then to classify them according to these properties. Ask the class for different properties of the rock that you are holding and list these on the board.

Target Observations:

- Hard, soft, smooth, rough, large, small, shiny, dull, color etc.

Target Model:

-Asking questions is a scientific way to classify and determine properties of rocks

-Many different rocks have different properties

Procedure:

Give each student a rock and a hand lens to observe its properties. List these on the worksheet. Have each student trace their rock on the grid space and color in on their worksheet the shapes and sizes of the minerals that they observe. Have each student dip their rock into a cup of water and place it on paper towels in front of them. The students should trace and color the rock again. Ask them to list the differences in the appearance of the dry rock vs. the wet rock on their worksheet. After drying off the rocks, have the students describe the texture of their rock. Finally have all the students bring their rocks to the front of the room and place them in a big pile. Each person will switch sheets with their neighbor and, using the observations of their classmate, must find the correct rock.

Target Observations:

- The rock was made of a couple of different minerals
- Some properties of the rock, such as color and texture, changed when the water was put in water
- I found my partner's rock by using his/her observations

Target Model:

-Asking questions is a scientific way to classify and determine properties of rocks

-Rocks can be identified by using lots of different observations

-Many different rocks have different properties

-Rocks are made of many different minerals

Procedure:

The students may either use the same rock as before or pick a new rock for the next activity. They will have to fill in the Communicating about Rocks worksheet, in order to “tell geologists all around the world about their unique rock.” Properties including color, texture, fossils and luster should be listed, along with any other special features.

Name: _____ Date: _____

OBSERVING ROCKS

1. Observe the rock with a hand lens. List the colors that you see. _____

2. Trace your rock on the graph grid. Color in the shapes and sizes of the particles you observe.



3. Dip your rock in water and observe again with a hand lens. Trace and color again.



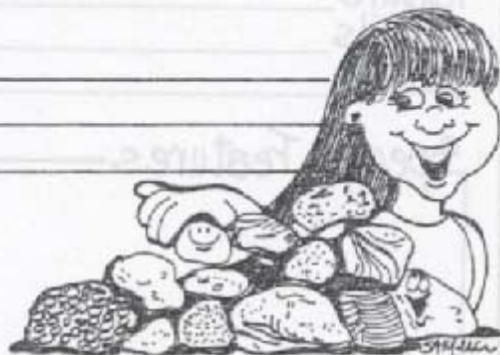
4. List the differences you observed between the dry and the wet rock.

DRY ROCK

WET ROCK

5. Describe the texture. _____

6. When your observations are complete, place your rock in a pile with the other rocks. Find it using your drawings and descriptions.



7. What helped you identify your rock? _____

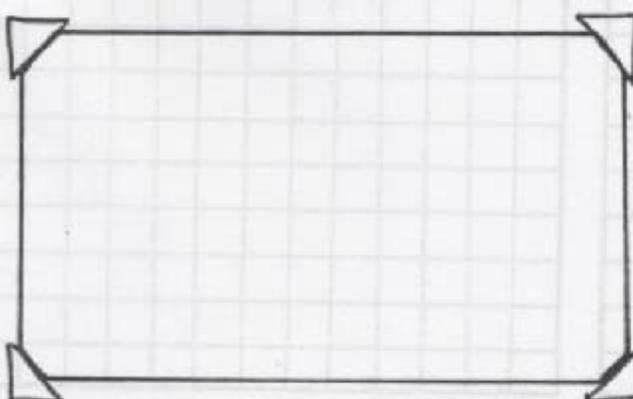
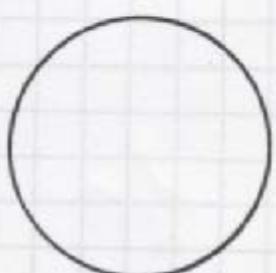
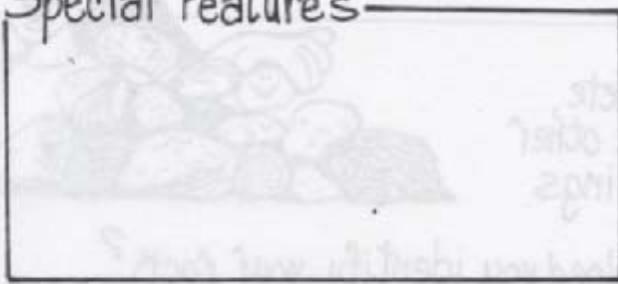
Name: _____ Date: _____

Communicating about

ROCKS



You have just discovered a new rock, unknown to the rest of the scientific world. Study your specimen. Make notes of its properties. Prepare a poster session to teach other geologists about your special rock.

Name of Rock _____	
	
Photograph	Magnified view of crystals
Observable Properties	Description
Color(s) _____	_____
Texture _____	_____
Fossils _____	_____
Luster _____	_____
Special Features _____	_____
	_____

Rocks - Making Connections

The Processes of Inquiry / Content Standards

Earth and Space Science Standards:

Levels K-4

- Properties of earth materials

Levels 5-8

- Structure of the earth system

In the following activities, students use the processes of inquiry to discover properties of earth materials and structure of the earth system.



Observing Rocks

Materials: rock, plastic cup of water, hand lens, color crayons, pencils, or markers

Directions: Pick up a rock and put it in your hand. Then tell students that you have something in your hand and invite them to guess what it is by asking questions that can be answered with a "yes" or "no." After students have guessed that you are holding a rock, ask them to describe rocks they have observed. Point out differences in the descriptions; i.e., rocks can be dark, light, smooth, rough, large, small, shiny, dull, etc. Then have students observe and draw their rock dry and wet. Then ask them to compare the appearance of the rock dry and wet. Finally, have them describe the texture of their rock.

Connecting Content: Observing a rock can give clues to its identity. Rocks are made of minerals so color can be misleading because the same mineral can come in many colors. But looking at luster (the way minerals in the rock reflect light) can be more useful. The minerals can be metallic (shiny like metal), vitreous (glistening like broken glass), or dull. A rock can be translucent (you can see light through it, or completely opaque (you can't see anything at all through it). Examining a rock with a hand lens is the best way to see the mineral content.

Communicating about Rocks

Materials: rock, hand lens, reference book on rocks

 **Directions :** Place a set of rocks where all group members can observe the rocks. Then have each group member pick a rock to observe and describe. Tell students not to touch the rock or indicate which one they have selected. The other members of the group should try to guess which rock each person is describing. Then ask students to prepare a poster session to teach others about their rock.

Connecting Content : Minerals are the building blocks of rocks. Without rocks to supply us with minerals, we would not have bricks for building, metals for machines, oil to burn, or gems for jewelry. Only a few of the more than one hundred elements make up almost all of the compounds called minerals. Most rocks are composed of only eight of the chemical elements (oxygen, silicon, aluminum, iron, calcium, magnesium, sodium, and potassium). Silicon and oxygen combine in silicates which make up 75% of the Earth's rocks. Most minerals are crystalline; that is, the atoms that make up the crystals are arranged in an orderly fashion.

The Earth's crust is made from: 64.7% dark igneous (42.7% basalt) and light igneous (22.0% granite); 27.4% metamorphic (21.4% gneiss, 5.1% schist, and 0.9% marble); and 7.9% sedimentary (4.2% shale, 2.0% limestone, and 1.7% sandstone).

Classifying with Rocks

Materials: 8 rocks, color crayons, pencils, or markers

Directions : Explain how to use a multistage classification system to organize 8 rocks. Begin by asking students to divide the rocks into two groups; i.e., dark and light rocks. *Note:* Pick a property so that you have two groups of four rocks. Then ask students to divided each of these groups into two groups; i.e., smooth and rough. *Note:* Pick a property so that you have four groups of two rocks. Finally, ask students to divide the groups one more time; i.e., shiny an dull. *Note:* Each rock should be by itself at this stage. Remind students to think about the properties used to sort the rocks so that each rock ends up in its own box at the bottom of the page.