JELL-O™ ROCKS

Science Concept:

Most rocks are made of different substances.

Objectives:

The student will:

- describe a variety of rocks;
- observe and communicate about rocks; and
- take a photograph of a rock and describe its substances.

GLEs Addressed:

Science

[3] SD1.1 The student demonstrates an understanding of geochemical cycles by recognizing that most rocks are composed of combinations of different substances.

[3] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.

Writing

[3] W1.2.2 The student writes for a variety of purposes and audiences by using expressive language when responding to literature or producing text (e.g., journals, pictures supported by text or poetry).

Vocabulary:

fossil – any remains, impression, or trace of a living thing of a former geologic age, as a skeleton, footprint, etc.

pebbles – loose particles of rock or mineral (sediment) that range in size from 2-64 millimeters in diameter; pebbles are the smallest type of gravel

rock – rocks are made of different kinds of minerals, or broken pieces of crystals, or broken pieces of rocks. Some rocks are made of the shells of once-living animals, or of compressed pieces of plants.

silt – loose particles of rock or mineral (sediment); Silt is finer than sand, but coarser than clay

substance – that of which a thing consists; physical matter or material; a kind of matter of definite chemical composition

Materials:

- Piece of granite
- Safety goggles
- Heat-proof gloves
- Tongs
- Gas torch
- Pan of cold water
- Thick cloth
- Hammer
- A variety of rocks that can be broken into at least three or more substances, which may include silt, sand, shells, pebbles, fossils
- Glue sticks (one per student)
- Colored pencils, markers and/or crayons
- Chart paper
- Rocks (20-25 rocks made of at least three or more substances)
- Hand lenses (one per student)

- Clear plastic cups (one per student)
- Marker (permanent ink)
- Plastic spoons
- Ruler
- Jell-O™, light color
- Water, boiling and cold, for preparing Jell-O™
- Container for preparing Jell-O™
- A variety of chunky food items, such as raisins, nuts, candies, etc.
- Camera
- Science journal

Resources:

Farnden, J. (1992). *How the Earth works*. Reader's Digest Association.
Stille, Darlene (2005) Erosion: How Land Forms, How It Changes

Activity Preparation:

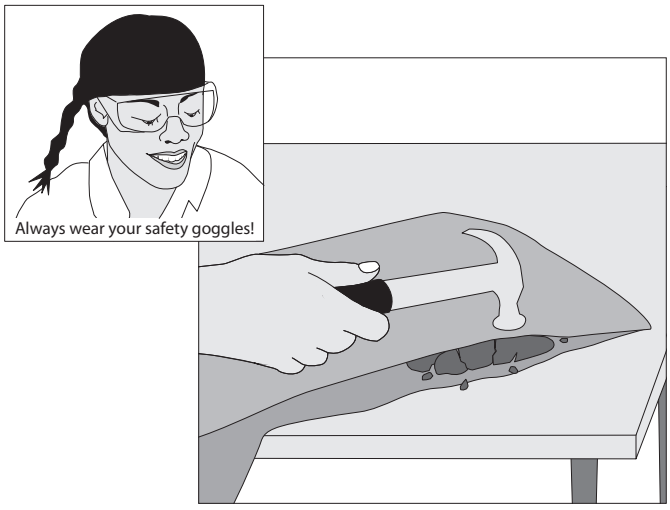
Mark a line two inches from the bottom of each plastic cup. Prepare Jell-O™ immediately before class. Place food items in small bowls with a spoon in each. Prepare class chart. (See example graph, page 4.)

Activity Procedure:

Please refer to the assessment task and scoring rubric located at the end of these instructions. Discuss the assessment descriptors with the class before teaching this lesson.

Gear Up
Process Skill: observing

1. Ask students how they can determine what substances rocks are made of. Define "substance" if necessary. Record student responses on the board; list student initials with their response.
2. Ask students to gather at a safe distance to observe.
3. Put on safety goggles and heatproof gloves. Using tongs, heat a piece of granite with a gas flame or burner. Once the rock is very hot, plunge it into a pan of cold water. Repeat this step several times.
4. Wrap the rock in a thick cloth, place it on a hard surface, and hit it with a hammer to break it up. Dump the fragments onto a clean surface.



5. Distribute hand lenses to students and ask them to observe the different types of materials in the rock fragments.
6. Repeat Activity Procedure #2-5 with several other types of rocks.
7. Review vocabulary words and definitions with students.

Explore

Process Skills: observing, describing, and communicating

8. Tell students they will make a "rock" composed of different substances, held together by Jell-O™. Divide students into groups. Distribute a plastic cup (see Activity Preparation) to each student. Distribute bowls and spoons of food items, such as raisins, nuts, etc. to each group. Allow students to put the food items in their cups, in any arrangement they choose.
9. The teacher will pour Jell-O™ over the materials to the 2-inch line. Ask students to record the substances they placed in their cup on the class chart by placing an "x" in the box of the substances used.
10. Place individual cups of Jello-O™ in a refrigerator and let it set up overnight.

Generalize

Process Skills: describing and communicating

11. After each "Jell-O™ rock" is solid, distribute the "rocks" to students and ask the following questions:
    a. What do you observe about your Jell-O™ rock?
    b. What did you see that you weren't expecting?
    c. What do the Jell-O™ rocks have in common?
    d. What different substances do you see in each Jell-O™ rock?
    e. How are the Jell-O™ rocks and the rocks we broke with the hammer the same? Different?

Apply

Process Skills: communicating, describing, and making generalizations

12. Generate a class list of other things that are made up of substances, parts, and/or materials. Document each student's input by recording his or her initials on the chart.

CLASS CHART

Substance

	Mini Marshmallows	Peanuts	Diced Apples	Pineapple Chunks	Raisins	Diced Celery	Gummi Bears	Mandarin Orange Slices	Chocolate Chips	Reese's Pieces	M&M's (plain)	M&M's (peanut)	Malted Milk Balls	Coconut
Name:														

JELL-O™ ROCKS

RUBRIC

Assessment Task:

Choose a rock from the box provided and carefully examine the rock using a hand lens. In your journal, draw a picture of the rock and label at least two substances in the rock. Next, tell at least one other student about two substances in the rock. Finally, take a photograph of the rock, glue the picture in your journal and write at least two sentences describing your rock.

Rubric:

Objective	GLE	Below Proficient	Proficient	Above Proficient
The student describes a variety of rocks.	[3] SD1.1	The student does not label a drawing of a rock, identifying two substances, which may include silt, sand, shells, pebbles, or fossils.	The student labels a picture of a rock, identifying two substances, which may include silt, sand, shells, pebbles, or fossils.	The student labels a picture of a rock, identifying three or more substances, which may include silt, sand, shells, pebbles, or fossils.
The student observes and communicates about rocks.	[3] SA1.1	The student observes a rock but does not tell another student about two substances in the rock.	The student observes a rock and tells another student about two substances in the rock.	The student observes a rock and tells two or more students about two substances in the rock.
The student takes a photograph of a rock and describes its substances.	[3] W1.2.2	The student takes a photograph of a rock and writes fewer than two sentences describing the substances in the rock.	The student takes a photograph of a rock and writes two sentences describing the substances in the rock.	The student takes a photograph of a rock and writes three or more sentences describing the substances in the rock.