

If I am a volcanologist...
I study volcanoes, magma, and lava.

Experiment 2

Lava!

You will need the rock collection (A), magnifying lens (I), 6 foam cups (L), digital balance (M), water, and paper towels.

Things To Know:

Magma is liquid rock inside of a volcano. Lava is liquid rock that flows out of a volcano. Lava is a red-hot mixture of gases and molten rocks. When cooling after the eruption, lava forms a volcanic rock called scoria. Scoria is an igneous rock with many large holes or pores. The holes or pores form in the lava when gases escape from the molten rock as it cools.



What To Do:

1. Do you think all rocks have pores?
2. To discover the answer to the question, turn on the digital balance and follow the procedure on the next page...

- The top of the digital balance can be used as a weighing tray. Place the weighing tray on the stainless steel platform and press the "Tare" button to zero the balance.



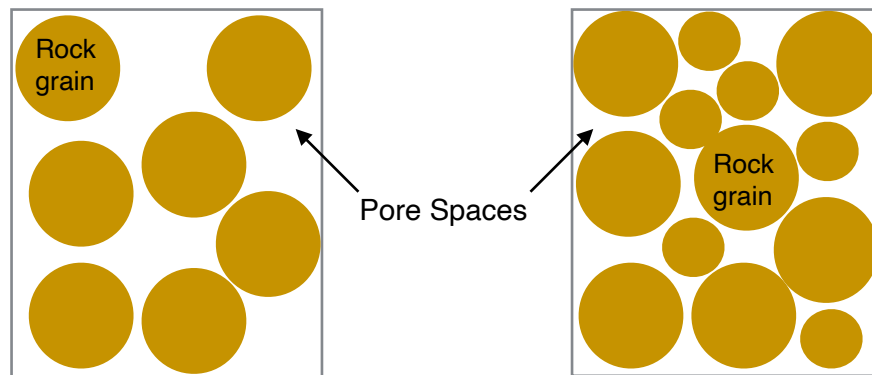
- Add one of the rocks to the tray.
- Write the rock identity (use the dichotomous key in Experiment 1) and the "Day 1" mass of the rock on the student sheet.
- Repeat steps 3-4 until you have identified and recorded the "Day 1" mass of each rock.
- Fill each foam cup $\frac{3}{4}$ full with tap water. Place one rock into each of the cups so that the rock is completely covered by water.
- Use the magnifying lens to observe the rocks for about 5 minutes and record your observations on the student sheet.
- Based on your observations, predict which rocks are most and least porous.
- Let set overnight.** Tomorrow you will take measurements to check your predictions.
- On the following day, remove each rock from the water and pat dry. **Save the foam cups for later experiments.**
- Measure the mass of each rock. Write the "Day 2" mass of the rock on the student sheet.

13. Calculate the change in mass and the percent change in rock mass.

$$\text{Change in mass} = \text{Day 2 mass} - \text{Day 1 mass}$$

$$\text{Percent change in rock mass} = \text{Change in mass} \div \text{Day 1 mass} \times 100$$

Porosity is a word used to describe a characteristic of rocks. Even though rocks seem to be solid, some rocks have a tremendous number of tiny pores inside them. When porous rocks are placed in water, water seeps into the pores, replacing the air. Tiny air bubbles come out of the rock. Some types of rocks contain more pores than other rocks. They are said to have greater porosity. Rocks with a greater porosity have a higher percent change in rock mass. Use the percent change in mass to rank the rocks from lowest to highest porosity.



Rock with high porosity -
Large spaces

Rock with low porosity -
Small spaces

Note: Porosity is more accurately defined by volume rather than mass. However, 1 gram of pure water has a volume of 1 mL. Therefore, if a rock gained 1 gram of mass then 1 mL of water entered the pores of the rock.

Name _____

Date _____

Experiment 2: Lava

Rock Identification	Day 1 Mass (g)	Observations of the Rock in Water	Day 2 Mass (g)	Change in Mass (g)	% Change in Rock Mass

Use the percent change in rock mass to rank the rocks from lowest to highest porosity. Write the names of the rocks on the lines below

