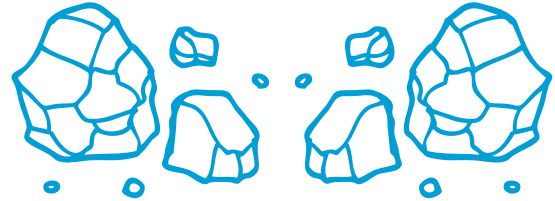


## ACTIVITY 3: TESTING ROCK PROPERTIES

The purpose of this activity is to test the properties of various rocks in order to compare and classify them.



### Materials

- A variety of rock samples of different color, size, shape, luster, texture, density
- Beakers (large enough to fit each rock)
- Water
- A ruler
- An electronic balance
- Large nails or paperclips
- Mohs scale of mineral hardness chart (optional)
- Vinegar
- Notebook or loose leaf paper

First, inform students that they will be working with a partner to investigate the properties of various rocks in order to categorize and compare them. Have students meet up with their partner and gather all their materials at their workspace.

Next, explain that they will be doing several tests, including hardness, density, and the acid test. They will need a way to keep track of all the data they're going to collect and keep everything organized for the results of all their rock samples. You might give them time to devise a way to record their data in each pair or have a whole class discussion to arrive at some consensus about how to keep track of all the data. It's important to emphasize that there could be multiple ways of organizing the data, but the key thing is that you can keep everything straight.

Then, give students time to perform each test on all their rock samples and to record their results for each test.

Last, have groups summarize and discuss their findings in a poster presentation.

### Density Test Procedure

1. Measure the mass (in grams) of each rock sample
2. Determine the volume (in mL) of each rock sample by water displacement in the beaker by measuring the difference in volume of water before and after the rock is placed in the beaker
3. Calculate the density (in g/mL) of each rock using the measured values above

### Hardness Test Procedure

- Take a nail or paperclip and try to scratch the surface of each rock
- Observe the results as to whether there is a scratch on the rock or not
- Rocks that get scratched by the nail/paperclip are softer than the metal of the nail/paperclip, while those that resist scratching are harder.
- Record your results as harder/softer than the nail/paperclip
- Similarly, you can take one rock and try to scratch another rock with it. The same relative hardness principle applies: if one object can scratch the other, it is harder; if it cannot, it is softer
- Rank your rocks in terms of hardness

### Carbonate Test Procedure

- Place a small amount of vinegar on the surface of each rock
- Observe any fizzing or bubbling and record the result

*Note: Carbonate minerals (like calcite) will react with the acid, producing carbon dioxide gas, which causes the fizzing. No fizzing, no carbonate. This test is specific to detecting the presence of carbonate minerals in a rock sample.*