

Mohs Hardness Test

5th Grade

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References: (Checked 1/2005)

- <http://gk-12.osu.edu/earth.html> -- “Rocks and Minerals”
- <http://gk-12.osu.edu/earth.html> -- “Mohs Hardness Test”

Benchmarks:

SLC 12: Identify characteristics and/or patterns in rocks and soil.
Benchmark A: Student will classify rocks by their characteristics.

Objectives:

Students will further classify their rocks according to Mohs hardness test.

Materials:

- Mohs Hardness Scale overhead
- “Like a Rock” worksheet
- Rocks (1 per student)
- Vinegar
- Pennies
- Butter Knives
- Steel Nails
- Microscope slides
- Magnets
- Magnifying Glasses

Initial Demonstration:

Display at the front of the classroom an example of minerals from each extreme of the hardness scale. Have students look at them and feel them, then give their observations.

Target Observations:

- Minerals have different textures.

Initial Model:

- Minerals can be classified by their texture.

Procedure:

Have students find the rock they used the previous day, as well as get out their “Like a Rock!” handouts. Discuss with students that another way to classify rocks is by their hardness. Put up the Mohs Hardness Test overhead and describe to the students how the test works. Then, hand out the associated materials (pennies, butter knives, nails, magnets). Walk around the room to carefully monitor the students as they perform their tests. (Note: I would not pass out the glass slides, as they may not be necessary and they are easily breakable and expensive to replace.)

Given time, the students can continue on the vinegar and magnet tests. (The vinegar test is a substitute for the acid test that is often used to identify whether a rock is sedimentary, igneous, or metamorphic.)

What did they find? Was the test easy to follow? Give some examples of minerals with various levels of hardness. Discuss how scientists use these tests for examining the history of the earth and for creating things we use everyday.

Target Observations:

- Some of rocks reacted with the vinegar.
- A few rocks were attracted to the magnets.
- The rocks had many different levels of hardness.

Target Revised Model:

- Another way to classify rocks, in addition to the way they were formed, is to group them by how hard they are.
- Another way is to see if they are magnetic or not.
- Yet another way is whether they react with vinegar (acid) or not.

Summary:

Students have another method of classifying rocks and minerals.

Like a Rock!

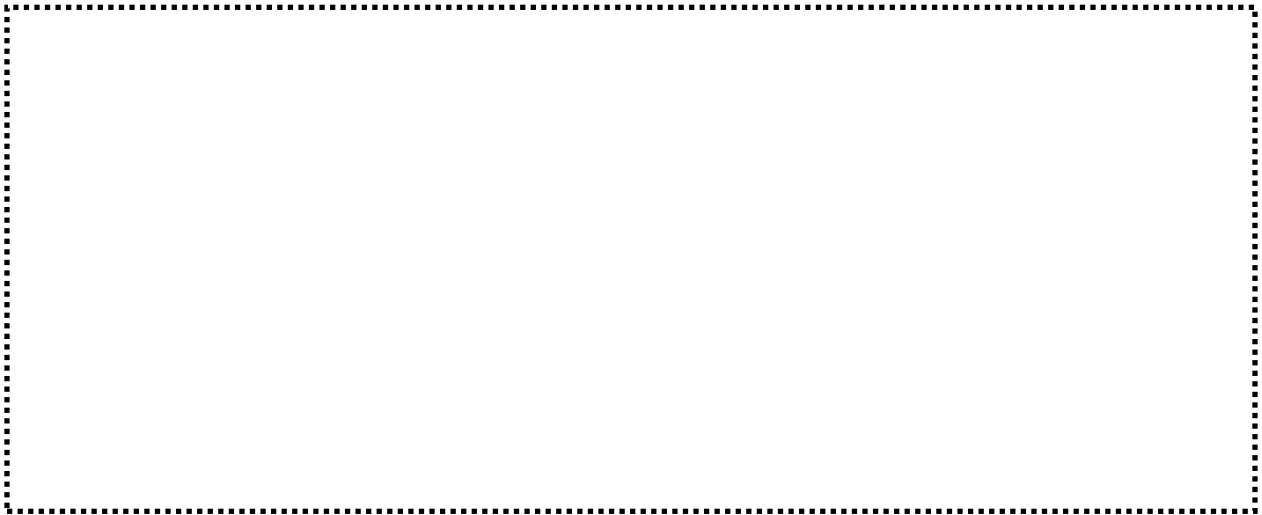
Test 1: Description

Look at your rock carefully. Look at the color, the crystals, and any other features. Draw your rock as detailed as you can below.



Test 2: Magnification

Use the hand lenses to look at your rock. Draw a detailed view of your rock under magnification.

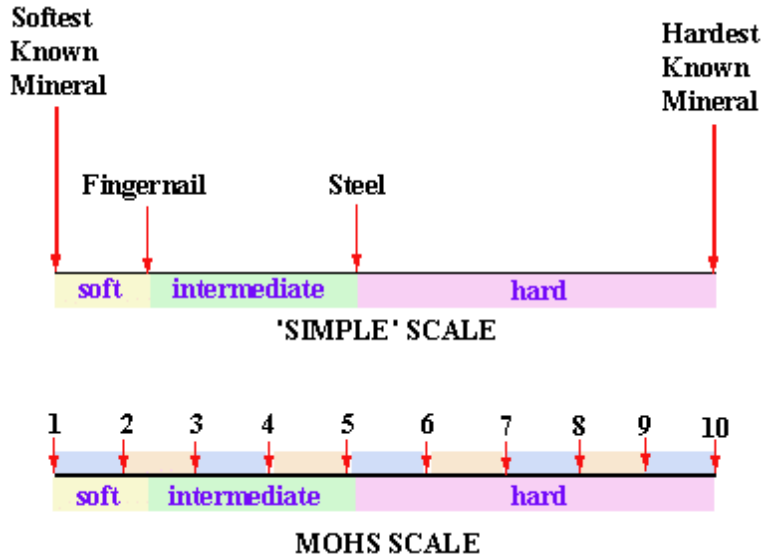


Test 3: Identification

Use the rock identification key to figure out if your rock is igneous, metamorphic, or sedimentary.

Rock Type: _____

Test 4: Hardness



Here are the minerals Mohs used to determine his hardness scale:

Diamond	10
Corundum	9
Topaz	8
Quartz	7
Orthoclase (Feldspar)	6

Aptite	5
Fluorite	4
Calcite	3
Gypsum	2
Talc	1

Find out how hard your rock is by trying these tests and seeing where it falls on the scale.

If your rock...	Give it a hardness number...
Can be rubbed off on the fingers	1
Can be scratched with a fingernail	2
Can be scratched with a penny	3
Can be scratched easily with a butter knife	4
Is hard to scratch with a butter knife	5
Can be scratched with a steel nail but not glass	6
Can be used to scratch glass	7
Too hard to be tested in this scale	8-10

Scale Number: _____

Which mineral from Mohs scale does your rock match up with?

Test 5: The vinegar test

Put your rock in a cup of vinegar. Let it sit for a while. Describe what happened.

Test 6: The magnet test

Use the magnet to test if your rock contains magnetic material. Describe what happened.
