Rock Classification

TEAM(S)

REMOTE team activity

TIME ALLOWANCE

PRE LAB: 10 minutes
LAB: 40 - 45 minutes
POST LAB: 10 minutes

MATERIALS

rock samples
magnet
plastic cup
ceramic tile samples or scraps
vinegar
nail
penny

PREPARATION

1. Collect supplies.
2. Use rock kits or have students bring rock samples.
3. Collect resource books.
4. Copy DATA LOG.

KEY CONCEPTS AND STUDENT INFORMATION

Rocks can be classified into types by testing for certain characteristics. These tests include hardness, streak or color, acid, and magnetism.

Three types of rocks

1. **igneous** – hard rocks formed from cooled molten material. Often appear to have crystals and are never in layers.

2. **sedimentary** – rocks formed from sediments or something that has been deposited by water. Have a layered appearance, feel gritty, and break easily.

3. **metamorphic** – an igneous or sedimentary rock that has been changed by pressure, heat, water, or contact with hot lava. Very hard, more crystal than igneous. Crystals of each mineral are lined up in bands or layers.

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Rock Classification

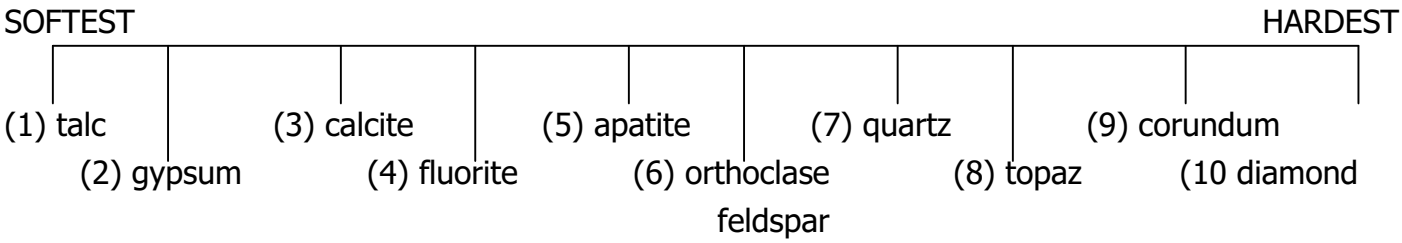
TEACHER BACKGROUND INFORMATION

The label "rock" is often used rather loosely to mean either rock or mineral. Actually, rocks are made of minerals. Rocks can be divided into three basic classifications: igneous, sedimentary, and metamorphic. The following tests are used by experts to classify rocks:

Hardness Test – Minerals are scaled in range from 1 to 10, with 1 being softest and 10 hardest. The method of determining hardness is the scratch test. Fingernails have a hardness of 2.5, penny 3.0, nail 5.5, quartz 7. Test the rock by seeing if it will scratch or be scratched by any of the above materials.

TOPIC: ROCK CLASSIFICATION, cont.

HARDNESS SCALE



Color Streak Test – different rocks will make distinctive color marks on porcelain, tile, or paper. Talc, anthracite, and gypsum will make color streaks on paper.

Acid Test – used to identify rocks that contain calcium carbonate. Limestone, marble, calcite, and chalk will fizz in the presence of vinegar.

Magnetism Test – rocks which contain iron such as galena or lodestone (magnetite) will respond to a magnet.

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Rock Classification

Enrichment Activities

1. Start a class rock collection.

2. Check for local resource people who may come in to speak to the class: local "rockhounds," geologist, forester, manager of rock shop, or rock club that may meet in your area.

3. Calculate the density of your rocks using mass and volume. Specific gravity is the number expressing the ratio between the weight of an object and the weight of an equal volume of water.

4. Study crystal structures. Have the students make crystals in class.

5. Study the rock cycle.

Apollo 17 astronaut Harrison Schmitt collects small lunar samples with a rake device. Apollo 17 stayed on the moon three days and returned 257 pounds of lunar rock.

Lab: Rock Classification

Purpose

To identify rocks by using classification tests.

Materials

rock samples	plastic cup	vinegar
penny	magnet	
nail	ceramic tile scraps	

A **geologist**, or person who studies rocks, uses several types of tests to classify a rock sample. You will become a geologist as you practice four of these tests on your rock samples.

Test One: Hardness

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Rock Classification

Rocks are scaled in hardness in a range from 1 to 10, with 1 being the softest and 10 the hardest. Hardness can be tested by trying to scratch a rock with a substance or another rock.

1. Select two rocks from the collection.
2. Try to scratch one with the other. The harder one will scratch the other.
3. Keep the harder rock. Choose another rock from the collection and do the scratch test between the two rocks. Keep testing until you find the hardest rock in your collection.
4. Continue the scratch test until you have all your rocks lined up from hardest to softest.
5. Test the rocks with other objects.

   fingernail = 2.5 penny = 3.0 nail = 5.0
6. Complete your data chart by numbering your samples from softest to hardest. (Softest being #1 and hardest #6)

STUDENT
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TEST TWO: COLOR STREAK TEST

Some rocks make a streak of color when rubbed against a piece of tile or paper. Others do not. The color of the streak is usually different than the color of the rock.

1. Try to make a streak on the tile or paper with the rock.
2. Record the color of the streak on your DATA LOG.

TEST THREE: ACID TEST

Some rocks contain calcium. These rocks will fizz in the presence of acid. You will use vinegar as the acid for this test.

1. Fill your plastic cup half full with vinegar.
2. Put the rock sample in the cup.
3. Observe the rock for fizzing or bubbles. Record the results on your DATA LOG.

TEST FOUR: MAGNETISM

Some rocks contain metals that will attract a magnet.

1. Select one of the rocks and touch it with the magnet.
2. Is the rock attracted by the magnet? Record your results on your DATA LOG.

Use your data chart information and rock keys or book to classify each of your rocks.

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LAB: ROCK CLASSIFICATION

DATA COLLECTION SHEET

SAMPLE NUMBER	HARDNESS TESTING METHOD (scratched by sample___)	NUMBER RANKING HARDNESS TEST	STREAK TEST COLOR	ACID TEST (yes or no)	MAGNETISM TEST (yes or no)	ROCK CLASSIFICA-TION
ONE						
TWO						
THREE						
FOUR						
FIVE						
SIX						

STUDENT Topic: Rock Classification Data Collection Sheet