Observing and Testing Minerals

**Objectives**

• Students observe mineral samples.

• Students compare the hardness of different minerals after testing mineral samples for this property.

**Materials**

*For each pair*

1 magnifier

1 set minerals: calcite, feldspar, graphite, talc, quartz

1 tray

1 *penny,

*Not provided in kit

**Inquiry Focus**

• Compare

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1. **Observe and name minerals.**

   Divide the class into teams of two. Distribute two magnifiers, a penny, and a tray of minerals to each team. Give students a few minutes to observe the minerals with their magnifiers. Review the names of the minerals.

2. **Students scratch minerals with fingernail.**

   Tell students that one way to sort minerals is by how hard they are. A scratch test shows how hard a mineral is compared with another object or mineral. Have students scratch each mineral with a fingernail.

3. **Students compare hardness of minerals and fingernails.**

   Ask: **Which minerals could your fingernail scratch? (talc and graphite)** Point out to students that they can tell that talc and graphite are softer than their fingernails, because their fingernails scratched these two minerals. Talc and graphite are two of the softest minerals. Graphite is used in pencils. It rubs off on paper. Talc is ground up into talcum powder.
4. **Students scratch minerals with a penny.**
   Have students scratch all the minerals with a penny. Ask: *Which minerals could a penny scratch?* (talc, graphite, and calcite) Explain that calcite is harder than their fingernail, but softer than the copper penny.

5. **Students scratch a penny with minerals.**
   Next, have students scratch the penny with each mineral and try to rub the mark off the penny. Ask: *Which minerals scratched the penny (left a mark that could not be wiped off)?* (feldspar and quartz)
   Ask: *How do you know that these minerals are harder than the copper penny?* (the penny was able to scratch them)

**Assessment**
Ask students, *Which is harder: talc or quartz?* (quartz) *Calcite or graphite?* (calcite)

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**Extension**

**The Gold Rush**
Tell students that in the 1840s, many people moved to California because they heard that gold could be found there. Gold is a very valuable mineral. Gold looks a lot like the mineral pyrite, which is less valuable. Because many miners were fooled by the similarity, pyrite came to be known as fool's gold. Some miners knew that pyrite is a lot harder than gold. To test the hardness of a sample, they would bite down on the nugget. Students, however, should never bite any rock or mineral!
Extension

Resources from Our Earth

Rocks and minerals are important resources, providing seasoning (salt), building materials (marble), fuel (coal), and many other products. Copy the following chart on the board. Ask students to list as many uses for rocks and minerals as they can think of. You could also make a bulletin board and have students illustrate the uses of rocks and minerals with magazine pictures or drawings.

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<tr>
<th>Name</th>
<th>Uses</th>
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Rock and Mineral Resources

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Section Assessment

1. Make copies of Student Resource Page 1.3, Section 1 Assessment, and distribute to students. Have students complete the sheet independently.

2. Discuss the answers as a whole-class activity. Make sure students understand how the objects they described are like rocks (they are made of more than one kind of material).