

# ROCKS AND MINERALS:

## What do we do with them? What would we do without them?

Grade 7(may be adapted for grades 6-8)

<b>Stage 1 – Desired Results</b>	
<p><b>Goals</b></p> <p><b>Students learn the importance of rocks and minerals, where they come from, how we obtain them and how we use them to enrich our lives.</b></p> <p><i>Note: This activity uses the 12 rock and mineral specimens provided to teachers attending the 2009 NSTA Regional Conference in Phoenix. Teachers who do not have access to these should plan to obtain six specimens that represent igneous, sedimentary and metamorphic rocks – ideally two of each – and six mineral specimens.</i></p>	
<p><b>Understandings</b></p> <p><i>Students will understand that:</i></p> <ul style="list-style-type: none"> <li>• Everyday things come from mines or are made using equipment made from minerals and rocks that are mined.</li> <li>• Life without products that come from mines would be very different than what we now enjoy.</li> <li>• Rocks and minerals have various properties that make them suitable for a unique purpose.</li> </ul>	<p><b>Essential Questions</b></p> <p><i>Students will consider such questions as:</i></p> <ul style="list-style-type: none"> <li>• What are minerals and why are they important to us?</li> <li>• How do we use minerals in our lives?</li> <li>• What unique properties do rocks and minerals exhibit?</li> <li>• How does a rock that contains a mineral become something we can use?</li> <li>• What would our lives be like if we did not have minerals to use?</li> </ul>
<p><b>Knowledge</b></p> <p><i>Students will know . . .</i></p> <ul style="list-style-type: none"> <li>• 12 minerals and rocks used in the things they use every day.</li> <li>• Rocks and minerals used in everyday things come from mines.</li> <li>• Properties of rocks and minerals lend themselves to unique purposes in our lives.</li> </ul>	<p><b>Skills</b></p> <p><i>Students will be able to . . .</i></p> <ul style="list-style-type: none"> <li>• Identify unique properties of 12 different rock and mineral specimens.</li> <li>• Hypothesize why those properties could make the rock or mineral important to our lives.</li> <li>• Infer the source of the specimen and how it came into our home or workplace.</li> </ul>
<b>Stage 2 – Assessment Evidence</b>	
<p><b>Performance Tasks</b></p> <p><i>Students will . . .</i></p> <ul style="list-style-type: none"> <li>• Complete a graphic organizer (the “Rock and Minerals” worksheet).</li> <li>• Accurately identify specimens.</li> <li>• Describe the application of rocks and minerals to our daily lives in verbal and written communication.</li> </ul>	<p><b>Other Evidence</b></p> <p><i>Students will. . .</i></p> <ul style="list-style-type: none"> <li>• Be on task with questions and related discussion.</li> <li>• Use grade-appropriate geological terms when identifying and discussing minerals.</li> </ul>

## Stage 3 – Action Plan

### Materials Preparation

- Minerals and rocks from kit (12)
- Print one “Rocks and Minerals” worksheet for each student
- Print one “Decoding the Role of Rocks and Minerals in My Life” worksheet for each student
- Print one “uses” chart for each student (See last page.)
- Stop watch or clock with a second hand

### Learning Activities

Assign a number to each specimen prior to class. Label each specimen and create your answer sheet.

Divide the class into twelve small groups. Using the “Rocks and Minerals” worksheet, each student adds information about the sample (color, shape, texture, size, weight and luster) on his/her individual worksheet. (Plan about two minutes per sample.)

Then pass the sample to the next group and work on a new sample OR have student groups rotate together. Continue in this manner until everyone has seen all the samples. Have students use the rock and mineral uses chart to guess the uses of each mineral and rock. Collect all the samples and review correct answers to the uses of each sample. *Option:* Students can cut out the uses and glue them onto the worksheet.

Each student will research additional uses of one or more rock or mineral sample(s) and share that research via one of the following: a one-page summary on “What My Life Would Be Like Without [rock or mineral]”, a “tweet”, a text message, a student blog or an epitaph (assuming the rock or mineral is no longer available to humans).

## Arizona Academic Standards Addressed

### Science

#### Strand 1: Inquiry Process

- Concept 1: Observations, Questions, and Hypotheses
- Concept 2: Scientific Testing (Investigating and Modeling)
- Concept 3: Analysis and Conclusions
- Concept 4: Communication

#### Strand 2: History and Nature of Science

- Concept 2: Nature of Scientific Knowledge

#### Strand 6: Earth and Space Science

- Concept 2: Earth’s Processes and Systems

### Writing

#### Strand 1: Writing Process

- Concept 1: Prewriting

#### Strand 2: Writing Elements

- Concept 4: Word Choice
- Concept 5: Sentence Fluency.
- Concept 6: Conventions

### **Strand 3: Writing Applications**

Concept 2: Expository

Concept 6: Research

## **National Science Education Standards Addressed**

### **Unifying Concepts and Processes**

Systems, order, and organization

Change, constancy, and measurement

Form and function

### **Science as Inquiry**

Abilities necessary to do scientific inquiry

Understandings about scientific inquiry

### **Earth and Space Science**

Structure of the earth system

### **Science and Technology**

Abilities of technological design

Understandings about science and technology

### **History and Nature of Science**

Science as a human endeavor

Nature of science

Name \_\_\_\_\_

## Rocks and Minerals Worksheet

**Minerals:** chalcopyrite, halite, fluorite, quartz, gypsum, molybdenite

**Rocks:** granite, basalt, limestone, sandstone, schist, marble

Description	Rock or Mineral and Its Use(s)
1.	
2.	
3.	
4.	
5.	
6.	

Description	Rock or Mineral and Its Use(s)
7.	
8.	
9.	
10.	
11.	
12.	



Toothpaste	Cell phone	Television	Computer
Table salt	Water Treatment	Glass	Dry wall
Paint	Counter tops	Landscape Materials	cement
Copper wire	Door knobs	Alloy in Steel	Lubricant
Light bulbs	Paint pigment	Paper	Tums
Soil additive	Plaster of Paris	Construction aggregate	Building Stone
Flagstone	Gemstone	Abrasive	Porcelain
Optical instruments	Fiberglass	Watches	Sandpaper
Flux	Pottery	Enamel	Floor tiles
Water pipes	Electrical Wire	Alloy of Brass	Alloy of Bronze