



## Lesson Plan

**Subject/Grade Level:** Science 7<sup>th</sup> Grade

**Lesson Title:** Mineral Identification the Uses of Rocks and Minerals

**Lesson Duration:** 200 minutes (2days)

**Performance Objective:** Upon completion of this lesson, the student will be able to :1) The students will differentiate between rocks and minerals. 2) The students will describe characteristics of gems that make them more valuable than other minerals. 3) The students will identify useful elements that are contained I minerals. 4) The students will research a variety of common everyday uses of minerals.

## Preparation

**Framework Strand:** Grade 7 Earth & Space

**Content Standard Competencies/Objectives:**

**4. Describe the properties and structure of the sun and the moon with respect to the Earth**

a. Justify the importance of Earth minerals) e.g., rocks, minerals, atmospheric gases, and water) to humans.

(DOK 3)

**MS CCR/CCSS:**

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

WHST. 6-8.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical process.

**ISTE:**

**1. Creativity and innovation**

a. Apply existing knowledge to generate new ideas, products, or processes

**2. Research and information fluency**

b.) Locate, organize, analyze, evaluate, synthesize, and ethically use information form a variety of sources and media

**Instructional Aids:**

PowerPoint presentations, handouts, charts, videos, quizzes, rubric

**Materials Needed:**

Mineral samples, magnifying lens, pan balance, graduated cylinder, water, piece of copper, glass plate, small iron nail, steel file, streak plate, 5% HCl with dropper, Mohs scale of hardness, minerals appendix (field guide) safety goggles, Science Journal

**Equipment Needed:**

**Desired Student Prerequisites:** Students should be familiar with common rocks and minerals. The students were previously provided with handout.

Today your going to be detectives. Can anyone tell me what a detective does? Students Answers will vary Provide the students with visual aid of a detective.

Questions to Ponder??

1. What are the characteristics of gems that make them more valuable than other minerals?
2. What are useful elements that are contained in minerals?
3. What are the differentiate between rocks and minerals.
4. Is your sample a mineral?
5. Did it pass every test?

Introduction:  
The students will view It's A Rocky World

PowerPoint  
Presentation  
attached

**Guided Practice:**  
The class will take quiz form Brain Pop and discuss.

**Independent Practice:**  
Although certain minerals can be identified by observing only one property, others require testing several properties to identify them. How can you identify unknown minerals?

1. Copy the data table into your Science Journal. Obtain a set of unknown minerals.
2. Observe a numbered mineral specimen carefully. Write a star in the table entry that represents what you hypothesize is an important physical property. Choose one or two properties that you think will help most in identifying the sample.
3. Perform tests to observe your chosen properties first.
  - a. To estimate hardness:
    - i. Rub the sample firmly against objects of known hardness and observe whether it leaves a scratch on the objects.
    - ii. Estimate a hardness range based on which items the mineral scratches.
  - b. To estimate specific gravity: Perform a density measurement.

- i. Use the pan balance to determine the sample's mass, in grams.
- ii. Measure its volume using a graduated cylinder partially filled with water. The amount of water displaced by the immersed sample, in mL, is an estimate of its volume in  $\text{cm}^3$ .
- iii. Divide mass by volume to determine density. This number, without units, is comparable to specific gravity.

With the help of the Mineral Appendix or a field guide, attempt to identify the sample using the properties from step 2. Perform more physical property observations until you can identify the sample. Repeat steps 2 through 4 for each unknown.

**Lesson Closure:**

Gather students for whole group discussion. The focusing questions will lead the class discussion. The students will be asked to share their findings and if they think their rocks are really minerals. Students will then be told that there is a sixth way to test a mineral through a test of its hardness. Students will be asked how they think we can determine which of their rocks is the hardest. Answers will be written on the chart paper. Students will be told that in tomorrow's lesson, they will learn about the Moh's Scale of Mineral Hardness and they will be able to determine which of their minerals are the hardest.

**Informal Assessment/Review:**

Pondering Questions  
Questions during the powerpoint  
BrainPop Quiz

**Formal Assessment:**

Students will be assessed according to their ability to:

1. Identify a mineral according to its physical characteristics.
2. To test a mineral for specific characteristics (color, luster, streak, texture, breakage).
3. To explain how the physical characteristics of a mineral can be tested.

**Extension/Enrichment:**

A Field Guide to Rocks and Minerals by Frederick H. Pough.  
Experiments With Rocks and Minerals by Salvatore Tocci  
Peterson First Guide to Rocks and Minerals by Frederick H. Pough

**Accommodations/Differentiation:**

The "Minerals Test" worksheet provides written instruction on how to test for each physical characteristic. Alternative assessments to the completion of the worksheet may be given to students who would be better served with an adapted version or by explaining through a drawing or short verbal retelling.

**References:**

