



Properties of Minerals

4th Grade

Duration

Visit: 20-30 minutes

Location

Gem & Mineral Hall

Supplies

- Worksheet
- Pencil
- Clipboard (optional)

Standards

Science 4.b

Vocabulary

Mineral

Property

Color

Luster

Cleavage

Streak

Hardness

Concepts

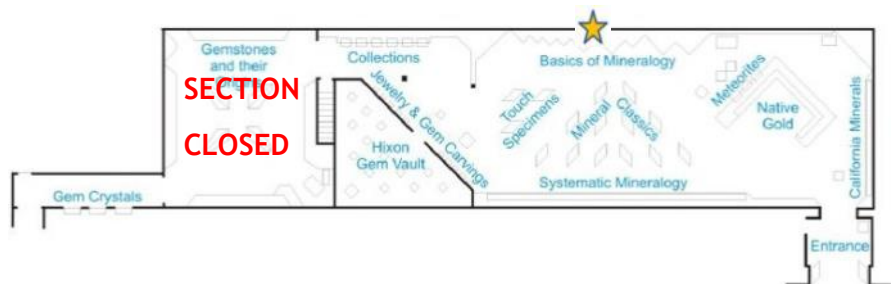
- Minerals are identified using a set of properties.
- Looking at more than one property is important when identifying minerals.

Objectives

- Students will know that minerals are identified by using different properties such as color, luster, streak, cleavage, and hardness.
- Students will compare and contrast the minerals using their properties.
- Students will understand that it necessary to examine more than one property to identify a mineral.

Outline

1. At the Museum explore minerals and their properties using the worksheet.
2. In the classroom discuss student observations and discoveries and use them to talk about how properties are used in identification.



Background

Minerals can be identified by their color, luster, streak, cleavage, hardness, and even by their chemical composition. Using these properties is one way a Geologist defines and identifies what kind of mineral a specimen is.

The museum has 6 wall spaces at the museum dedicated to these specific properties with examples. As the students learn about properties to identify minerals there are actual specimens for students to explore. Listed below are definitions of the properties:

- **Color** is one category but it is not always a good clue to the identity of a mineral. Many minerals are found in several colors and many minerals have extra chemicals in them that give them an unexpected color.
- **Luster** is the way a mineral reflects light. Minerals can be described as metallic, pearly, glassy, silky, greasy, brilliant, or dull.
- **Cleavage** is when certain minerals break in a definite way
- **Hardness** is measured by seeing how easy it is to scratch a mineral.
- **Streak** is the color a specimen makes by rubbing a mineral across a hard, rough surface like a bathroom tile.

You may choose to share this information with your students prior to visiting.

Museum Visit

During a trip to the Museum, students will examine the specimens on the wall of the exhibit using the worksheet. By looking at all the examples in the museum, the students can answer the questions on the worksheet and will be able to participate in the discussion.

Post-Visit

Back in the classroom, the teacher can lead a whole group discussion on their findings. The students will discuss the minerals they found and what else they discovered about their properties. For example, they can tell you that two minerals may have the same color but have a different hardness. The teacher can begin the discussion of why this happens and why it is necessary to look at more than one property to identify a mineral. The students can begin to infer that rocks can be identified by using the properties discovered at the museum.

Variations & Extensions

This introductory lesson can be used to further explore more about the diagnostic properties for minerals. For example, this lesson can lead into teaching about the Moh's hardness scale and compare the hardness of the minerals listed on that scale. Students will learn that the minerals can be scratched by certain items and that helps to categorize them.

In Gem and Mineral Hall

Observe the displays in the Basics of Mineralogy section, and use them to answer the following questions.

1. Write the definition of the following properties of minerals:

Color:

Streak:

Luster:

Hardness:

Cleavage:

2. List the minerals used to demonstrate each property in the table below:

Color	Streak	Luster	Hardness	Cleavage

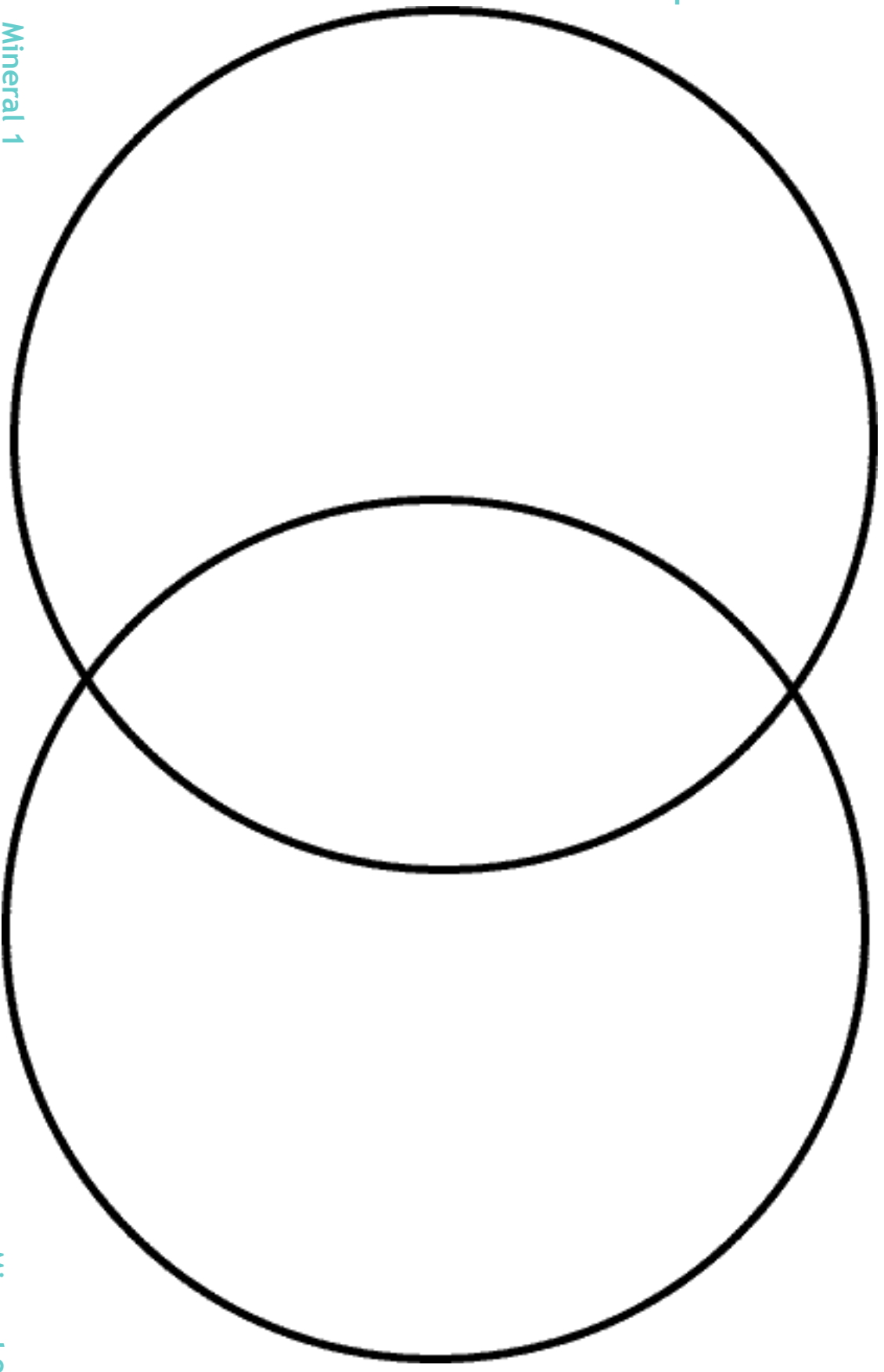
3. Name three minerals that are used for more than one example, and list the properties that mineral demonstrates:

Mineral	Mineral	Mineral
_____	_____	_____
Properties	Properties	Properties
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



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4. Using the Venn diagram below, pick 2 minerals to compare and contrast. Name at least three similarities and three differences between the two minerals.



Mineral 1

Mineral 2
