

Minerals ▪ *Guided Reading and Study*

Properties of Minerals

This section explains what minerals are and how they can be identified.

Use Target Reading Skills

As you read about properties of minerals, use the headings to complete the outline below.

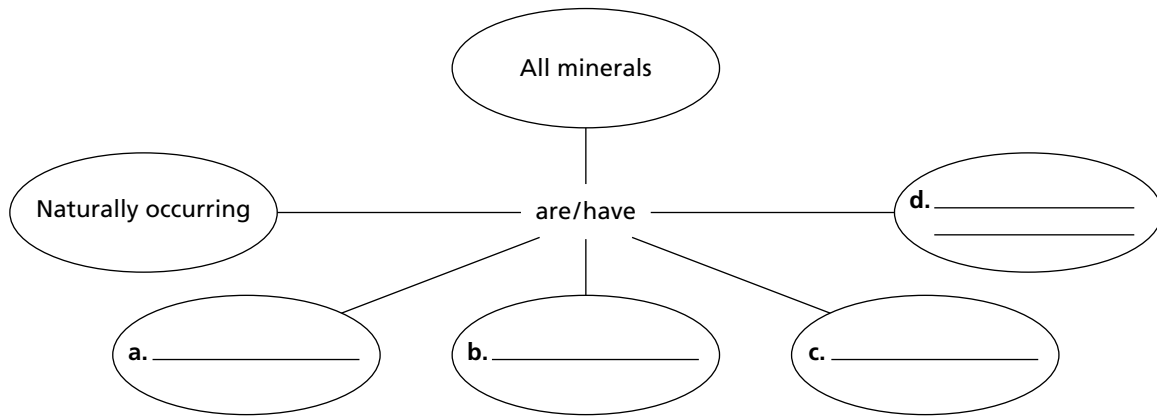
Properties of Minerals
I. What Is a Mineral?
A. Naturally Occurring
B. Inorganic
C. _____
D. _____
E. _____
II. Identifying Materials
A. Color
B. _____
C. _____
D. Density
E. _____
F. _____
G. _____
H. Special Properties

What Is a Mineral?

1. Because minerals are formed by processes that occur in the natural world, they are said to be _____.
2. Complete the concept map that shows characteristics of minerals.

Minerals ▪ *Guided Reading and Study*

Properties of Minerals *(continued)*



e. Use the concept map to write a definition of a mineral in your own words. You may use more than one sentence.

3. Because minerals do not come from living things, they are said to be _____.

4. A substance that keeps its shape because its particles can't flow freely is a(n) _____.

5. A solid with flat sides that meet at sharp edges and corners is called a(n) _____.

Minerals ▪ *Guided Reading and Study*

6. Is the following sentence true or false? A mineral always contains certain elements in definite proportions. _____
7. Is the following sentence true or false? Very few minerals are compounds. _____
8. A substance formed when two or more elements combine and lose their distinct properties is a(n) _____.
9. In what two ways can elements occur in nature?

10. What are some examples of minerals that occur as elements instead of compounds? _____

Identifying Minerals

11. Is the following sentence true or false? Geologists have identified about 300 minerals. _____
12. Is the following sentence true or false? Each mineral has its own specific properties. _____
13. Why can't color alone be used to identify most minerals?

14. The color of a mineral's powder is its _____.
15. The term that describes how a mineral reflects light from its surface is _____.
16. Is the following sentence true or false? Minerals containing metals often have a shiny luster. _____
17. Circle the letter of each sentence that is true about the density of a mineral.
 - a. A given mineral can have varying densities.
 - b. The larger the sample of a mineral, the greater its density.
 - c. Each mineral has a characteristic density.
 - d. The density of a mineral is its mass divided by its volume.

Minerals ▪ *Guided Reading and Study*

Properties of Minerals *(continued)*

18. What is the Mohs hardness scale? _____

19. The softest known mineral is _____. The hardest known mineral is _____.

20. Is the following sentence true or false? A mineral can scratch any mineral harder than itself. _____

21. Is the following sentence true or false? Each piece of a mineral has the same crystal structure. _____

22. How do geologists classify crystal structures? _____

Match the term with its definition.

Term

- _____ 23. cleavage
- _____ 24. fracture
- _____ 25. fluorescence

Definition

- a. A mineral's ability to split easily along flat surfaces
- b. A mineral's ability to glow under ultraviolet light
- c. The way a mineral looks when it breaks

Minerals ▪ *Review and Reinforce*

Properties of Minerals

Understanding Main Ideas

Fill in the blanks in the table below.

Mineral Property	Test
1. _____	Perform scratch test
Color	Observe surface of mineral
2. _____	Observe color of powder on unglazed tile
Luster	Observe how mineral reflects light
3. _____	Find mass per unit volume
4. _____	Observe number and angle of crystal faces
Cleavage and Fracture	Break mineral apart to see if it splits along flat surfaces

Answer the following questions on a separate sheet of paper.

- List the five characteristics necessary for a substance to be a mineral.
- Explain why each mineral has its own properties, different from every other mineral.

Building Vocabulary

Match each term with its definition by writing the letter of the correct definition on the line beside the term in the left column.

- | | |
|-------------------------------|--|
| _____ 7. cleavage | a. how a mineral reflects light from its surface |
| _____ 8. streak | b. a substance composed of a single kind of atom |
| _____ 9. luster | c. the property of splitting evenly along flat surfaces |
| _____ 10. fracture | d. how a mineral breaks apart when it does not split evenly |
| _____ 11. Mohs hardness scale | e. the repeating pattern of a mineral's particles in a solid |
| _____ 12. crystal | f. the color of a mineral's powder |
| _____ 13. element | g. a ranking of minerals from softest to hardest |

Minerals ▪ *Guided Reading and Study*

How Minerals Form

This section describes how minerals form and where minerals are found.

Use Target Reading Skills

As you preview the headings in this section, complete the graphic organizer with questions in the left column. As you read, fill in the answers in the second column.

Formation of Minerals

Question	Answer
How do minerals form from magma?	

Introduction

1. The process by which atoms are arranged to form a material with a crystal structure is referred to as _____.
2. In what two ways do minerals form?

Minerals From Magma and Lava

3. What affects the size of crystals formed from magma? _____

Minerals ▪ *Guided Reading and Study*

4. Why does magma that cools deep below the surface have large crystals?

5. Is the following sentence true or false? Lava cools quickly and forms minerals with small crystals. _____

Minerals From Solutions

6. A mixture in which one substance dissolves in another is called a(n)

_____.

7. Is the following sentence true or false? Minerals can form when solutions evaporate. _____

8. Circle the letter of each sentence that is true about halite deposits in the United States.

- a. Deposits are found in the Midwest and Southwest.
- b. Deposits are found along the Gulf Coast.
- c. Deposits formed over the past thousand years.
- d. Deposits formed when ancient seas evaporated.

9. How do minerals form from a hot water solution? _____

10. A narrow channel or slab of a mineral that is much different from the surrounding rock is called a(n) _____.

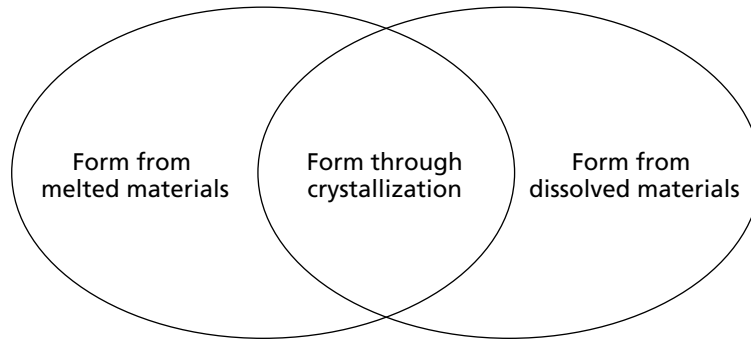
11. How do veins form? _____

Minerals ▪ *Guided Reading and Study*

How Minerals Form *(continued)*

12. Complete the Venn diagram by labeling the circles with the type of minerals they represent.

a. _____ b. _____



c. Use the Venn diagram to explain how the two main ways in which minerals can form are alike and how they are different. _____

Minerals ▪ *Review and Reinforce*

How Minerals Form

Understanding Main Ideas

Complete the flowchart below by filling in the blanks.

1. _____ heats water underground.
- ➔ 2. _____ and _____ dissolve in the hot water to form solutions. ➔ These solutions follow cracks within the rock.
- ➔ Elements and compounds leave the solutions during cooling and
3. _____ as minerals. ➔ The minerals form a narrow channel or slab in the rock called a(n) 4. _____.

Answer the following questions in the spaces provided.

5. In general, what are the two ways in which minerals form?

6. Describe conditions in which large and small crystals are likely to form.

7. Describe how halite deposits form.

Building Vocabulary

Fill in the blank to complete each statement.

8. A(n) _____ is a mixture in which one substance is dissolved in another.
9. A(n) _____ is a rounded, hollow rock that is often lined with mineral crystals.
10. The process by which atoms are arranged to form a material with a crystal structure is called _____.