Properties of Minerals (pp. 66–74)

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.

<table>
<thead>
<tr>
<th>Properties of Minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. What Is a Mineral?</td>
</tr>
<tr>
<td>A. Naturally Occurring</td>
</tr>
<tr>
<td>B. Inorganic</td>
</tr>
<tr>
<td>C. ___________________</td>
</tr>
<tr>
<td>D. ___________________</td>
</tr>
<tr>
<td>E. ___________________</td>
</tr>
<tr>
<td>II. Identifying Materials</td>
</tr>
<tr>
<td>A. Color</td>
</tr>
<tr>
<td>B. ___________________</td>
</tr>
<tr>
<td>C. ___________________</td>
</tr>
<tr>
<td>D. Density</td>
</tr>
<tr>
<td>E. ___________________</td>
</tr>
<tr>
<td>F. ___________________</td>
</tr>
<tr>
<td>G. ___________________</td>
</tr>
<tr>
<td>H. Special Properties</td>
</tr>
</tbody>
</table>

What Is a Mineral? (pp. 66–67)

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.
**Properties of Minerals** (continued)

![Diagram of mineral properties]

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) ________________.

© Pearson Education, Inc., publishing as Pearson Prentice Hall. All rights reserved.
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** (pp. 68-74)

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.
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 | Definition
--- | ---
23. cleavage | a. A mineral’s ability to split easily along flat surfaces
24. fracture | b. A mineral’s ability to glow under ultraviolet light
25. fluorescence | c. The way a mineral looks when it breaks
How Minerals Form (pp. 76–79)

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.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do minerals form from magma?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Introduction (p. 76)

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 (p. 77)

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

   ____________________________

   ____________________________
Minerals • Guided Reading and Study

How Minerals Form (continued)

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 (pp. 77–79)

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?
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.
Using Mineral Resources (pp. 80–85)

This section describes the uses of minerals and how minerals are obtained.

Use Target Reading Skills

As you come to each head in the section, stop and write what you know about that topic. As you read the passage, write what you learn.

<table>
<thead>
<tr>
<th>What You Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The gems used in jewelry are minerals.</td>
</tr>
<tr>
<td>2.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What You Learned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
</tbody>
</table>

The Uses of Minerals (p. 81)

1. Any hard, colorful mineral that has a brilliant or glassy luster is called a(n) _____________________.

2. A gemstone that has been cut and polished is called a(n) _____________________.

© Pearson Education, Inc., publishing as Pearson Prentice Hall. All rights reserved.
Minerals  •  Guided Reading and Study

3. Circle the letter of each choice that is a way gems are used.
   a. jewelry
   b. fuel
   c. mechanical parts
   d. grinding and polishing

4. List four examples of metals.
   a. ________________
   b. ________________
   c. ________________
   d. ________________

5. Why are metals useful?

6. What are some uses of metals?

Match each mineral with the product in which it is found.

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. talc</td>
<td>a. cement</td>
</tr>
<tr>
<td>8. calcite</td>
<td>b. microscopes</td>
</tr>
<tr>
<td>9. quartz</td>
<td>c. watches</td>
</tr>
<tr>
<td>10. gypsum</td>
<td>d. powder</td>
</tr>
</tbody>
</table>

Producing Metals From Minerals (pp. 82–85)

11. A rock that contains a metal or economically useful mineral is called __________________________.

12. Is the following sentence true or false? Most metals occur in a pure form. ____________________

13. Much of the world’s copper is contained in the mineral ore ____________________
Minerals • Guided Reading and Study

Using Mineral Resources (continued)

14. Anyone who searches for an ore deposit is called a(n) ____________________________
15. What features do geologists look for when they prospect for ores?

16. Is the following sentence true or false? The map of an ore deposit helps miners decide how to mine the ore.

17. Complete the compare/contrast table to show the similarities and differences among the different types of ore deposits and mines.

<table>
<thead>
<tr>
<th>How Ores Are Mined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kind of Ore Deposit</td>
</tr>
<tr>
<td>Starts near the surface and extends deep underground</td>
</tr>
<tr>
<td>Occurs in veins</td>
</tr>
<tr>
<td>Is exposed on the surface</td>
</tr>
</tbody>
</table>

d. Use the table to explain how the ore deposits removed by shaft mining and by strip mining are similar to the ore deposits removed in open pit mining.

18. Describe strip mining.

19. Describe open pit mining.

20. Describe a shaft mine.
Minerals  •  Guided Reading and Study

21. The process in which an ore is melted to separate the useful metal from other elements is

22. Is the following sentence true or false? People first developed smelting in the 1800s.

23. A solid mixture of two or more metals is called a(n)

24. Fill in the flowchart with the following steps in the correct sequence:
   produce carbon dioxide and molten iron, pour off molten iron, mix with limestone and coal, place in blast furnace.

   Smelting Iron Ore

   a. 
   
   b. 
   
   c. 
   
   d. 
   
   Right side: side where impurities flow.
Key Terms

Use the clues to help you unscramble the key terms from the chapter. Then put the numbered letters in order to find the answer to the riddle.

Clues

1. It's how it looks when it breaks. tarfeur 1
2. It contains two or more metals. ylaol 2
3. It could be shiny or pearly. rutels 3
4. It was never alive. rincanoig 4
5. It's the color of the powder. rsaekt 5
6. It includes melting. temsilgn 6
7. It has a repeating pattern. ratlycs 7
8. It contains two or more elements. pucnooedm 8
9. It's valued because it's beautiful and rare. nsgoteem 9
10. It's a mixture. situnloo 10
11. It's how it splits. elagveac 11
12. It's composed of a single kind of atom. teemlen 12

Riddle: Why do some minerals glow?

Answer: 1 2 3 4 5 6 7 8 9 10 11 12