

Skills Worksheet

Active Reading**Section: Minerals and Mineral Resources**

Read the passage below and answer the questions that follow.

Certain metals are of major economic and industrial importance. Some metals can be pounded or pressed into various shapes or stretched very thinly without breaking. Other metals are good conductors of heat and electricity, or are prized for their durability and resistance to corrosion. Often, two or more metals are combined to form *alloys*. Alloys are important because they often combine the most desirable properties of the metals used to make them. Many new technologies depend on the mining of metallic minerals.

Nonmetals are among the most widely used minerals in the world. For example, gypsum has many applications in the construction industry. It is used to make Sheetrock™, or wallboard, for homes and commercial buildings. It is also a major component of concrete, which is used to build roads, buildings, and other structures. Industrial sand and gravel have uses that range from glassmaking to the manufacture of computer chips. Some non-metallic minerals, called *gemstones*, are prized purely for their beauty, rarity, or durability. Important gemstones include diamond, ruby, sapphire, emerald, aquamarine; topaz, and tourmaline.

IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about the main idea.

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- _____ 1. The value of a mineral is determined by its
a. properties.
b. mining technique.
c. gemstones.
d. alloys.
- _____ 2. What types of minerals are among the most widely used in the world?
a. metals
b. alloys
c. gemstones
d. nonmetals
- _____ 3. Which of the following is an example of a gemstone?
a. gypsum
b. sapphire
c. gravel
d. glass

Chap. 16

Active Reading *continued*

VOCABULARY DEVELOPMENT

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|--------------------------|---|
| _____ 4. gypsum | a. the combination of two or more metals |
| _____ 5. gemstones | b. a major component of concrete |
| _____ 6. industrial sand | c. conductors of heat and electricity |
| _____ 7. alloy | d. topaz and tourmaline |
| _____ 8. certain metals | e. a substance used in manufacturing computer chips |

Read each question and write the answer in the space provided.

9. The verb *corrode* means “wear away gradually, usually by a chemical reaction.” A metal that is prized for its “resistance to corrosion” has what property?

10. *Aqua* means “water” or “a light blue color.” *Marine* refers to the sea. Use this information to determine what the gemstone *aquamarine* might look like.

RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

In the space provided, write the letter of the phrase that best answers the question.

- _____ 11. Why do people value gemstones?
- | | |
|--------------------------------------|------------------------------------|
| a. for their use in industry | c. for their beauty and rarity |
| b. for their resistance to corrosion | d. for their benefit to technology |

Read each question and write the answer in the space provided.

12. Why are alloys especially important?

13. What are some properties of metals that give them economic and industrial importance?

Active Reading**Section: Mineral Exploration and Mining**

Read the passage below and answer the questions that follow.

Through mineral exploration, mining companies can identify areas where there is a high likelihood of finding valuable mineral resources in quantities that are worth mining. Usually, a mineral deposit has 100 to 1,000 times the concentration of the mineral than ordinary rocks do and enough material to justify opening a mine.

Exploring rock for mineralization is the first step in finding an ore deposit. Planes that carry instruments for identifying patterns in gravity, magnetism, or radioactivity fly over and collect these data as well as images and photographs of an area. When used with satellite images, these data and aerial photographs can be used to create an accurate geological map of the surface. Rock samples are then taken from the exploration area. The samples are analyzed to determine ore grade—the metal content of an ore. If the ore grade is high enough, the companies will drill test holes that help them estimate the three-dimensional extent of the ore. If the ore grade is high enough and the deposit extensive enough, the cost to open a mine may be warranted.

IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about the main idea.

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- _____ 1. Mining companies conduct mineral exploration to
- a. find mineral deposits.
 - b. identify new types of minerals.
 - c. create geological maps.
 - d. collect rock samples.
- _____ 2. Airplanes used in mineral exploration carry instruments that detect
- a. gravity.
 - b. radioactivity.
 - c. magnetism.
 - d. All of the above
- _____ 3. What is ore grade?
- a. the three-dimensional extent of an ore
 - b. the radioactivity of an ore
 - c. the metal content of an ore
 - d. the magnetism of an ore

Active Reading *continued*

SEQUENCING INFORMATION

One reading skill is the ability to sequence information, or to logically place items or events in the order in which they occur.

Beginning with step 1, write the five steps involved in finding an ore deposit in the order in which they occur. Write the steps in the space provided.

- 4. Step 1: _____
- 5. Step 2: _____
- 6. Step 3: _____
- 7. Step 4: _____
- 8. Step 5: _____

RECOGNIZING SIMILARITIES AND DIFFERENCES

One reading skill is the ability to recognize similarities and differences between two phrases, ideas, or things. This is sometimes known as comparing and contrasting.

Read each question and write your answer in the space provided.

- 9. How is a mineral deposit different from ordinary rocks?

- 10. How do both satellites and airplanes aid mining companies in finding ore deposits?

RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

Read each question and write the answer in the space provided.

- 11. What do mining companies learn from rock samples taken from an exploration area?

- 12. How does drilling test holes help mining companies determine whether to open a mine in a specific area?

Active Reading

Section: Mining Regulations and Mine Reclamation

Read the passage below and answer the questions that follow.

Mines on land in the United States are regulated by federal and state laws. To ensure that contaminants from mines do not threaten water quality, mining companies must comply with regulations of the Clean Water Act and the Safe Drinking Water Act. The release of hazardous substances into the air, soil, and water by mining is regulated by the Comprehensive Response Compensation and Liability Act. In addition, all mining operations must comply with the Endangered Species Act. This act ensures that mining activities will not affect threatened or endangered species and their habitats.

The process of returning land to its original or better condition after mining is completed is called reclamation. The Surface Mining Control and Reclamation Act of 1977 (SMCRA) created a program for the regulation of surface coal mining on public and private land. The act set standards that would minimize the surface effects of coal mining on the environment. SMCRA also established a fund that is administered by the federal government and is used to reclaim land and water resources that have been adversely affected by past coal-mining activities.

IDENTIFYING MAIN IDEAS

One reading skill is the ability to identify the main idea of a passage. The main idea is the main focus or key idea. Frequently, a main idea is accompanied by supporting information that offers detailed facts about the main idea.

In the space provided, write the letter of the phrase that best completes each statement.

- _____ 1. Which act ensures that mining activities will not affect the habitats of some species?
- a. Comprehensive Response Compensation and Liability Act
 - b. Safe Drinking Water Act
 - c. Surface Mining Control and Reclamation Act
 - d. Endangered Species Act
- _____ 2. What is reclamation?
- a. returning land to its original or better condition after mining
 - b. returning land to a useful condition after mining
 - c. regulation of the effect of mining on water
 - d. regulation of the effect of mining on air and soil
- _____ 3. The Comprehensive Response Compensation and Liability Act regulates
- a. reclamation.
 - b. endangered species.
 - c. hazardous substances.
 - d. past coal-mining activities.

Active Reading *continued*

VOCABULARY DEVELOPMENT

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|--|---|
| _____ 4. Clean Water Act | a. minimizes the surface effects of mining on the environment |
| _____ 5. Safe Drinking Water Act | b. ensures that contaminants from mining do not threaten water resources |
| _____ 6. Comprehensive Response Compensation and Liability Act | c. ensures that mining will not affect threatened species |
| _____ 7. Endangered Species Act | d. ensures that contaminants from mining do not threaten drinking water |
| _____ 8. Surface Mining Control and Reclamation Act | e. regulates release of hazardous substances into the air, soil, or water |

RECOGNIZING CAUSE AND EFFECT

One reading skill is the ability to recognize cause and effect.

Read each question and write your answer in the space provided.

9. Which of the acts mentioned in the passage regulate mining directly?
- _____
- _____
10. Which of the acts mentioned in the passage are *not* directly related to mining?
- _____
- _____
11. What are the effects of the Surface Mining Control and Reclamation Act of 1977?
- _____
- _____
- _____
- _____