Name Class Date

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CHAPTER 4 STUDY GUIDE

Minerals

SECTION 4.1 *What is a mineral?*

In your textbook, read about mineral characteristics.

Answer the following questions.

1. What is a mineral?

A) Element of chemical compound that is normally xstalline & forms from geological process

B) Naturally occurring, Inorganic, solid, with a definite composition and structure

2. Why is salt classified as a mineral, but sugar is not?

A) Because sugar is Inorganic C) Because sugar is liquid

B) Because sugar is organic D) Because sugar is a solid

3. Can minerals occur as liquids? Why or why not?

A) YES B) NO

4. Can the chemical composition of a single mineral vary? Explain your answer.

A) YES

B) NO

5. What is a crystal?

A) solid in which atoms are arranged in a repeating pattern

B) solid in which atoms ARE NOT arranged in a repeating pattern

6. How does forming in a restricted space affect the structure of a crystal?

A) Internal atomic arrangement is NOT apparent

B) Internal atomic arrangement IS apparent

C) external atomic arrangement is apparent

7. What does the definite crystalline structure of a mineral consist of?

A) having a repeating pattern C) amorphous solid

B) having a non-repeating pattern D) all crystals contain silica tetrahedron

8. Why are feldspars considered to be minerals even though their compositions can vary?

A) has to do with how feldspar reflects light off its surface

B) has to do with how the minerals grows

C) has to do with how the mineral comes from decay of plants

SECTION 4.1 *What Is a mineral?, continued*

In your textbook, read about minerals that formed from magma and that formed from solution.
For each statement, write *true* or *false*. A= TRUE; B= FALSE

A B **9.** Minerals can form from the cooling of magma.

A B **10.** Density differences can force magma upward into cooler layers of Earth's interior.

A B **11.** If magma cools slowly, atoms do not have time to arrange themselves into large crystals.

A B **12.** Small crystals form from rapidly cooling magma.

A B **13.** When liquid evaporates from a solution, the remaining elements cannot form crystals.

A B **14.** Minerals can form from elements dissolved in a solution.

A B **15.** If a solution remains unsaturated, mineral crystals may precipitate.

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SECTION 4.1 *What is a Mineral?*

In your textbook, read about mineral identification.

(use for 20-23) **Use each of the terms below just once to complete the passage.**

(A)	(B)	(C)	(D)
cleavage	specific gravity	fracture	hardness
luster	color	streak	texture

(use for 16-19)

Geologists use physical properties to identify minerals. For example, the **(16)** _____ of a mineral is caused by the presence of different trace elements. The way a mineral reflects light from its surface is called **(17)** _____, which is described as metallic or nonmetallic. How a mineral feels to the touch is called **(18)** _____. A mineral's **(19)** _____ is the color of a mineral when it is broken up and powdered. A measure of how easily a mineral can be scratched is called **(20)** _____.

Another property describes how a mineral will break. If a mineral splits easily and evenly along one or more planes, it has the property of **(21)** _____, while minerals that break along jagged edges are said to have **(22)** _____. The density of a mineral is usually expressed as **(23)** _____, which is the ratio of the weight of a substance to the weight of an equal volume of water at 4°C.

In your textbook, read about mineral identification.

Answer the following questions.

24. Can all minerals produce a streak on a porcelain plate? Why or why not?

A) YES B) NO

25. Can minerals with cleavage have more than one cleavage plane? If so, give an example.

A) YES B) NO

26. What is the difference between density and specific gravity?

A) Specific gravity is a measure of density

B) Density is a measure of specific gravity

C) there is no difference between density and specific gravity. They are the same thing

27. How many minerals are represented on the Mohs scale of mineral hardness? What is the range of hardness of those minerals?

A) 05 B) 12 C) 02 D) 10

SECTION 4.1 *What is a Mineral?, continued*

Circle the letter of the choice that best completes the statement.

28. Identification tests for minerals are based on their
- **a.** scientific names.
- **b.** physical and chemical properties.
- **c.** color.
- **d.** chemical composition.

29. The appearance of milky quartz is caused by
- **a.** its high density.
- **b.** its hardness.
- **c.** its magnetism.
- **d.** trapped bubbles of gas and liquid.

30. A mineral's hardness with respect to other minerals can be determined by
- **a.** its specific gravity.
- **b.** its cleavage planes.
- **c.** the Mohs scale of mineral hardness.
- **d.** its magnetic properties.

31. Minerals break along planes where atomic bonds are
- **a.** weak.
- **b.** strong.
- **c.** dense.
- **d.** magnetic.

32. Minerals, such as quartz, that break along jagged edges are said to have
- **a.** cleavage.
- **b.** density.
- **c.** fracture.
- **d.** special properties.

33. The ratio of the weight of a substance to the weight of an equal volume of water at 4°C is its
- **a.** chemical composition.
- **b.** weight.
- **c.** specific gravity.
- **d.** hardness.

In your textbook, read about special properties of minerals.

Circle the letter of the choice that best completes the statement or answers the question.

34. In double refraction, light is
- **a.** bent in two directions.
- **b.** bent in one direction.
- **c.** obscured by gas bubbles in the crystal.
- **d.** changed to a magnetic field.

35. Which mineral bubbles when it comes in contact with hydrochloric acid because the calcite releases?
- **a.** quartz.
- **b.** calcite.
- **c.** feldspar.
- **d.** mica.

36. Lodestone can pick up iron filings. What special property does lodestone have?
- **a.** a sticky texture
- **b.** extreme heaviness
- **c.** magnetism
- **d.** a rotten-egg smell

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CHAPTER 4 STUDY GUIDE

SECTION 4.2 *Types of Minerals*

In your textbook, read about mineral uses.
Answer the following questions.

37) What makes a mineral an ore?

A) Rare & Beautiful B) valuable & mined at a profit

38) Is aluminum an ore? Explain your answer.

A) YES B) NO

(not graded) Can the classification of a mineral as an ore change? If so, how?

A) YES B) NO

(not graded) How are ores deep beneath Earth's surface removed?

A) by underground mining B) by open-pit mining C) by fracking

(not graded) How are ores near Earth's surface removed?

A) by underground mining B) by open-pit mining C) by fracking

(not graded) What two problems can result from removing waste material from ores?

A) Expensive & Harmful to environment B) cheap & not harmful to the enviroment

In your textbook, read about mineral groups. (A) (B) (C)
Complete the table by filling in the following terms: *silicates, carbonates, oxides.*

	Mineral Group	Description
39)	(A) (B) (C)	Calcite, dolomite, and rhodochrosite are examples.
40)	(A) (B) (C)	Readily form silica tetrahedrons
41)	(A) (B) (C)	Composed of one or more metallic elements with the carbonate compound CO_3
42)	(A) (B) (C)	Composed of silicon, oxygen, and another element
43)	(A) (B) (C)	Compounds of oxygen and a metal
44)	(A) (B) (C)	Magnetite and hematite, both sources of iron, are examples.
45)	(A) (B) (C)	The most common minerals, feldspar and quartz, are examples.
46)	(A) (B) (C)	Primary minerals in limestone and marble

SECTION 4.2 *Types of Minerals, continued*

This section below IS NOT graded

In your textbook, read about mineral uses.

Use each of the terms below to complete the statements.

(A)	(B)	(C)	(D)
open-pit mines	**ore**	**underground mining**	**overlourden**

. A(n) _____ is a mineral that contains a useful substance that can be mined at a profit.

. An ore located deep within Earth's crust is removed by _____.

. An ore near Earth's surface is obtained from large _____.

. Unwanted rock and dirt, known as _____, are dug up along with valuable ore.

just graded

THIS SECTION BELOW is GRADED

In your textbook, read about gems.

Use each of the terms below to complete the statements.

(A)	(B)	(C)	(D)
abrasive	**emeralds**	**gem**	**trace elements**

47) **19.** A(n) _____ is a valuable mineral prized for its rarity and beauty.

48) **20.** Because of their relative rareness, rubies and _____ are more valuable than diamonds.

49) **21.** The presence of _____ can make one variety of a mineral more colorful and thus more prized than other varieties of the same mineral.

50) **22.** The mineral corundum, which is often used as a(n) _____, can also be found as rubies and sapphires.