

Skills Worksheet

Directed Reading A**Section: Grouping the Elements** (pp. 202–209)

Write the letter of the correct answer in the space provided.

- _____ 1. Which of the following gives elements in a family or group similar properties?
- a. the same atomic mass
 - b. the same number of protons
 - c. the same number of electrons in their outer energy level
 - d. the same number of neutrons
- _____ 2. At the atomic level, what makes elements reactive?
- a. Their atoms have the same number of neutrons.
 - b. Their atoms have the same number of protons.
 - c. Their atoms have the same number of electrons.
 - d. Their atoms take, give, or share electrons with other atoms.

GROUP 1: ALKALI METALS

- _____ 3. In the periodic table of elements, what is the symbol for potassium?
- a. Li
 - b. K
 - c. Cs
 - d. Fr
- _____ 4. How are the alkali metals similar?
- a. They are very reactive.
 - b. They have very few uses.
 - c. They are so hard they cannot be cut.
 - d. They are often stored in water.
- _____ 5. How many outer-level electrons do alkali metal atoms have?
- a. four
 - b. three
 - c. two
 - d. one

GROUP 2: ALKALINE-EARTH METALS

- _____ 6. In the chart that illustrates Group 2 elements, which element is not an alkaline-earth metal?
- a. magnesium
 - b. calcium
 - c. barium
 - d. sodium

Directed Reading A *continued*

- _____ 7. Which of the following is true about all the alkaline-earth metals?
- a. They have low density.
 - b. They are less reactive than alkali metals are.
 - c. They have three outer-level electrons.
 - d. They have few uses.

GROUPS 3–12: TRANSITION METALS

- _____ 8. Which of the following is true about transition metals?
- a. They are less reactive than alkali and alkaline-earth metals.
 - b. They are more reactive than alkali and alkaline-earth metals.
 - c. They are equally as reactive as alkali and alkaline-earth metals.
 - d. They are not reactive.
- _____ 9. If groups are read from top to bottom, what elements are in Group 3?
- a. Sc, Ti, V, Mn
 - b. V, Nb, Ta, Db
 - c. Sc, Y, La, Ac
 - d. La, Hf, Ta, W
- _____ 10. What type of metal are the lanthanides and the actinides?
- a. transition metals
 - b. alkali metals
 - c. alkaline-earth metals
 - d. precious metals

Properties of Transition Metals

- _____ 11. Which of the following describes most transition metals?
- a. poor conductors of electric current
 - b. dull
 - c. good conductors of thermal energy
 - d. low density and melting points

Directed Reading A *continued*

- _____ **21.** Which element in Group 15 is found in nature only combined with other elements?
- a. nitrogen
 - b. oxygen
 - c. hydrogen
 - d. phosphorus

GROUP 16: OXYGEN GROUP

- _____ **22.** How much oxygen is in the air you breathe?
- a. 20%
 - b. 40%
 - c. 80%
 - d. none
- _____ **23.** What is necessary for substances to burn?
- a. fertilizer
 - b. oxygen
 - c. nitrogen
 - d. arsenic
- _____ **24.** What element of the oxygen group is a yellow solid in nature and is used to make sulfuric acid?
- a. nitrogen
 - b. oxygen
 - c. sulfur
 - d. phosphorus

GROUP 17: HALOGENS

- _____ **25.** Why are halogens so reactive?
- a. because their atoms only need two electrons to complete their outer level
 - b. because they are excellent conductors of electric current
 - c. because their atoms only need one electron to complete their outer level
 - d. because they have so few electrons in their outer level
- _____ **26.** What is made when a halogen reacts with a metal?
- a. a salt
 - b. a metalloid
 - c. a nonmetal
 - d. an electron

Directed Reading A *continued*

GROUP 18: NOBLE GASES

- _____ **27.** Because scientists originally thought that these elements would not react at all, what were the noble gases first called?
- a. inept gases
 - b. inert gases
 - c. inverted gases
 - d. nongases
- _____ **28.** How many nonmetals make up Group 18?
- a. five
 - b. six
 - c. three
 - d. two
- _____ **29.** What element helps light bulbs last longer?
- a. neon
 - b. krypton
 - c. argon
 - d. xenon

HYDROGEN

- _____ **30.** What is the symbol for hydrogen?
- a. Hy
 - b. K
 - c. H
 - d. Hi
- _____ **31.** Which word or words describe hydrogen?
- a. colorless gas
 - b. unreactive
 - c. high density
 - d. not abundant

The Uniqueness of Hydrogen

- _____ **32.** Where is hydrogen located on the periodic table?
- a. in Group 1
 - b. in Group 18
 - c. above Group 1
 - d. below Group 1

Answer Key

Directed Reading A

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PING THE ELEMENTS

Directed Reading B

SECTION: ARRANGING THE ELEMENTS

- Answers may vary. Sample answer: Scientists might have been frustrated because the elements weren't organized, and therefore their properties couldn't be predicted.
- D
- periodic
- periodic
- Mendeleev was able to predict the properties of unknown elements by using the pattern of properties in the periodic table.
- D
- A
- C
- Chemical symbols are color coded on the periodic table according to the element's physical state at room temperature. The color of the chemical symbol for carbon is red, which corresponds to a solid.
- properties
- electrons
- Answers may vary. Sample answer: The zigzag line can help me recognize which elements are metals, which are nonmetals, and which are metalloids.
- metals
- solid
- mercury
- nonmetals
- metalloids