

## 6.3

## PERIODIC TRENDS

## Section Review

## Objectives

- Describe trends among elements for atomic size
- Explain how ions form
- Describe and explain periodic trends for first ionization energy, ionic size, and electronegativity

## Vocabulary

- atomic radius
- ion
- cation
- anion
- ionization energy
- electronegativity

## Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

- Atomic radii generally 1 as you move from left to right in a period. Atomic size 2 with atomic number within a group because there are more occupied 3 and an increased shielding effect, despite an increase in nuclear 4.
- The energy required to remove an electron from an atom is known as 5 energy. This quantity generally 6 as you move left to right across a period. Ions form when 7 are transferred between atoms. Cations are always 8 than the atoms from which they form. The ability of an atom to attract electrons when it is in a compound is called 9, and this value 10 as you move from left to right across a period.

## Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

- \_\_\_\_\_ 11. Compounds are composed of particles called ions.

- \_\_\_\_\_ 12. Removing one electron from an atom results in the formation of a positive ion with a 1+ charge.
- \_\_\_\_\_ 13. An anion has more electrons than protons.
- \_\_\_\_\_ 14. Elements with a high electronegativity value tend to form positive ions.

## Part C Matching

Match each description in Column B to the correct term in Column A.

Column A	Column B
_____ 15. ion	a. half the distance between the nuclei of two atoms of the same element when the atoms are joined
_____ 16. ionization energy	b. a negatively charged ion
_____ 17. electronegativity	c. the energy required to remove an electron from an atom in its gaseous state
_____ 18. atomic radius	d. an atom or group of atoms that has a positive or negative charge
_____ 19. cation	e. a positively charged ion
_____ 20. anion	f. the ability of an atom of an element to attract electrons when the atom is in a compound

## Part D Questions and Problems

Answer the following in the space provided.

21. For the following pairs of atoms, tell which one of each pair has the largest ionic radius.
- a. Al, B \_\_\_\_\_
- b. S, O \_\_\_\_\_
- c. Br, Cl \_\_\_\_\_
- d. Na, Al \_\_\_\_\_
- e. O, F \_\_\_\_\_
22. Indicate which element of the following pairs is the most electronegative.
- a. calcium, gallium \_\_\_\_\_
- b. lithium, oxygen \_\_\_\_\_
- c. chlorine, sulfur \_\_\_\_\_
- d. bromine, arsenic \_\_\_\_\_