

Directed Reading B *continued*

18. The first energy level of any atom can hold only _____ electrons.

19. Why is it uncommon for noble gases to form chemical bonds?

20. Which is more likely to form bonds, an atom with 8 valence electrons or an atom with fewer than 8 valence electrons?

21. How can atoms with fewer than 8 valence electrons fill their outermost energy level? Use either sulfur or magnesium to explain the process.

Skills Worksheet

Directed Reading B

Section: Ionic Bonds (pp. 230–235)

FORMING IONIC BONDS

1. A chemical bond that forms when electrons are transferred from one atom to another is a(n) _____.
2. Charged particles that form when atoms gain or lose electrons are called _____.
3. A transfer of electrons between atoms changes the number of electrons in an atom, but the number of _____ stays the same.
4. Why is an atom neutral?

5. Why are ions charged particles and thus no longer neutral?

FORMING POSITIVE IONS

- _____ 6. When an atom loses electrons through an ionic bond, it becomes
 - a. positively charged.
 - b. neutral.
 - c. negatively charged.
 - d. uncharged.
7. Most metals have few _____ and form positive ions.
8. If an aluminum atom loses its three valence electrons to another atom, the aluminum atom becomes an aluminum _____.
9. An aluminum ion has a charge of _____.
10. The chemical symbol for an aluminum ion is _____.

Directed Reading B *continued*

11. Pulling electrons away from atoms requires _____.

12. Where does the energy needed to take electrons from metal atoms come from?

FORMING NEGATIVE IONS

_____ 13. Some atoms gain electrons during chemical changes and acquire a(n)

- a. positive charge.
- b. negative charge.
- c. neutral charge.
- d. chemical charge.

_____ 14. The symbol for the oxide ion is O^{2-} . How many electrons must an oxygen atom gain to become an oxide ion?

- a. 0
- b. 1
- c. 2
- d. 3

_____ 15. What ending is used for the names of negative ions?

- a. *-ion*
- b. *-ade*
- c. *-ide*
- d. *-ite*

16. Atoms of Group _____ elements give off the most energy when they gain an electron.

17. When is energy given off by most nonmetals?

18. What conditions are required for an ionic bond to form between a metal and a nonmetal?

Directed Reading B *continued*

FORMING IONIC COMPOUNDS

19. Why does the compound formed by an ionic bond have a neutral charge even though the ions that bond are charged?

IONIC COMPOUNDS

20. When ions bond, they form a repeating three-dimensional pattern called

a(n) _____.

21. List three properties of ionic compounds.
