

8.1

MOLECULAR COMPOUNDS

Section Review

Objectives

- Distinguish molecular compounds from ionic compounds
- Identify the information a molecular formula provides

Vocabulary

- covalent bond
- diatomic molecule
- molecular formula
- molecule
- molecular compound

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.

- Every substance is either an element or a(n) 1. 1. _____
- A compound is either 2 or ionic in nature. Most molecular 2. _____
- compounds are composed of two or more 3. Molecules 3. _____
- consisting of two atoms are 4 molecules. The chemical 4. _____
- formula of a molecular compound is a 5. Molecular 5. _____
- compounds tend to have 6 melting and boiling points, while 6. _____
- ionic compounds tend to have 7 melting and boiling points. 7. _____
- A molecular formula shows how many 8 of each 8. _____
- element a molecule contains, but it does not indicate the 9. _____
- 9 of the molecule.

Part B True-False

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

- _____ 10. A diatomic molecule contains two or three atoms.
- _____ 11. Molecular compounds have relatively high boiling points.

- _____ 12. The molecular structure of carbon dioxide is one carbon atom with two oxygen atoms on opposite sides of it.
- _____ 13. Covalent bonds exist when combining atoms give up or accept electrons.
- _____ 14. A molecule contains two atoms.

Part C Matching

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

| Column A | Column B |
|------------------------------|---|
| _____ 15. molecule | a. compound composed of molecules |
| _____ 16. molecular compound | b. a molecule consisting of two atoms |
| _____ 17. covalent bond | c. shows the kinds and numbers present in a molecule of a compound |
| _____ 18. diatomic molecule | d. joins atoms held together by sharing electrons |
| _____ 19. molecular formula | e. an electrically neutral group of atoms joined together by covalent bonds |

Part D Questions and Problems

Answer the following in the space provided.

20. A compound has a boiling point of 40°C. Is this compound most likely an ionic or a molecular compound?

21. Identify the number and kinds of atoms present in a molecule of each compound.

a. butane (C₄H₁₀) _____

b. fluorobenzene (C₆H₅F) _____

22. Classify each particle as an atom or a molecule.

a. CH₄ _____

d. He _____

b. Ne _____

e. CO₂ _____

c. O₂ _____