Name _____ Class _____ Date _____



# Section 6.2 Covalent Bonding

**(pages 165–169)**

*This section discusses the formation of covalent bonds and the factors that determine whether a molecule is polar or nonpolar. It also discusses attractions between molecules.*

## Reading Strategy (page 165)

**Relating Text and Visuals** As you read the section, look closely at Figure 9. Complete the table by describing each type of model shown. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

| Molecular Models | |
|---|---|
| **Model** | **Description** |
| Electron dot diagram | Dots represent valence electrons |
| Structural formula | |
| Space-filling | |
| Electron cloud | |

## Covalent Bonds (pages 165–167)

1. Define a covalent bond. _____

_____

2. A molecule is a _____ group of atoms that are joined together by one or more covalent bonds. Circle the correct answer.

   negative neutral positive

3. Is the following sentence true or false? In a covalent bond, the atoms are held together by the attractions between the shared electrons and the protons in each nucleus. _____

4. Circle the correct answer. Nitrogen has five valence electrons. How many pairs of electrons must two nitrogen atoms share in order for each atom to have eight valence electrons?

   a. one
   b. two
   c. three

## Unequal Sharing of Electrons (pages 167–168)

**5.** Use the words in the box to fill in the blanks.

| chlorine | hydrogen | oxygen |
|---|---|---|

In a hydrogen chloride molecule, the shared electrons spend more time near the _____ atom than near the _____ atom.

**6.** Define a polar covalent bond. _____

_____

_____

**7.** When atoms form a polar covalent bond, the atom with the greater attraction for electrons has a partial _____ charge. Circle the correct answer.

neutral positive negative

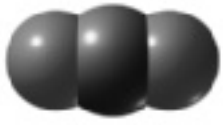
**8.** Is the following sentence true or false? In a molecule of a compound, electrons are always shared equally by both atoms. _____

**9.** Circle the letter of each factor that determines whether a molecule is polar or nonpolar.

a. the number of atoms in the molecule
b. the type of atoms in the molecule
c. the shape of the molecule

**10.** Compare the shapes of carbon dioxide and water molecules. Circle the letter of the polar molecule.

a. carbon dioxide b. water



$CO_2$

$H_2O$

## Attraction Between Molecules (page 169)

**11.** Water has a higher boiling point than carbon dioxide because attractions between polar molecules are _____ than attractions between nonpolar molecules.

**12.** Is the following sentence true or false? Attractions among nonpolar molecules explain why nitrogen can be stored as a liquid at low temperatures and high pressures. _____