

## 8

## COVALENT BONDING

## Practice Problems

In your notebook, solve the following problems.

## SECTION 8.1 MOLECULAR COMPOUNDS

- Classify each of the following as an atom or a molecule.
  - Be
  - CO<sub>2</sub>
  - N<sub>2</sub>
  - H<sub>2</sub>O
  - Ne
  - CO
- Which of the following are diatomic molecules?
  - CO<sub>2</sub>
  - N<sub>2</sub>
  - O<sub>2</sub>
  - H<sub>2</sub>O
  - CO
- What types of elements tend to combine to form molecular compounds?
- What information does a molecule's molecular structure give?
- How do ionic compounds and molecular compounds differ in their relative melting and boiling points?

## SECTION 8.2 THE NATURE OF COVALENT BONDING

- Draw the electron dot structure for hydrogen fluoride, HF.
- Draw the electron dot structure for phosphorus trifluoride, PF<sub>3</sub>.
- Draw the electron dot structure for nitrogen trichloride, NCl<sub>3</sub>.
- Draw the electron dot configuration for acetylene, C<sub>2</sub>H<sub>2</sub>.
- How many resonance structures can be drawn for CO<sub>3</sub><sup>2-</sup>? Show the electron dot structures for each.

## SECTION 8.3 BONDING THEORIES

- Predict the shape and bond angle for the compound carbon tetrafluoride, CF<sub>4</sub>.
- Predict the shape and bond angle for phosphorus trifluoride, PF<sub>3</sub>.
- ~~X~~ Predict the type of hybridized orbitals involved in the compound boron trichloride, BCl<sub>3</sub>.
- ~~X~~ What types of hybrid orbitals are involved in the bonding of the silicon atoms in silicon tetrafluoride, SiF<sub>4</sub>?
- ~~X~~ Predict the shape and bond angle of fluorine monoxide, F<sub>2</sub>O.