Chemical Bonding **Name**_____

Lewis Structures

Read from **Lesson 2: Covalent Bonding** in the **Chemistry Tutorial Section, Chapter 6** of **The Physics Classroom**:
Part 2b: Lewis Electron Dot Structures Part 2c: Double and Triple Bonds
Part 2d: Octet Breakers Part 2e: Formal Charge Considerations

Part 1: Lewis Electron Dot Structures and Multiple Bonds

1. How many valence shell electrons are on each of the following molecules?
   a. O_3 b. HCN c. NBr_3

   d. SiF_4 e. PO_4^{3-} f. $C_2O_4^{2-}$

2. Construct the electron dot diagram for the following molecules.
   a. $CHCl_3$ b. H_2S c. NBr_3

   d. SiF_4 e. HCN f. CH_3OH

3. Construct the electron dot diagram for the following molecules and ions. Which of the following have single bonds? Double bonds? Triple bonds?
   H_2 F_2 HF NF_3 N_2 O_2 SO_3^{2-}

Part 2: Exceptions and Other Considerations

Construct the electron dot diagrams for the following. Calculate the formal charges on the atoms in the structures when there is more than one possible configuration. Circle the Lewis structure that has the smallest formal charges.

$XeCl_4$

SiO_2

N_2O

H_2CO

CNS^-

ICl_3