**Lewis Structures**

(Electron dot structures)

Definition:

* shows how valence electrons are distributed in a molecule

**Ionic compounds**

1. write the symbol for each atom so that the nonmetals surround the metal
2. place electrons as dots around the atom for the number of valence electrons
3. remove the electrons from the metal and place them around the non-metal to obey the octet rule
4. write in the charge of the ions

Example:

Draw the Lewis structure for CaCl2

**Covalent Compounds:**

1. count the total number of valence electrons for the molecule
2. place two electrons between atoms that are bonded
3. complete the octet by placing the other electrons around the outer atoms
4. if still more electrons place them as pairs on the central atom
5. if the center atom is not surrounded by 8 electrons, have it share electrons with a neighbor
6. replace each pair of electrons representing a bond with a dash “-“

Example:

Draw the Lewis structure for CH3F Draw the Lewis structure for N2

Draw the Lewis structure for H3O+ Draw the Lewis structure for NO3-

Special cases:

* H fills it valence shell with 2 electrons.
* electron deficient molecules have one or more atoms that do not possess a full octet of electrons (due to an insufficient electrons for sharing) **B** & **Al**
* elements in the third and fourth periods frequently attain more than an octet of valence electrons causing the central atom to have more than eight electrons (for us just **P** & **S**)

Draw the Lewis structure for SCl4