**Ch. 15 Ionic Bonding Notes**

Valence Electrons

* For chemical properties, the most important electrons are those in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy levels.
* Valence electrons = Outer \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_ electrons
* Core electrons = Ones that are below the valence electrons.

Keeping Track of Electrons

* Atoms in the same column have the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electron configuration.
  + (Same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ number!)
  + Example: Group 2A
    - …s2
    - \_\_\_\_\_\_\_\_\_ valence electrons!

Electron Dot Diagrams

* Created by Gilbert Lewis
* Also called “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ diagrams”
* A way of keeping track of valence electrons.

1. Write the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Put \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ for each valence electron
3. Don’t pair electrons until you have to!

The Electron Dot Diagram for Nitrogen

Nitrogen Lewis Structure:

* Nitrogen has \_\_\_\_\_\_\_\_\_\_ valence electrons.
* First write the symbol
* Then add 1 electron at a  
   time to each side.
* Until they are forced to pair up

**Your Turn** – Draw the electron dot diagram for the following elements. Check your answers with your group and be ready to share out.

Li C

Ca S

Electron Configurations for Cations

* Metals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons to attain \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_ configuration.
* They make \_\_\_\_\_\_\_\_\_\_\_\_ ions.
* If we look at electron configuration it makes sense.

Calcium Lewis Structure:

* + Na 1s22s22p63s1 - 1 valence electron
  + Na+ 1s22s22p6 - noble gas configuration
* Metals will have few \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons
* These valence electrons will come off
* Forming positive ions

Electron Configurations for Anions

* Nonmetals \_\_\_\_\_\_\_\_\_\_\_\_\_ electrons to attain noble gas configuration.
* They make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ions.

Phosphorous Lewis Structure:

* If we look at electron configuration it makes sense.
  + S 1s22s22p63s23p4 - 6 valence electrons
  + S-2 1s22s22p63s23p6 -noble gas configuration.
* Nonmetals will have many valence electrons.
* They will gain electrons to \_\_\_\_\_\_\_\_\_\_\_\_ the outer shell
* All atoms react to achieve noble gas configuration.
* Noble gases have 2 s and 6 p electrons.
* 8 valence electrons .
* Also called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_.

Your Turn: Draw the Lewis Structure for each ion

O Na

S Mg