**Electron Configuration Notation**

1. The electron configuration of an atom is a form of notation which shows how the electrons are distributed among the various atomic orbital and energy levels. The format consists of a series of numbers, letters and superscripts as shown below:

$$1s^2$$

2. Here you see the electron configuration for the element helium. This electron configuration provides us with the following information:
    a. The large number "1" refers to the principle quantum number (n) which stands for the energy level. It tells us that the electrons of helium occupy the first energy level of the atom.
    b. The letter s stands for the angular moment quantum number (l). it tells us that the two electrons of the helium electron occupy an s orbital
    c. The exponent 2 refers to the total number of electrons in that orbital or sublevel. In this case, we know that there are two electrons in the s sublevel at the first energy level.
3. Remember that electron configuration is the arrangement of electrons of an atom.
4. The process for writing electron configuration is a simplified version of orbital notation!
    a. Locate the element on the periodic chart
    b. Determine the main energy level of the element
    c. Determine the sublevel of the element
    d. Determine the number of electrons in the element
    e. Fill in all subsequent (ones that come before) main energy levels, sublevels, and electrons before the last sublevel; then determine the number of electrons in the last sublevel and write that as the superscript
    f. When you add all superscripts together, it should equal the total number of electrons in the element
5. Example: sodium
    a. Sodium is has an atomic number of 11
    b. It is located on the 3rd row of the chart → 3rd main energy level
    c. It is located in the 1st column, which means it is in the s sublevel
    d. It has 11 electrons
    e. The orbital notation for sodium is:

    f. Therefore its electron configuration would be written as: $1s^2 2s^2 2p^6 3s^1$ and the number of valence electrons (the number of electrons in the highest s and p sublevels) would be 1
6. Complete the electron configuration for each of the following elements and determine the number of valence electrons.
    a. Cl
    b. Ag
    c. Fe
    d. I
    e. Ni
    f. Cu
    g. Ba
    h. Pd