**Physical Science Study Guide Chapter 17 The Periodic Table of Elements**

**KNOW**

* A chemical symbol is a representation of an element using 1-3 letters. The first letter is always capitalized and the following letters are lower case (i.e. Br). A CAPITAL LETTER ALWAYS INDICATES A NEW ELEMENT
* Monatomic means that an element occurs/exists having only one atom of that element
* Diatomic means that the element likes to occur having 2 atoms (H, N, O, F, Cl, Br, and I)
* Dmitri Mendeleev created the version/style of the periodic table of elements (PTE) that we use today
* Elements are organized on the PTE according to the increasing atomic number (number of protons- REMEM BER THE # OF PROTONS DICTATES WHAT THE ELEMENT IS!) and their chemical and physical characteristics
* The periodic law is simple and says that the elements vary with their atomic numbers in a periodic way (see the above statement)
* Know the metal characteristics
* Know the characteristic of non metals
* Characteristics of metalloids
* Know that each column on the PTE is known as a family or a group and that each group will have the same number of valence electrons for all representative elements (the A elements)
* The number of valence electrons for the representative elements is the same as the number letter designation
* Know that out of all of the elements the alkali metals and the halogens are the most reactive
* Know alloy
* Know that the transition and inner transition elements will have between 1-3 valence electrons, but most often 2
* Know general characteristics of each family
* Know that a period or series is the horizontal rows on the PTE
* Know the general trends as you go across a period
  + The outer electron shell decreases across a period from left to right (gets smaller) and increases down a group(that is the atom increases in size)
  + The valence electrons are held more strongly, tightly to the atom when you are at the right side of a period and at the top of a group
  + Metallic character decreases as you go across the PTE from left to right (it less conductive as you go towards the right)
  + Diameter decreases from left to right and increases from top to bottom (again this is why the electrons on the larger atoms are not as strongly attracted to the nucleus of that atom)
* Electrons pair up in their orbital which leads to the electron configurations (know how to write these)