**Study Guide: test! Chapters 6, 7, 8, 9, 10**

* **Periodic table**
  + **How organized**
    - **Details about elements: all sorts of information**
  + **Types of elements**
  + **Periodic trends**
    - **Electronegativity**
    - **Ionic and atomic radii**
* **Ionic and Metallic bonding**
  + **Valence electrons in elements**
    - **How to count?**
  + **Octet rule, and common “violators”**
  + **Formation of cations, anions; who does what?**
  + **Electron configuration is inherent in this….**
* **Ionic solids vs. covalent compounds**
  + **Intermolecular attractions**
    - **What are they?**
    - **Where are each type found?**
  + **Properties of electrolytes**
* **Covalent Bonding**
  + **Molecular formulas**
  + **Don’t forget the diatomic elements!**
  + **Single, double, triple bonds…yeah**
  + **Resonance…more than one equivalent structure**
  + **Bond dissociation energy…the stronger the bond, the more energy it takes to break it**
  + **VSEPR**
    - **Shapes…depend upon number of electron domains around central atom**
    - **Count all valence electrons, add +/- for “charge” of ion, then make the appropriate Lewis structure; now, arrange them so as to be able to draw in 3-d fashion; figure out shape with domains as far apart as possible, within the framework given (tetrahedral, trigonal bipyramid, octahedral, etc.)**
  + **Polarity…distribution of charge, either along a bond, or the molecule overall. Remember, you can have polar bonds but a nonpolar molecule…be thoughtful (good advice everywhere)**
* **Naming compounds**
  + **Cations first, then anions**
    - **Metals don’t change their names**
      * **Is a Roman numeral needed, to indicate oxidation state?**
    - **Anion: if single element, -ide!**
    - **If polyatomic ion, choose wisely…you have quite a list**
  + **MOST IMPORTANT…BALANCE THE CHARGES…ALL THE (+) MUST BALANCE ALL THE (-)**
  + **Remember the cris-cross way to balance charges**
  + **Make sure you have read section 9.4 on naming acids and bases**
    - **Add the number of hydrogens back to front of molecule to create acid form**
      * **Example: SO4-2 become H2SO4 (sulfuric acid)**
* **Chemical Quantities**
  + **Moles…not just a small garden or yard pest, quite likely the most important unit ever.**
  + **Molar mass…I know all of you can calculate this**
  + **Hydrates: those molecules with a given number of molecules of bound water…be thoughtful**
  + **Don’t forget…at STP, 22.4L = 1 mole of a gas**
* **Percent Composition**
  + **Think pie graph…must always equal 100%**
  + **Take percentages, convert to grams, divide by atomic mass for moles, divide by smallest # moles for simplest ratio, multiply by small number to make whole number ratio, as needed**