

Classes of Reactions

- I. Two classes
 - a. Acid base reactions
 - b. Oxidation reduction reactions
- II. Acid base
 - a. Transfer of protons H^+ ions
 - b. Change water into hydronium and hydroxide
 - c. pH is negative log of hydronium concentration
 - i. 0 to 7 are acidid
 - ii. 7 to 14 are basic
 - d. Reaction of acid and base results in water and salt
- III. Oxidation-reduction
 - a. Transfer of electrons, often observed by bonding with oxygen
 - b. Follow electrons
 - i. **Loss of Electrons is Oxidation** **LEO**
 - ii. **Gain of Electrons is Reduction** **GER**
 - iii. **LEO** the lion says **GER**
 - c. Results of redox reactions
 - i. Flow of electrons—batteries
 - ii. Breaking covalent bonds—electrolysis
 - iii. Formation of metal oxides—corrosion
 - iv. Oxidation of carbon and hydrogen—combustion
- IV. Review
 - a. Periodic table
 - i. Group names
 - ii. groups show ionic character: charge type and amount
 - b. bonds control properties of compounds
 - i. ionic
 - ii. covalent
 1. nonpolar
 2. polar
 - c. molecular formulas of compounds
 - i. controlled by bonding electrons
 - ii. can be predicted by knowing ionic character
 - iii. subscript tells number of atoms in compound
 - d. chemical formulas
 - i. reactants \rightarrow products
 - ii. number of atoms must match on each side
 1. can change number of molecules of compounds to balance
 2. cannot add, delete or change ratios of atoms in any compound
 - iii. numbers of molecules is the ratio of interaction of reactants and products
 - e. molar mass, formula mass
 - i. atomic weight in periodic table is grams in a mole
 - ii. add the atomic weights in compound for grams in a mole
 - iii. find grams from known molar mass and known molar quantity
 - iv. find moles from known molar mass and known gram quantity