

## AP Chemistry Stoichiometry Review UNIT 1

- $2 \text{SO}_2 (\text{g}) + 2 \text{CaCO}_3 (\text{s}) + \text{O}_2 (\text{g}) \rightarrow 2 \text{CaSO}_4 (\text{s}) + 2 \text{CO}_2 (\text{g})$ 
  - Name the compounds involved in the reaction.
  - What mass of  $\text{CaCO}_3$  is required to remove 155 g of  $\text{SO}_2$ ?
  - What mass of  $\text{CaSO}_4$  is formed when 155 g of  $\text{SO}_2$  is consumed completely?
- $\text{S}_8 (\text{l}) + 4 \text{Cl}_2 (\text{g}) \rightarrow 4 \text{S}_2\text{Cl}_2 (\text{l})$ 
  - Starting with a mixture of 32.0 g of  $\text{S}_8$  and 71.0 g of  $\text{Cl}_2$ , which is the limiting reactant?
  - What mass of  $\text{S}_2\text{Cl}_2$  can be produced?
  - What mass of excess reactant remains when the limiting reactant is consumed?
- $2\text{NaBH}_4 (\text{s}) + \text{I}_2 (\text{s}) \rightarrow \text{B}_2\text{H}_6 (\text{g}) + 2\text{NaI} (\text{s}) + \text{H}_2 (\text{g})$ 
  - Suppose you use 1.203 g of  $\text{NaBH}_4$  with an excess of iodine and obtain experimentally 0.295 g of  $\text{B}_2\text{H}_6$ . What would be the theoretical yield of  $\text{B}_2\text{H}_6$ ?
  - What is the % error?
  - What is the % yield of  $\text{B}_2\text{H}_6$ ?
- A hydrate of magnesium bromide is found to be 37% water by mass. What is its formula?
- Nicotine, a component of tobacco, is composed of C, H, and N. A 5.775 mg sample of nicotine was combusted, producing 15.666 mg of  $\text{CO}_2$  and 4.491 mg of  $\text{H}_2\text{O}$ . What is the empirical formula for nicotine? If the molar mass of nicotine is 162.26 what is the molecular formula?
- Write the formulas of your six strong acids and your six strong bases. Name these compounds.
- Write the formulas of 4 acidic ionic compounds (salts). Name these compounds.
- Write the formulas of 4 basic ionic compounds. Name these compounds.
- Write the formulas of 4 neutral ionic compounds. Name these compounds.
- Write the formulas of your 10 alkanes. Name these compounds.
- Write the formulas of your 10 alcohols. Name these compounds.
- Know how to determine the number of protons, electrons, and neutrons in a given atom/ion.
- Know how to determine the charge of an ion using the periodic table.
- Know your polyatomic ions.
- Know how to name and write formulas of ionic and molecular compounds.
- Review significant figures.

**\*Anything from your summer assignment is fair game!!!**