CHM 130LL
PRACTICE PROBLEMS FOR THE MAJOR QUIZ 3

Chemical Quantities (Chapter 7)

1. **Percent by mass composition of a chemical compound.**

Example: What is the percent by mass of carbon in sucrose, $C_{12}H_{22}O_{11}$. *42.10% C*

2. **Preparation of aqueous solutions by dilution (use the dilution formula $M_1V_1=M_2V_2$). (Chapter 12)**

Example: What volume in mL of 6.0 M $HCl_{(aq)}$ is needed to prepare 0.500 L of a 2.3 M $HCl_{(aq)}$. *$1.9x10^2$ mL $HCl_{(aq)}$*

Stoichiometry (Chapter 9)

1. **Moles to moles conversions from the balanced chemical equation**.

Example: Calculate the number of moles of $Ag_{(s)}$, produced by 3.14 moles of $Cu_{(s)}$ according to the following balanced chemical equation: *6.28 mol Ag*

$$Cu_{(s)} + 2AgNO_{3(aq)} \rightarrow Cu(NO_3)_{2(aq)} + 2Ag_{(s)}$$

2. **Grams to moles conversions**

Example: How many moles of $CO_{2(g)}$ are produced by a combustion reaction of 25.0 g of $C_8H_{18(l)}$? *1.75 mol CO_2*

$$2C_8H_{18(l)} + 25O_{2(g)} \rightarrow 16CO_{2(g)} + 18H_2O_{(g)}$$

3. Grams to grams conversions

Ex ample: Calculate the number of grams of $H_2O_{(l)}$ produced by a neutralization reaction of 3.00 g of $Mg(OH)_{2(aq)}$ with an excess of $HCl_{(aq)}$. *1.85 g H_2O*

$Mg(OH)_{2(aq)} + 2HCl_{(aq)} \rightarrow MgCl_{2(aq)} + 2H_2O_{(l)}$