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$_{(aq)}$. $1.9\times 10^2$ 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: $6.28 \text{ mol Ag}$

$$\text{Cu}_ {(s)} + 2\text{AgNO}_3 (aq) \rightarrow \text{Cu(NO}_3)_2 (aq) + 2\text{Ag}_ {(s)}$$

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$_8$H$_{18}(l)$? $1.75 \text{ mol CO}_2$

$$2\text{C}_8\text{H}_{18}(l) + 25\text{O}_2(g) \rightarrow 16\text{CO}_2(g) + 18\text{H}_2\text{O}(g)$$
3. Grams to grams conversions

Example: Calculate the number of grams of H₂O(l) produced by a neutralization reaction of 3.00 g of Mg(OH)₂(aq) with an excess of HCl(aq). 1.85 g H₂O

Mg(OH)₂(aq) + 2HCl(aq) → MgCl₂(aq) + 2H₂O(l)