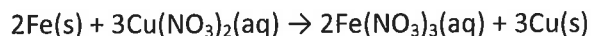


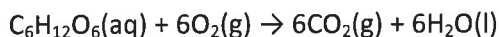
Stoichiometry Warm-Up

- 1) 55.0g of iron is placed into a solution of copper (II) nitrate. How many grams of copper will form on the outside of the piece of iron?



$$55.0 \text{ g Fe} \left(\frac{1 \text{ mol Fe}}{55.85 \text{ g}} \right) \left(\frac{3 \text{ mol Cu}}{2 \text{ mol Fe}} \right) \left(\frac{63.55 \text{ g}}{1 \text{ mol Cu}} \right) = \boxed{93.9 \text{ g Cu}}$$

- 2) Your body converts glucose (sugar) into carbon dioxide and water during cellular respiration. How many grams of glucose would you need to burn to exhale 25.0g of CO₂?



$$25.0 \text{ g CO}_2 \left(\frac{1 \text{ mol CO}_2}{44.01 \text{ g}} \right) \left(\frac{1 \text{ mol C}_6\text{H}_{12}\text{O}_6}{6 \text{ mol CO}_2} \right) \left(\frac{180.16 \text{ g}}{1 \text{ mol C}_6\text{H}_{12}\text{O}_6} \right) = \boxed{17.1 \text{ g C}_6\text{H}_{12}\text{O}_6}$$

- 3) A 300ml bottle of store bought hydrogen peroxide (3%) contains about 9.50g of hydrogen peroxide. If it is allowed to completely decompose into water and oxygen, how many grams of oxygen will be released when you open the cap?



$$9.50 \text{ g H}_2\text{O}_2 \left(\frac{1 \text{ mol H}_2\text{O}_2}{34.02 \text{ g}} \right) \left(\frac{1 \text{ mol O}_2}{2 \text{ mol H}_2\text{O}_2} \right) \left(\frac{32.00 \text{ g}}{1 \text{ mol O}_2} \right) = \boxed{4.47 \text{ g O}_2}$$

Check yourself and think about how are you doing. Can you consistently...

- 1) Predict products for reactions?
- 2) Write out complete balanced equations?
- 3) Calculate molar mass?
- 4) Know when to use molar mass and molar ratios as conversion factors?
- 5) Remember to report final answers with proper sig figs and units?

Percent Yield Practice

The following values are obtained experimentally for reactions 1 & 3 on the front page. Determine the percent yield and percent error of the experiments.

- 1) 91.2 g of copper forms and is collected.

$$\begin{aligned} \% \text{ Yield} &= \left(\frac{91.2 \text{ g}}{93.9 \text{ g}} \right) (100) \\ &= \boxed{97.1\%} \end{aligned}$$

$$\begin{aligned} \% \text{ Error} &= \left(\frac{|91.2 \text{ g} - 93.9 \text{ g}|}{93.9 \text{ g}} \right) (100) \\ &= \boxed{2.9\%} \end{aligned}$$

- 3) 3.90g of O₂ escapes the bottle and is collected.

$$\begin{aligned} \% \text{ Yield} &= \left(\frac{3.90 \text{ g}}{4.47 \text{ g}} \right) (100) \\ &= \boxed{87.2\%} \end{aligned}$$

$$\begin{aligned} \% \text{ Error} &= \left(\frac{|3.90 \text{ g} - 4.47 \text{ g}|}{4.47 \text{ g}} \right) (100) \\ &= \boxed{12.8\%} \end{aligned}$$