

CHEMISTRY REVIEW: STOICHIOMETRY

$$\begin{array}{l|l|l}
 \textcircled{1} & 6.02 \times 10^{23} \text{ molecules CaBr}_2 & 1 \text{ mol CaBr}_2 & 50.4 \text{ g CaBr}_2 \\
 & 1 \text{ mol CaBr}_2 & 199.88 \text{ g CaBr}_2 & \\
 \hline
 & & & = 1.52 \times 10^{23} \\
 & & & \text{molecules CaBr}_2
 \end{array}$$

$$\begin{array}{l}
 \textcircled{2} \text{ NaOH} \\
 \frac{22.99 \text{ g Na}}{40.00 \text{ g NaOH}} \times 100 = \boxed{\begin{array}{l} 57.48\% \text{ Na} \\ \text{in NaOH} \end{array}}
 \end{array}$$

$$\textcircled{3} \text{ a) } \frac{1 \text{ mol Zn}}{65.39 \text{ g Zn}} \mid \frac{4.07 \text{ g Zn}}{65.39 \text{ g Zn}} = \frac{0.0625 \text{ mol Zn}}{0.0625} = 1$$

$$\frac{1 \text{ mol O}}{16.00 \text{ g O}} \mid \frac{1.00 \text{ g O}}{16.00 \text{ g O}} = \frac{0.0625 \text{ mol O}}{0.0625} = 1$$

Empirical ZnO

$$\text{b) } \frac{1 \text{ mol Fe}}{55.85 \text{ g Fe}} \mid \frac{46.54 \text{ g Fe}}{55.85 \text{ g Fe}} = \frac{0.8333 \text{ mol Fe}}{0.8333} = 1$$

$$\frac{1 \text{ mol S}}{32.07 \text{ g S}} \mid \frac{53.44 \text{ g S}}{32.07 \text{ g S}} = \frac{1.6664 \text{ mol S}}{0.8333} = 2$$

Empirical FeS₂

$$\textcircled{4} \frac{1 \text{ mol N}}{14.01 \text{ g N}} \mid \frac{4.02 \text{ g N}}{14.01 \text{ g N}} = \frac{0.2869 \text{ mol N}}{0.2869} = 1 \times 2 = 2$$

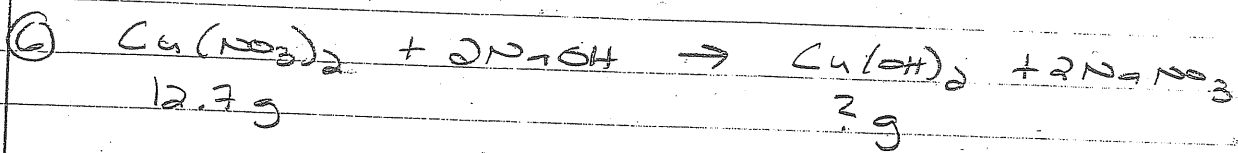
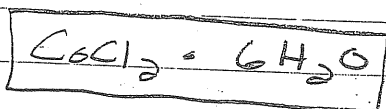
$$\frac{1 \text{ mol O}}{16.00 \text{ g O}} \mid \frac{11.48 \text{ g O}}{16.00 \text{ g O}} = \frac{0.7175 \text{ mol O}}{0.2869} = 2.5 \times 2 = 5$$

Empirical N₂O₅ = 108.02 g

Molecular N₂O₅

$$\textcircled{5} \frac{1 \text{ mol } \text{CoCl}_2}{129.83 \text{ g } \text{CoCl}_2} \mid \frac{0.846 \text{ g } \text{CoCl}_2}{0.0042} = \frac{0.0042 \text{ mol } \text{CoCl}_2}{0.0042} = 1$$

$$\frac{1 \text{ mol } \text{H}_2\text{O}}{18.02 \text{ g } \text{H}_2\text{O}} \mid \frac{0.454 \text{ g } \text{H}_2\text{O}}{0.0252} = \frac{0.0252 \text{ mol } \text{H}_2\text{O}}{0.0252} = 6$$



$$\frac{97.57 \text{ g } \text{Cu}(\text{OH})_2}{1 \text{ mol } \text{Cu}(\text{OH})_2} \mid \frac{1 \text{ mol } \text{Cu}(\text{OH})_2}{1 \text{ mol } \text{Cu}(\text{NO}_3)_2} \mid \frac{1 \text{ mol } \text{Cu}(\text{NO}_3)_2}{187.57 \text{ g } \text{Cu}(\text{NO}_3)_2} \mid 12.7 \text{ g } \text{Cu}(\text{NO}_3)_2$$

$$= \boxed{6.41 \text{ g } \text{Cu}(\text{OH})_2}$$