

# Solving Limiting Reactant Problems



GIVEN 1  
2.00g of carbon monoxide reacts with 6.00g of diiodine pentoxide, determine the theoretical yield of iodine which reactant is the limiting reactant & which is the excess reactant?

$$\begin{array}{r} 12.01 \\ 16.00 \\ \hline 28.01 \end{array}$$

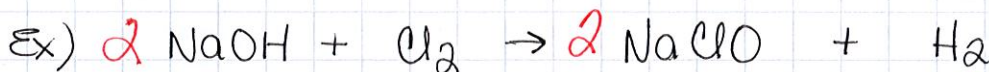
LR

$$\frac{2.00g CO}{28.01g CO} \times \frac{1mol CO}{1mol CO} \times \frac{1mol I_2}{5mol CO} \times \frac{253.80g I_2}{1mol I_2} = 3.62g I_2$$

ER

$$\frac{6.00g I_2O_5}{333.80g I_2O_5} \times \frac{1mol I_2O_5}{1mol I_2O_5} \times \frac{1mol I_2}{1mol I_2O_5} \times \frac{253.80g I_2}{1mol I_2} = 4.56g I_2$$

$$\begin{array}{r} 2I: 2 \times 126.90 = 253.80 \\ 5O: 5 \times 16.00 = 80.00 \\ \hline 333.80 \end{array}$$



GIVEN 1  
1200. g of chlorine gas reacts with 900. g of sodium hydroxide, calculate the theoretical yield of sodium hypochlorite. what are the limiting & excess reactants?

ER

$$\frac{1200. g Cl_2}{70.90g Cl_2} \times \frac{1mol Cl_2}{1mol Cl_2} \times \frac{2mol NaClO}{1mol Cl_2} \times \frac{74.44g NaClO}{1mol NaClO} = 2520. g NaClO$$

LR

$$\frac{900. g NaOH}{40.00g NaOH} \times \frac{1mol NaOH}{1mol NaOH} \times \frac{1mol NaClO}{2mol NaOH} \times \frac{74.44g NaClO}{1mol NaClO} = 1680. g NaClO$$

$$\begin{array}{r} 22.99 \\ 16.00 \\ + 1.01 \\ \hline 40.00 \end{array}$$

$$\begin{array}{r} 22.99 \\ 35.45 \\ + 16.00 \\ \hline 74.44 \end{array}$$