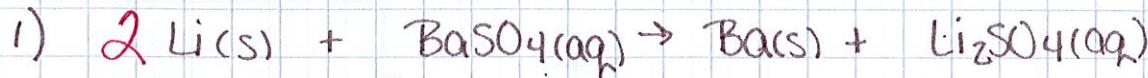


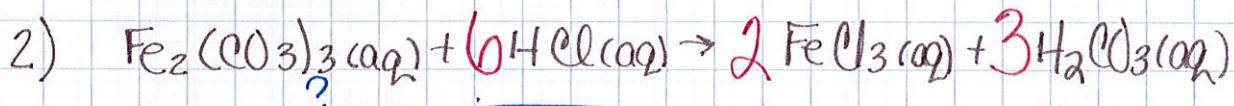
B. Mass-to-moles Stoichiometry

Examples



How many moles of barium are produced from reacting 100.0 g of lithium w/ excess barium sulfate? GIVEN

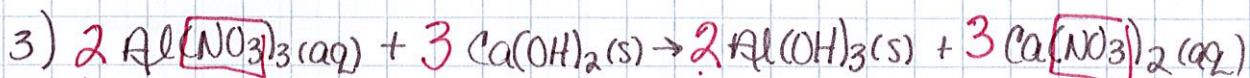
$$\frac{100.0 \text{ g Li}}{6.94 \text{ g Li}} \left| \begin{array}{c} 1 \text{ mol Li} \\ 2 \text{ mol Li} \end{array} \right| \frac{1 \text{ mol Ba}}{2 \text{ mol Li}} = 7.20 \text{ mol Ba}$$



How many moles of iron(III) chloride are produced by reacting .765 g of hydrochloric acid w/ excess iron(III) carbonate? GIVEN

$$\frac{.765 \text{ g HCl}}{36.46 \text{ g HCl}} \left| \begin{array}{c} 1 \text{ mol HCl} \\ 6 \text{ mol HCl} \end{array} \right| \frac{2 \text{ mol FeCl}_3}{6 \text{ mol HCl}} = .006699 \text{ mol FeCl}_3$$

$$\begin{array}{r} \text{MM} \quad \text{H} \quad 1.01 \text{ g} \\ \text{MM} \quad \text{C} \quad 35.45 \text{ g} \\ \hline \text{MM} \quad \text{FeCl}_3 \quad 36.46 \text{ g} \end{array}$$



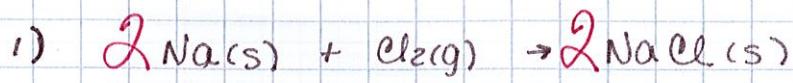
How many moles of calcium nitrate are made when 12.72 g of aluminum nitrate reacts w/ excess calcium hydroxide? GIVEN

$$\frac{12.72 \text{ g Al(NO}_3\text{)}_3}{213.01 \text{ g Al(NO}_3\text{)}_3} \left| \begin{array}{c} 1 \text{ mol Al(NO}_3\text{)}_3 \\ 2 \text{ mol Al(NO}_3\text{)}_3 \end{array} \right| \frac{3 \text{ mol Ca(NO}_3\text{)}_2}{2 \text{ mol Al(NO}_3\text{)}_3} = .08957 \text{ mol Ca(NO}_3\text{)}_2$$

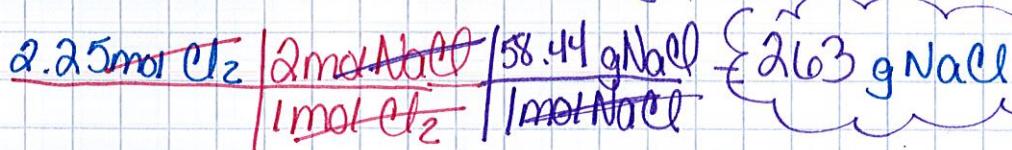
$$\begin{array}{r} \text{NM} \quad \text{Al} \quad 1 \times 26.98 \text{ g} = 26.98 \text{ g} \\ \text{NM} \quad \text{N} \quad 3 \times 14.01 \text{ g} = 42.03 \text{ g} \\ \text{NM} \quad \text{O} \quad 9 \times 16.00 \text{ g} = 144.00 \text{ g} \\ \hline \text{NM} \quad \text{Al(NO}_3\text{)}_3 \quad 213.01 \text{ g} \end{array}$$

C. Moles-to-Mass Stoichiometry

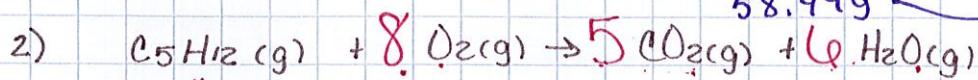
Examples



what mass of sodium chloride is produced from the reaction of 2.25 moles of chlorine with excess sodium?



$$\begin{array}{rcl} \text{MM Na: } & 22.999 \\ \text{Cl: } & 35.459 \\ & 58.449 \end{array}$$



What mass of oxygen is needed to completely react 32.6 moles of pentane (C_5H_{12})?

with GIVEN



$$\text{MM O}_2 \times 16.00 \text{ g} = 32.00 \text{ g}$$