

Molarity & Dilutions

$$\textcircled{1} \quad \frac{4.5 \text{ g Sr(NO}_3\text{)}_2}{211.64 \text{ g Sr(NO}_3\text{)}_2} \left| \begin{array}{l} 1 \text{ mol Sr(NO}_3\text{)}_2 \\ \hline \end{array} \right. = 0.02126 \text{ mol Sr(NO}_3\text{)}_2$$

$$\text{a) } [\text{Sr(NO}_3\text{)}_2] = \frac{0.02126 \text{ mol Sr(NO}_3\text{)}_2}{0.2 \text{ L}} = \boxed{0.11 \text{ M Sr(NO}_3\text{)}_2}$$

$$\text{b) } [\text{Sr}^{2+}] = \frac{0.11 \text{ mol Sr(NO}_3\text{)}_2}{1 \text{ L}} \left| \begin{array}{l} 1 \text{ mol Sr}^{2+} \\ \hline 1 \text{ mol Sr(NO}_3\text{)}_2 \end{array} \right. = \boxed{0.11 \text{ M Sr}^{2+}}$$

$$\text{c) } [\text{NO}_3^-] = \frac{0.11 \text{ mol Sr(NO}_3\text{)}_2}{1 \text{ L}} \left| \begin{array}{l} 2 \text{ mol NO}_3^- \\ \hline 1 \text{ mol Sr(NO}_3\text{)}_2 \end{array} \right. = \boxed{0.22 \text{ M NO}_3^-}$$

$$\textcircled{2} \quad 2.33 \text{ M NaC}_2\text{H}_3\text{O}_2 = \frac{x}{0.55 \text{ L}}$$

$$x = 1.2815 \text{ mol NaC}_2\text{H}_3\text{O}_2$$

$$\frac{1.2815 \text{ mol NaC}_2\text{H}_3\text{O}_2}{1 \text{ mol NaC}_2\text{H}_3\text{O}_2} \left| \begin{array}{l} 82.04 \text{ g NaC}_2\text{H}_3\text{O}_2 \\ \hline \end{array} \right. = \boxed{105 \text{ g NaC}_2\text{H}_3\text{O}_2}$$

$$\textcircled{3} \quad M_1 V_1 = M_2 V_2$$

$$(12 \text{ M})(V_1) = (5 \text{ M})(200 \text{ mL})$$

$$\boxed{V_1 = 83 \text{ mL}}$$

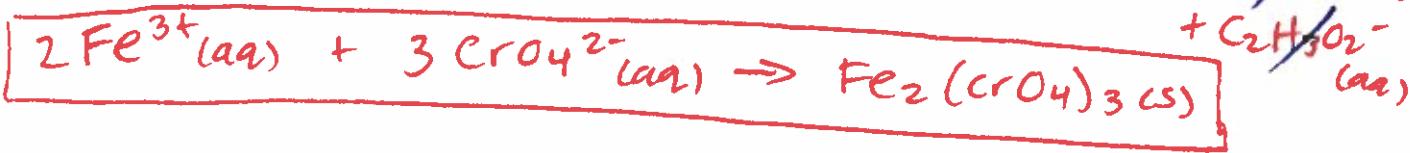
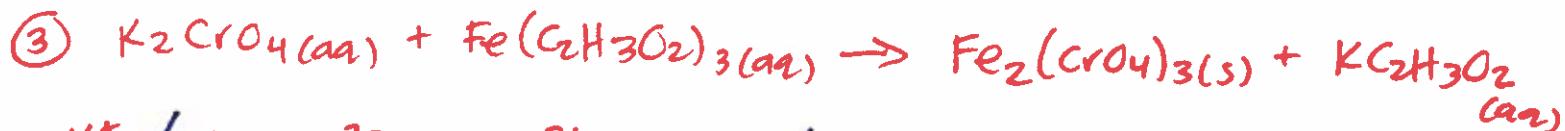
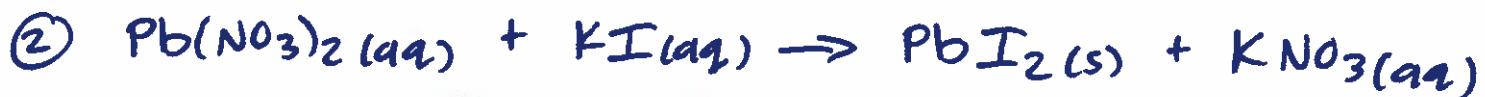
$$\textcircled{4} \quad V_2 = 400 \text{ mL} + 25 \text{ mL} = 425 \text{ mL}$$

$$M_1 V_1 = M_2 V_2$$

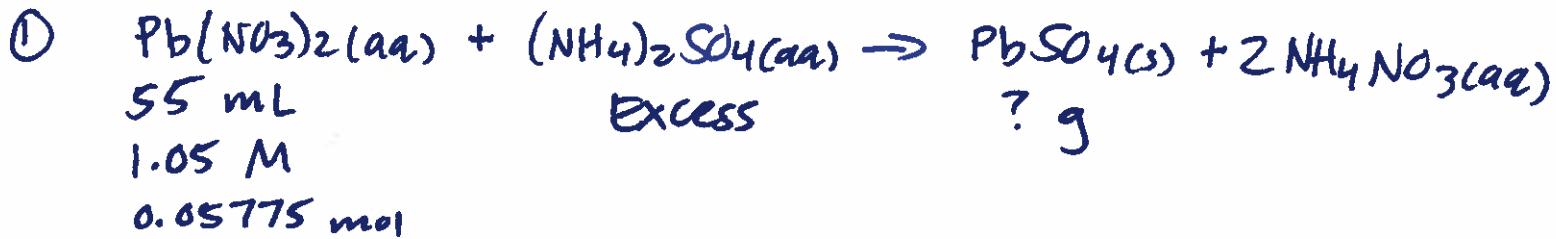
$$(2.97 \text{ M})(25 \text{ mL}) = (M_2)(425 \text{ mL})$$

$$\boxed{M_2 = 0.17 \text{ M}}$$

Net Ionic Equations



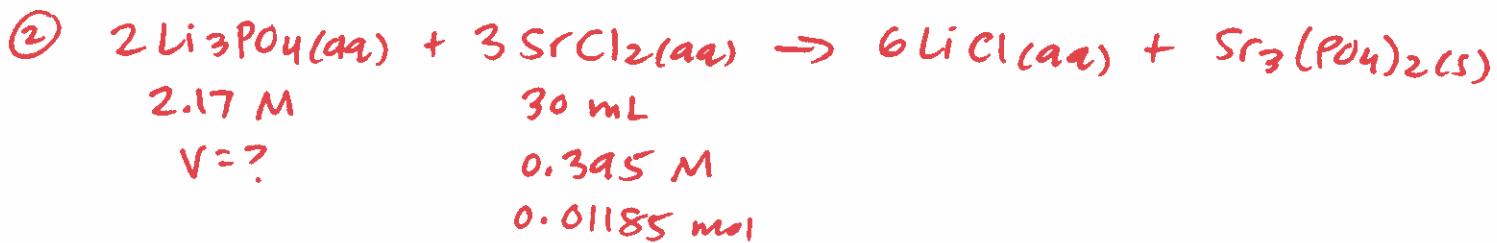
Solution Stoichiometry



$$(1.05 \frac{\text{mol}}{\text{L}})(0.055 \text{ L}) = 0.05775 \text{ mol Pb}(\text{NO}_3)_2$$

$$\begin{array}{c|c|c} \hline 0.05775 \text{ mol Pb}(\text{NO}_3)_2 & 1 \text{ mol PbSO}_4 & 303.26 \text{ g PbSO}_4 \\ \hline & 1 \text{ mol Pb}(\text{NO}_3)_2 & 1 \text{ mol PbSO}_4 \\ \hline \end{array}$$

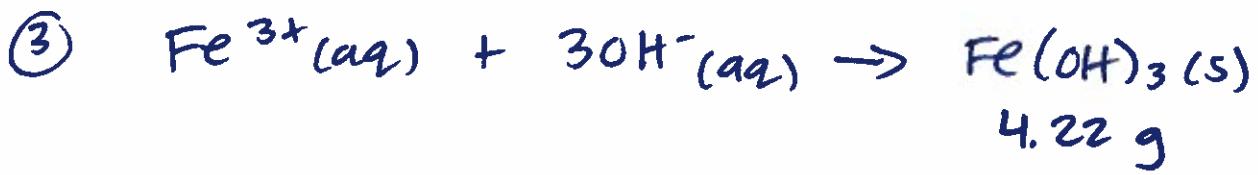
$= \boxed{18 \text{ g PbSO}_4}$



$$(0.395 \frac{\text{mol}}{\text{L}})(0.03 \text{ L}) = 0.01185 \text{ mol SrCl}_2$$

$$\begin{array}{c|c} \hline 0.01185 \text{ mol SrCl}_2 & 2 \text{ mol Li}_3\text{PO}_4 \\ \hline & 3 \text{ mol SrCl}_2 \\ \hline \end{array} = 0.0079 \text{ mol Li}_3\text{PO}_4$$

$$\begin{array}{c|c} \hline 0.0079 \text{ mol Li}_3\text{PO}_4 & 1 \text{ L} \\ \hline & 2.17 \text{ mol Li}_3\text{PO}_4 \\ \hline \end{array} = 0.00364 = \boxed{3.64 \times 10^{-3} \text{ L Li}_3\text{PO}_4}$$



$$\sqrt{\text{of }} \text{Ba(OH)}_2 = ?$$

$$[\text{Ba(OH)}_2] = 0.381 \text{ M}$$

$$\frac{4.22 \text{ g Fe(OH)}_3}{106.88 \text{ g Fe(OH)}_3} \times \frac{1 \text{ mol Fe(OH)}_3}{1 \text{ mol Fe(OH)}_3} = 0.03948 \text{ mol Fe(OH)}_3$$

$$\frac{0.03948 \text{ mol Fe(OH)}_3}{1 \text{ mol Fe(OH)}_3} \times \frac{3 \text{ mol OH}^-}{1 \text{ mol Fe(OH)}_3} = 0.11845 \text{ mol OH}^-$$

$$\frac{0.11845 \text{ mol OH}^-}{2 \text{ mol OH}^-} \times \frac{1 \text{ mol Ba(OH)}_2}{1 \text{ mol Ba(OH)}_2} = 0.059225 \text{ mol Ba(OH)}_2$$

$$\frac{0.059225 \text{ mol Ba(OH)}_2}{0.381 \text{ mol Ba(OH)}_2} \times \frac{1 \text{ L}}{1 \text{ L}} = \boxed{0.155 \text{ L Ba(OH)}_2(\text{aq})}$$