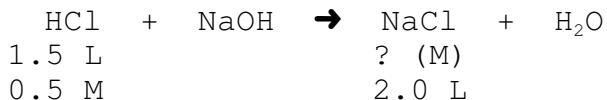


Stoichiometry with Solutions !!

use $n = CV$ plus stoichiometry (remember $n = \text{amount (moles)}$)

eg determine the concentration of sodium chloride that will result from combining 1.5 L of 0.5 M HCl with sufficient NaOH to complete the reaction. Assume a final volume of 2.0 L



$$n = ?$$

$$C = 0.5 \text{ M HCl}$$

$$V = 1.5 \text{ L HCl}$$

$$n = CV$$

$$n = 0.5 \text{ mol/L} \times 1.5 \text{ L}$$

$$n = 0.75 \text{ mol HCl}$$

$$0.75 \text{ mol HCl} \times \frac{1 \text{ mol NaCl}}{1 \text{ mol HCl}} = 0.75 \text{ mol NaCl}$$

$$n = 0.75 \text{ mol NaCl}$$

$$C = ?$$

$$V = 2.0 \text{ L}$$

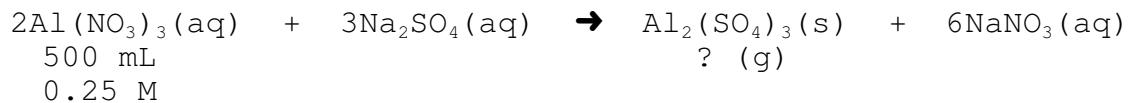
$$C = \frac{n}{V}$$

$$C = \frac{0.75 \text{ mol}}{2.0 \text{ L}}$$

$$C = 0.375 \text{ mol/L}$$

$$C = 0.375 \text{ M NaCl}$$

eg determine the mass of aluminum sulphate ppt that will form when 500 mL of 0.25 M aluminum nitrate is mixed with adequate sodium sulphate



$$n = ?$$

$$C = 0.25 \text{ M}$$

$$V = 500 \text{ mL} \rightarrow 0.500 \text{ L}$$

$$n = CV$$

$$n = 0.25 \text{ mol/L} \times 0.500 \text{ L} \quad n = (0.25 \text{ mol/L})(0.500 \text{ L})$$

$$n = 0.125 \text{ mol Al}(\text{NO}_3)_3$$

$$0.125 \text{ mol Al}(\text{NO}_3)_3 \times \frac{1 \text{ mol Al}_2(\text{SO}_4)_3}{2 \text{ mol Al}(\text{NO}_3)_3} \times \frac{342.17 \text{ g Al}_2(\text{SO}_4)_3}{1 \text{ mol Al}_2(\text{SO}_4)_3} = 21.4 \text{ g Al}_2(\text{SO}_4)_3$$