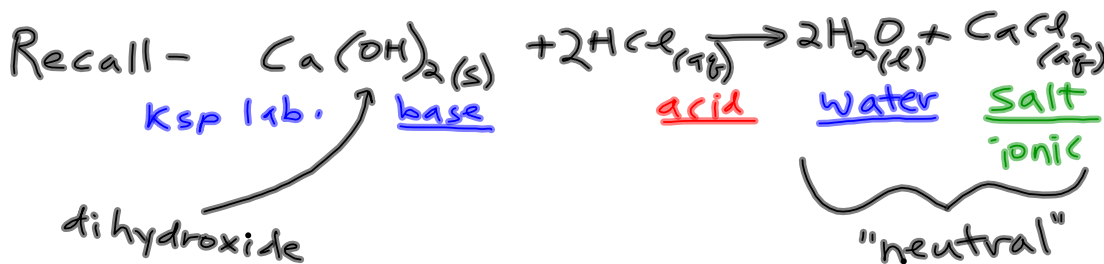


Neutralization Reactions



Used for titration - find an unknown conc. using a reactant of known concentration.

Text: p. 599

Example - A 14.8 mL sample of HCl is titrated with 8.5 mL of 0.50 mol/L NaOH. Find [HCl].



i) Moles NaOH = $\frac{0.50 \text{ mol}}{\cancel{\text{L}}} \times \underline{0.0085 \cancel{\text{L}}}$

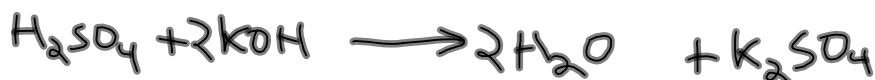
ii) mol HCl = 0.00425 mol NaOH

$$0.00425 \cancel{\text{ mol NaOH}} \times \frac{1 \text{ mol HCl}}{1 \cancel{\text{ mol NaOH}}} = 0.00425 \text{ mol HCl}$$

iii) $[\text{HCl}] = \frac{0.00425 \text{ mol}}{0.0148 \text{ L}} = 0.29 \text{ mol/L}$

Example 2 - $[\text{H}_2\text{SO}_4] = 0.250 \text{ mol/L}$

KOH - 37.2 mL at 0.650 mol/L



i) moles KOH = $\frac{0.650 \text{ mol}}{\cancel{\text{L}}} \times \underline{0.0372 \cancel{\text{L}}} = 0.0242 \text{ mol KOH}$

ii) $0.0242 \cancel{\text{ mol KOH}} \times \frac{1 \text{ mol H}_2\text{SO}_4}{2 \cancel{\text{ mol KOH}}} = 0.0121 \text{ mol H}_2\text{SO}_4$

iii) vol H₂SO₄ = $\frac{1 \text{ L H}_2\text{SO}_4}{0.250 \cancel{\text{ mol H}_2\text{SO}_4}} \times 0.0121 \cancel{\text{ mol H}_2\text{SO}_4} = 0.0484 \text{ L}$