Acid- Base Titration Calculations

Steps

1. Write a balanced equation
2. Find the number of moles of the known substance
3. Use the balanced equation to find the number of moles of the unknown substance
4. Find the concentration of the unknown substance

Example 1

20 mL of sodium hydroxide solution was titrated with 16 mL of 0.125 $molL^{-1}$ nitric acid using phenolphthalein indicator.

$^{1}NaOH + HNO_3 \rightarrow NaNO_3 + H_2O$

^{4}c =	c= 0.125 mol L^{-1}
V = 0.0200L	V= 0.0160L
^{3}n = 0.00200 mol	$^{2}n = 0.125 \times 0.016$ = 0.00200 mol

Same due to stoichiometry

Example 2

25 mL of Sodium Hydroxide solution was titrated with 0.173 $molL^{-1}$ Sulfuric Acid using phenolphthalein indicator. It took 19.1mL of acid for the reaction to reach endpoint. What is the [ ] of NaOH?

$^{1}\mathbf{2}NaOH + H_2SO_4 \rightarrow Na_2SO_4 + \mathbf{2}H_2O$

$^{4}c = 0.264\ molL^{-1}$	c= 0.173 mol L^{-1}
V = 0.0250L	V= 0.0191L
^{3}n = 0.00661 mol	$^{2}n = 0.173 \times 0.0191$ = 0.00330mol

x2 due to stoichiometry