



Volumetric Analysis Calculations

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Example One:

- Jo has a solution of Hydrochloric acid (HCl) that she does not know the concentration of. She decides to use a standard solution of Sodium hydroxide (NaOH), 0.112molL^{-1} , for the titration
- She uses a 15mL pipette to measure aliquots of NaOH into her flasks. She then titrates these with the HCl from the burette until the indicator turns from purple to colourless
- These are her results:
 - Titres of HCl: 23.3mL, 22.8mL, 22.9mL, 22.7mL

Balanced equation:

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- NaOH
 - c =
 - n =
 - v =
- HCl
 - c =
 - n =
 - v =

Example Two:

- Jim has a solution of Sodium carbonate (Na_2CO_3), but the label is missing. To work out the concentration he decides to use a standard solution of Hydrochloric acid (HCl) with a concentration of 0.322molL^{-1} .
- He uses a 20mL pipette to measure aliquots of HCl into his flasks. He then titrates these with the Na_2CO_3 from the burette until the indicator turns from colourless to purple
- These are his results:
 - Titres of Na_2CO_3 : 18.2mL, 18.2mL, 17.9mL, 18.3mL

- Balanced equation:

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- HCl
 - c =
 - n =
 - v =
- Na_2CO_3
 - c =
 - n =
 - v =

Example Three:

- Jill has a bottle of vinegar (ethanoic acid solution - CH_3COOH). The label says that it should have 3.1gL^{-1} of ethanoic acid in it. To work out the real concentration she decides to use a standard solution of Sodium hydroxide (NaOH) with a concentration of $1.22 \times 10^{-2} \text{molL}^{-1}$.
- She uses a 25mL pipette to measure aliquots of vinegar into her flasks. She then titrates these with the NaOH from the burette until the indicator turns from colourless to purple
- These are her results:
 - Titres of NaOH : 22.1mL, 22.5mL, 22.6mL, 22.4mL

- Balanced equation:

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- NaOH
 - c =
 - n =
 - v =
- CH_3COOH
 - c = molL^{-1}
 - n =
 - v = gL^{-1}