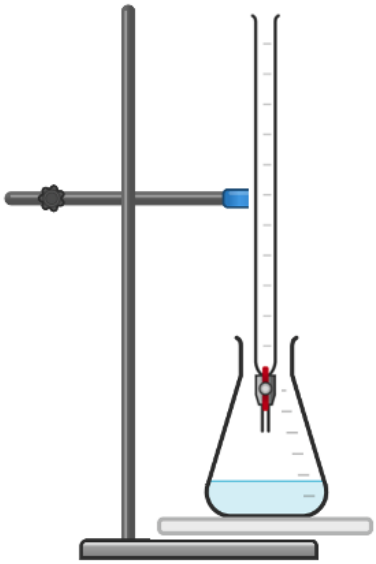
Required Practical Activity: Determining an Unknown Concentration by Titration

Apparatus:

- 25 cm^3 volumetric pipette
- Pipette filler
- 50 cm^3 burette
- 250 cm^3 conical flask
- Funnel
- Clamp stand and clamp
- White tile



Chemicals:

- 0.1 mol/dm^3 sodium hydroxide solution (irritant)
- 'Unknown concentration' sulfuric acid
- Phenolphthalein indicator

Method:

1. Clamp the burette to the retort stand with enough space beneath for the conical flask and white tile.
2. Check that the burette tap is closed, then use the funnel to help pour in sulfuric acid past the 0.00 cm^3 line. Remove the funnel.
3. Put the bottle of sulfuric acid beneath the burette and slowly open the tap until the bottom of the meniscus of the sulfuric acid reaches the 0.00 cm^3 line.
4. Add 25 cm^3 of sodium hydroxide solution to the conical flask using the volumetric pipette and pipette filler.
5. Add 5-10 drops of phenolphthalein indicator to the sodium hydroxide in the conical flask. Gently swirl the flask and the contents will turn pink.
6. Place the conical flask on a white tile beneath the burette.
7. Slowly and carefully open the burette's tap to allow approximately 10 cm^3 of sulfuric acid into the conical flask, constantly swirling the conical flask the entire time.
8. Close the tap a little so the sulfuric acid enters the conical flask a drip at a time. Eventually, one of these drips will cause the colour a colour change from pink to clear. At this point, immediately shut the tap so no more sulfuric acid is added.
9. Read the level of the sulfuric acid in the burette from the bottom of the meniscus and record this on your table.
10. Repeat the experiment two more times and complete your table. Calculate the mean volume of sulfuric acid needed to neutralise 25 cm^3 of 0.1 mol/dm^3 sodium hydroxide.

Results:
Record your results in the following table.

Titre	1	2	3	4	5	Mean
Volume of acid needed to neutralise alkali (cm^3)						

Identify concordant results (results that are within 0.2 cm^3 of each other) and use these to calculate the mean volume of acid needed to neutralise the alkali.