

Volumetric 1

1) 230ml of 0.753M $Mg(OH)_2$ is added to 172 mL of 0.570M H_3PO_4 What is the resulting pH of the final solution at 25 °C?

2) Explain the difference between the terms end point and equivalence point?

3) Consider the titration curve shown on the right. Select from the words below to complete the following sentences.

Weak, strong, conical flask, volumetric flask, pipette, burette, concordant, equivalence point, end point.

a) This is a titration between a _____ acid and a _____ base.

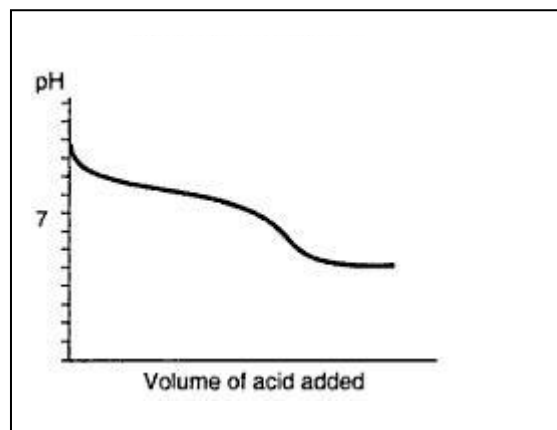
b) The acid is placed in the _____ while the base is placed in the _____.

c) Nearing the end of a titration the _____ is reached just before the _____.

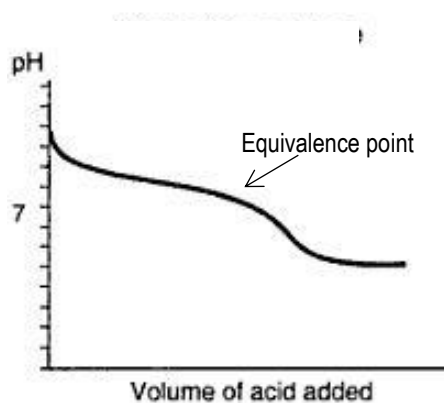
d) When washing the glassware with water a student forgot to dry one of the apparatus before using it. Water left in the _____ or _____ would result in no change to the average titre.

e) When washing the glassware with water a student forgot to dry one of the apparatus before using it. Water left in the _____ would result in a lower average titre.

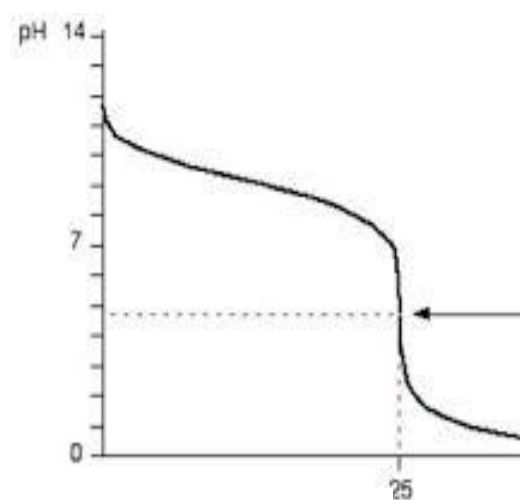
f) When washing the glassware with water a student forgot to dry one of the apparatus before using it. Water left in the _____ would result in a higher average titre.



g) Explain why none of the indicators below can be used during this titration?



h) Consider the titration curve shown on the right. Select an appropriate indicator for this titration. Explain.



i) What is the colour change?

Acid-base indicators

Name	pH range	Colour change		K_a
		Acid	Base	
Thymol blue	1.2–2.8	red	yellow	2×10^{-2}
Methyl orange	3.1–4.4	red	yellow	2×10^{-4}
Bromophenol blue	3.0–4.6	yellow	blue	6×10^{-5}
Methyl red	4.2–6.3	red	yellow	8×10^{-6}
Bromothymol blue	6.0–7.6	yellow	blue	1×10^{-7}
Phenol red	6.8–8.4	yellow	red	1×10^{-8}
Phenolphthalein	8.3–10.0	colourless	red	5×10^{-10}