

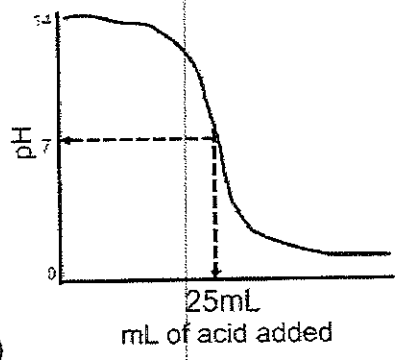
Name
Titrations

$1/2 \text{ vol} = 2 \text{ conc}$
to match.

1. 20mL of .1M NaOH is required to reach equivalence when added to 10mL of HCl. What is the concentration of HCl?

.1	?
.002	.002
.02	.01

$? = .2M$



(Graph is for #2 and #3)

2. An unknown base 22.5mL of base is titrated with .1M HCl as seen above?
- Which has a higher concentration? (acid/base) Explain.
 - Is the base a strong or weak? Explain.
3. At the equivalence point:
- The pH is? 7
 - Why is this pH being produced?
4. A student takes 12mL of an unknown acid and titrates with .5M NaOH (12.5mL to equivalence). What do you think about the concentration of the unknown?
5. In an experiment to determine the Molar mass of an unknown solid acid. .250g of unknown HX is dissolved in 25mL of water and titrated with .1M NaOH. The titration required 37.5mL of base to reach equivalence.

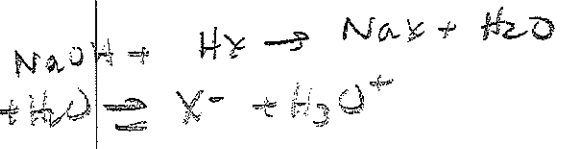
A	B
.1	?

Some moles
Less volume
25.0 → 22

equivalence = 7
Start = 14
- a strong produces a Neutral salt,

very close to 0.5, little more

- Write out the neutralization reaction.
- Write out the hydrolysis reaction.
- Determine the molar mass of the unknown.

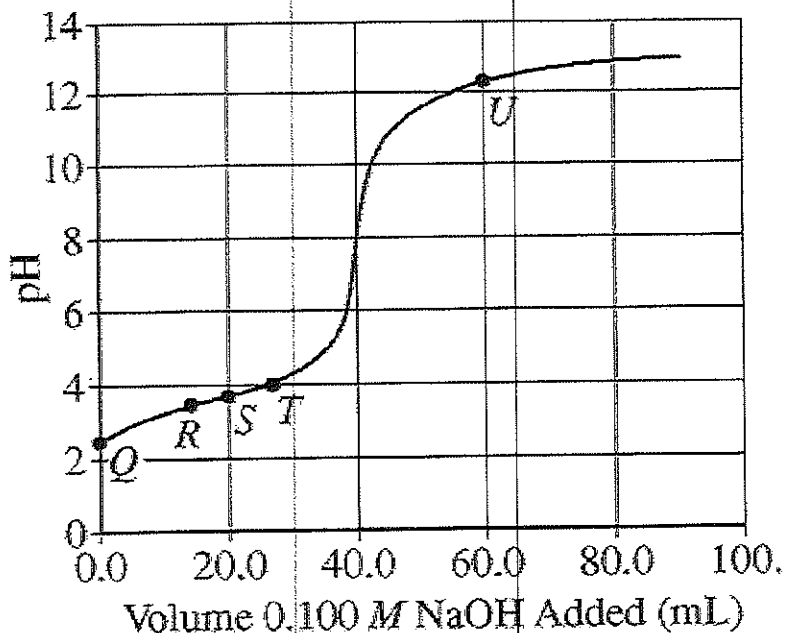


$$0.1 = \frac{x}{.0375}$$

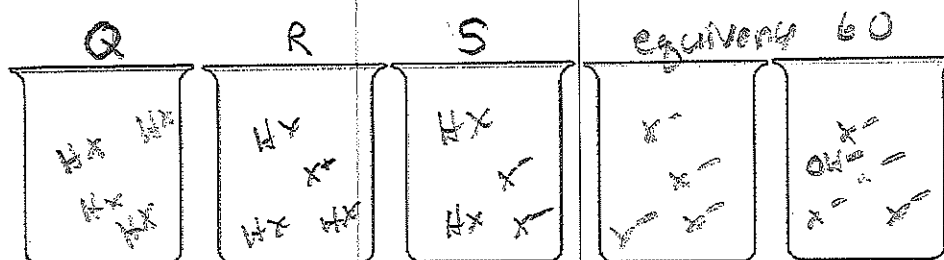
$$x = .00375$$

$$\text{Molar Mass} = \frac{g}{\text{mol}} = \frac{0.250g}{.00375}$$

pH VERSUS VOLUME TITRANT ADDED



6. A 50.0 mL sample of a Weak acid, HA, of unknown molarity is titrated, and the pH of the resulting solution is measured with a pH meter and graphed as a function of the volume of 0.100 M NaOH added.
- 7.



Draw a picture of the titration at each point.

8. Based upon the graph which is more concentrated.... No math just look at it?
NaOH, same moles, less vol = more conc.
9. Is the pH of the equivalence point (Greater than 7, equal 7, or less than 7)?
WA = WB
10. What is the concentration of the unknown acid?

$$0.1 \times 0.4 = \frac{0.04}{0.05} = 0.8M$$