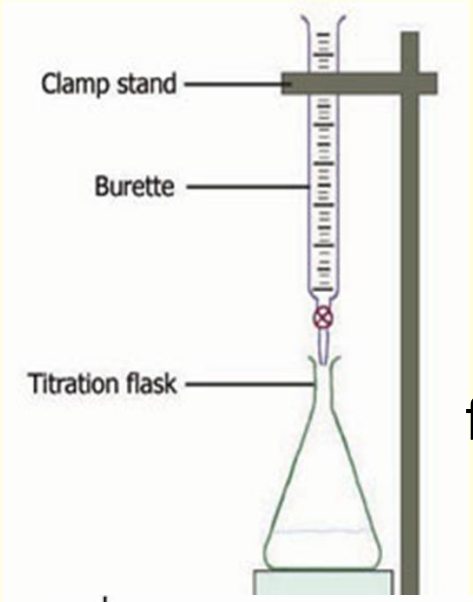
titration

technique where a solution of known concentration is used to determine the concentration of an unknown solution

$$NaOH + HCl \longrightarrow HOH + NaCl$$

net ionic: $OH^- + H^+ \longrightarrow HOH(l)$

S -0.025mol -0.025mol 0.025mol



How many mL of 1.0 NaOH will neutralize 25 mL of 1.0M HCl?

→ 25mL NaOH

burette: 1.0 M NaOH

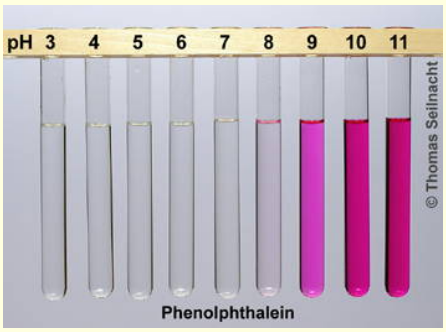
$1M = \frac{0.025mol}{X\,L}$ $X = 0.025L$ 25mL

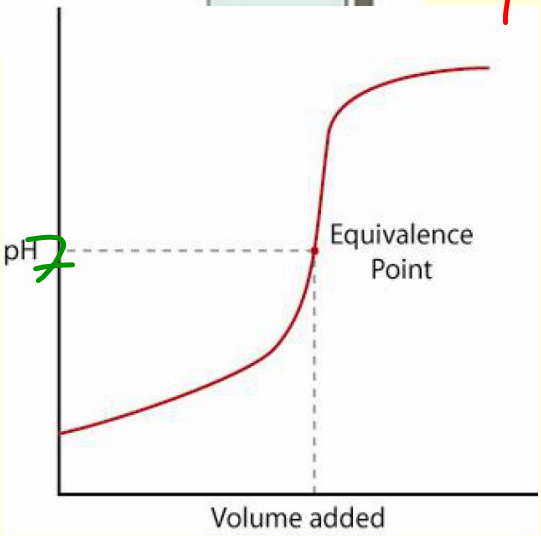
flask: 25 mL of 1.0 M HCl

moles of H^+?

$M = \frac{mol}{L}$ $1M = \frac{X}{0.025L}$ $X = 0.025mol\ HCl$

indicator: phenolphthalein





Equivalence point
point in which have equal number of moles of acid and base

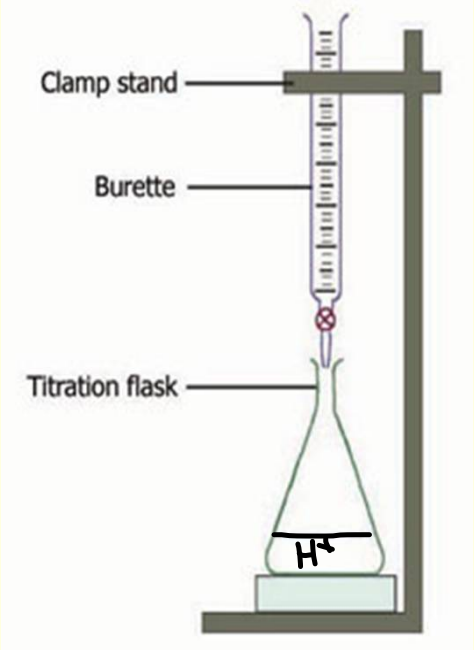
A 50 mL sample of unknown acid need to be determined.
The sample is titrated against 0.64M KOH.
In the titration, 63.5 mL of KOH was required to reach equivalence.

$$KOH + H^+ \longrightarrow HOH + K^+$$

net ionic: $OH^- + H^+ \longrightarrow HOH(l)$

0.041 0.64

$M = \frac{mol}{L}$



burette: 0.64 M KOH
63.5 mL titrated

how many moles?

$M = \frac{mol}{L}$ $0.64 = \frac{mol}{0.0635}$ $x = 0.041$

flask: 50 mL of an acid
moles of H^+? Molarity of H^+?

$M = \frac{0.041\ mol}{0.050} = 0.81\ M$