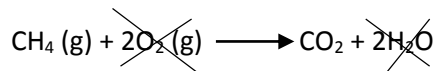


## CALCULATIONS BASED ON EQUATIONS



1 mol

1Mol

1: Identify the substances in the question which are involved.

2: Identify the No. of Moles of these substances.

3: Work out  $m=n \times \text{FM}$  for both substances

$$M=n \times \text{FM}$$

$$M=n \times \text{FM}$$

$$M=1 \times 16$$

$$M=1 \times 44$$

$$M=\underline{16\text{g}}$$

$$M=\underline{44\text{g}}$$

4: Use proportion to work out the solution.

$$16\text{g} \longleftrightarrow 44\text{g}$$

$$1\text{g} \longleftrightarrow 44/16$$

$$8\text{g} \longleftrightarrow 44/16 \times 8 = \underline{22\text{g}}$$

## VOLUMETRIC TITRATION

$$\text{Conc} \times \text{Vol} \times \text{H}^+ = \text{Conc} \times \text{Vol} \times \text{OH}^-$$

E.g.

$$\text{Conc} \times \text{Vol} \times \text{H}^+ = \text{Conc} \times \text{Vol} \times \text{OH}^-$$

$$0.5 \times \text{Vol} \times 1 = 0.1 \times 25 \times 1$$

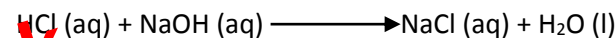
$$\text{Vol} = \underline{0.1 \times 25} = \underline{5\text{cm}^3}$$

$$0.5$$

## SPECTATOR IONS

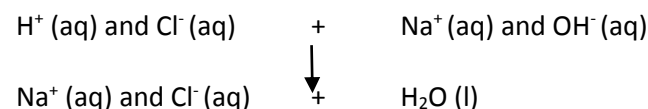
Reaction of a dilute acid with an alkali.

E.g. the reaction of sodium hydroxide solution with dilute hydrochloric acid

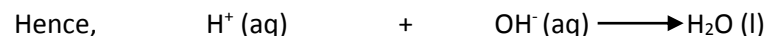
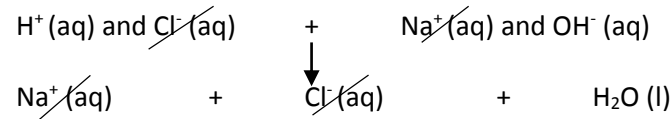


This equation can be rewritten to show the ions present.

Since water is made up almost entirely of molecules (covalent bonding) it is left unchanged.



Both the  $\text{Na}^+(\text{aq})$  and  $\text{Cl}^-(\text{aq})$  have not changed during the reaction. These ions are both spectator ions and can be cancelled out to show the actual reaction taking place.



This equation shows the  $\text{OH}^-(\text{aq})$  of the alkali reacting with the  $\text{H}^+(\text{aq})$  of the acid. It is called an ion equation. The ion equation shows the ions that take actually take part in the reaction. The ion equation is the same for the neutralisation of any acid with any alkali.