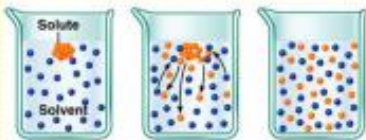


### 1. Solubility



**Solute** = A substance that is dissolved in another substance.

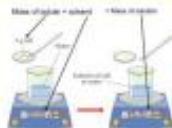
**Solvent** = A substance that dissolves another substance.

**Solution** = The mixture of the solute and solvent together.

**Soluble:** a substance that can dissolve (e.g. salt, instant coffee).

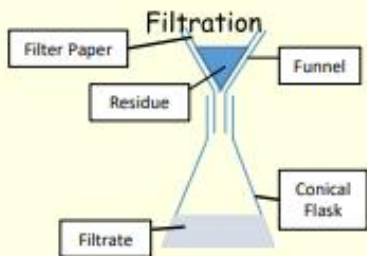
**Insoluble:** a substance that cannot dissolve (e.g. sand, rice).

**Conservation of mass:**  
Mass of solute + Mass of solvent = Mass of solution



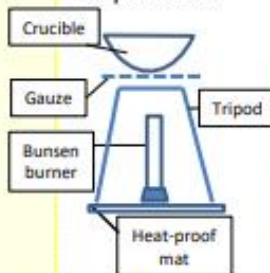
**Saturation point:**  
The point at which no more solute will dissolve.

### 3. The Four Separation techniques:



Filtration can be used to separate an insoluble solid from a filtrate.

### Evaporation



Evaporation can be used to separate a soluble solid from a solution.

### 2. Rates of Dissolving

Factor	Effect on Solubility
Temperature	When the temperature increases, the rate of dissolving increases.
Stirring	We can speed up the rate of dissolving by stirring our solution.

### 7. Graphs & Variables

#### Independent Variable (I.V)

The one you **change** to see what happens.

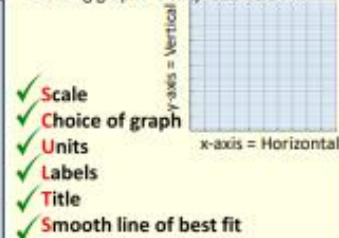
#### Dependent Variable (D.V)

The one that you **measure** for your results.

#### Control Variable (C.V)

The ones that stay the same the whole time.

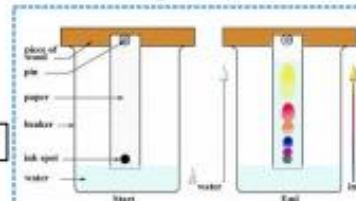
Drawing graphs is easy! See below:



Independent variables go on the x-axis and dependent variables on the y-axis.

It's important that our control variables stay the same so our results are reliable.

### Chromatography



If two coloured dots move the same distance up the chromatogram (paper), they contain the same chemical.

Chromatography is used to separate mixtures and help identify substances.

Top Mistakes	Consequence
Overfilling the beaker	Water level is too high & ink doesn't move upwards.
Drawing the starting line in pen	The line smudges, affecting our results.

### 5. Indicators

Indicators are chemicals which change colour, depending on whether they're mixed with acids or alkalis. Universal indicator (U.I) is the most accurate indicator, see below for others:

Indicator	Colour in Acid	Colour in Alkali
Blue Litmus Paper	Turns red	Stays blue
Red Litmus Paper	Turns blue	Stays red
Cabbage	Turns red	Turns blue

### 6. Neutralisation

Neutralisation means adding an acid and an alkali together to make something neutral. A general equation for neutralisation is:



The name of the salt depends on the names of the two chemicals which are reacting:

The first part of the salt's name is the same as that of the alkali

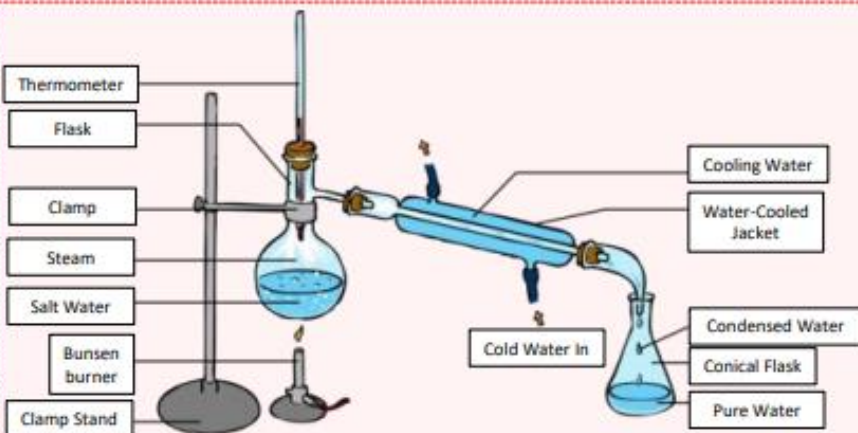
The second part of the salt's name depends on the acid:

Hydrochloric Acid = Chloride

e.g. magnesium oxide produces magnesium nitrate, calcium carbonate produces calcium nitrate etc.

Nitric Acid = Nitrate  
Sulphuric Acid = Sulphate

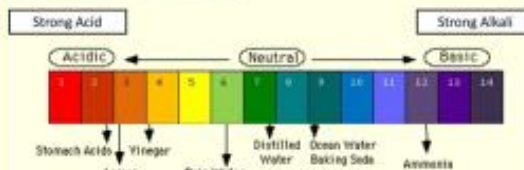
### Distillation



**Simple Distillation:** The process used to separate a pure liquid from a mixture of liquids. It works when the liquids have different boiling points.

**Key words:** distillation, condenser, condensing, distillate

### 4. Acids & Alkalis



Acids and alkalis are measured by the pH scale, which ranges from 1 (strong acid) to 14 (strong alkali).

Substance	pH Value	Colour with Universal Indicator
Vinegar	3	Orange
Distilled water	7	Green
Ammonia	12	Dark blue/purple

A pH value of 7 is neutral (neither acid nor alkali).

Acid: 1-6

Alkali: 8-14