Density

Density tells us how heavy something is for its volume

In dense materials

- particles are very closed to each other
- there is very little space between them

For the same materials

- gas is least dense
- liquid is more dense
- solid is most dense

Water is an exception

Liquid water is more than the ice thats why ice ice floats

How we can calculate the density

- measure mass using a top balance
- measure the volume
- regular cuboid
- volume= length x width x height
- Irregular shape
- It uses the displacement of water with the eureka can and measuring cylinder

Density formula

Density = mass / volume

Floating and sinking

A less dense material floats on a more dense one

Example
cooking oil has the density of 0.93 so it will float on the water that has the density 1.00
sand has the density 1.5 so it will sinks in the water

When substances are heated they expand and their density decreases
heated air Rises because the same number of particles not take up more space

Solution and concentration
A solution is a clear mixture made when one substance dissolves and fits into the gaps between the particles of the liquid

What is solute
It is something solid like send sugar salt

What is solvent
It is something that is liquid for example water

When the solution is formed
A solution forms because the forces between the solute and solvent are stronger than the forces in the solute alone

Mass of solution= mass of solvent + mass of solute

Volume of solution is usually the same as the volume of solvent

Sometimes the volume becomes smaller when two liquids makes like alcohol and water because they have strong forces of attraction and the gaps between the particles becomes smaller

Concentration

It tells us how much solute is in a certain amount of solution

Formula is

concentration= mass of solute/ volume of solvent

When a solution is made from two liquids concentration is often measured in percentage

concentration= volume of solute/ volume of solution x100

When water is added the solution becomes more dilute

A solution with most solute particles is the most concentrated

A solution with the fewest solute particles is the most dilute
Like gas concentration will be equal to gas pressure