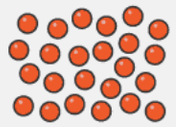
Year 7 Science: Term 2
Particles, forces and motion

Week 1 and 2 – States of Matter

	Solid	Liquid	Gas
Arrangement of particles	Close together Regular pattern	Close together Random arrangement	Far apart Random arrangement
Movement of particles	Vibrate on the spot	Move around each other	Move quickly in all directions
Diagram			

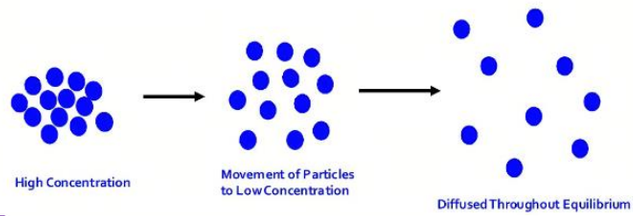
Only gasses can be compressed because there is empty space between the particles

Week 3 Diffusion

Diffusion is the movement of particles from an area of high concentration to and area of low concentration.
Diffusion happens in gasses and liquids because the particles can move freely.

Diffusion is affected by:

Temperature
Particle Size
The state of the diffusing substance

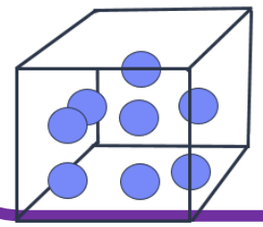


Week 4 - Density

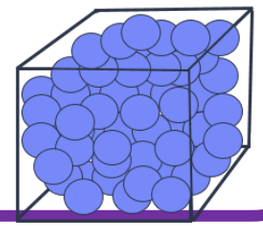
Density is a measure of how tightly packed the particles are. For example, Solid gold is more dense than liquid gold because the particles are more tightly packed together.

Density is not the same as how heavy something is. Density is the number of particles in a certain space

Low Density



High Density

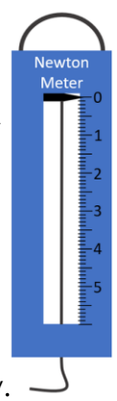


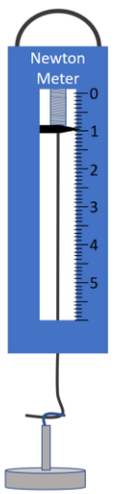
Week 5 - Forces

All forces are either push or pull. For example, when you drop a tennis ball gravity is pulling it down. When you kick a football, you are pushing the ball with your foot.

Forces can be contact this means you have to touch them to exert a force or non-contact which means you don't have to touch the object such as gravity.

Forces can be measured using a newton meter





Week 6 - Motion

Speed is how fast you travel in a certain time. If you are moving at 10 m/s (metres per second) that means every second you travel 10m

To calculate speed, you need to use the equation

$$Speed = \frac{Distance}{time}$$

Relative motion is how far you move relative to the observer. For example, two cars moving towards each other at 10m/s have a relative speed of 20m/s.

Key words:

Contact force – A type of force which is only exerted when the objects touch

Diffusion – The movement of particles from an area of high to low concentration until they are evenly spread out.

Distance – How far an object travels in a certain direction

Density – How tightly pack the particles are

Forces – Push or pull forces which result in a change in velocity, shape or direction

Newton Metre – A piece of science equipment used to measure the force exerted on an objects

Year 7 Science: Term 2
Particles, forces and motion

Week 1 and 2

Question	Answer
Why can a solid not be compressed?	A solid cannot be compressed as there are
How do the particles in a gas move?	The particles in a gas moves freely. There are no intermolecular forces between molecules.
Is a cake a solid or a gas?	A cake is a solid as the particles are close together and the cake keeps a consistent shape.
Name the three states of matter	Solid, Liquid and gas.
What are material made from?	All materials are made from particles

Week 3

Question	Answer
How does temperature affect diffusion?	The higher the temperature the faster the rate of diffusion as the particles move quicker.
Why can diffusion not happen in a solid?	The particles in a solid tightly packed so nothing can diffuse through it.
Define diffusion	Diffusion is the movement of particles from a high to low concentration until they are evenly spread.
What happens if you put orange juice in water?	The particles of orange juice will spread out in the water until they are evenly spread.
Does diffusion need energy?	No

Week 4

Question	Answer
Why does wood float on water?	Wood has a lower density than water, so it floats.
Why does solid gold have a higher density than liquid gold?	The particles in a solid are more tightly packed than in a liquid.
What is the equation for density?	$Density = \frac{mass}{volume}$
Explain how increasing the temperature affects density	The particles will become less tightly packed so are less dense.
Define density	How tightly packed the particles are

Week 5

Question	Answer
A contact force is…	A force which can only be exerted by touching the object
What is the unit of force?	The unit of force is the Newton
What is a force measured with?	Force is measured with a Newton Metre
List three things a force can change	A force can change speed, shape or direction
Gravity is…	A non-contact force which pulls things to the centre of mass

Week 6

Question	Answer
If a car is moving right at 10m/s and another is moving left at 20m/s what is the relative motion?	30m/s
Define speed	Distance travelled per second
State the speed equation	$Speed = \frac{Distance}{time}$
A car travels 150m in 20 seconds what is their speed?	$Speed = \frac{150}{20} = 7.5m/s$
What is relative motion?	How fast an object is moving relative to the oberver

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