

Particles and States of matter

Know the facts		Key words	
1	Solids have particles arranged in closely packed in neat orderly rows. Particles vibrate on the spot. Liquids have particles in random order, closely packed and flow past each other. Gases have particles in arranged in random order, not touching and move freely.	1	Particle Model: A way to think about how substances behave in terms of small, moving particles.
2	Particles gain energy as the temperature increases and lose energy when the temperature decreases.	2	Diffusion: is the random movement of particles from an area of high concentration to an area of lower concentration
3	A substance is a solid below its melting point. A substance is a liquid between its melting point and its boiling point. A substance is a gas above its boiling point.	3	Gas pressure: Caused by collisions of particles with the walls of a container.
4	Solids cannot be compressed as there are no spaces between particles. Solids have a fixed shape and volume as the particles cannot move.	4	Density: How much matter there is in a particular volume, or how close the particles are.
5	Liquids have a fixed volume but not a fixed shape. Liquids flow and take the shape of the container as the particles move over each other	5	Evaporate: Change from liquid to gas at the surface of a liquid, at any temperature.
6	Gases do not have a fixed shape or volume as the particles will spread out to fill the shape of the container. Gases can be compressed as they have space between the particles.	6	Boil: Change from liquid to a gas of all the liquid when the temperature reaches boiling point.
7	When solids are heated the particles gain energy so vibrate faster overcoming some of the forces of attraction between them to take on a liquid arrangement.	7	Condense: Change of state from gas to liquid when the temperature drops to the boiling point.
8	When liquids are heated the particles gain energy, move faster and overcome the forces of attraction between the particles to form a gas.	8	Melt: Change from solid to liquid when the temperature rises to the melting point.
9	The properties of a substance describe what it looks like and how it behaves	9	Freeze: Change from liquid to a solid when the temperature drops to the melting point.
10	The properties of a substance depends on what its particles are like and how they are arranged.	10	Sublime: Change from a solid directly into a gas.

Properties of solids, liquids and gases

Particles in solids:

- Stay fixed to their neighbours
- Line up in a regular pattern
- Are very close together
- Can only vibrate
- Are very strongly attracted by each other

Particles in liquids:

- Don't stay in a regular pattern
- Always change neighbour
- Move sliding past each other
- Are close together
- Are strongly attracted by each other

Particles in gases:

- Can fill any container of any size
- Have lots of space between each other
- Are free to move around
- Attract each other very slightly

