

In this unit: Pupils will learn about the makeup of solids, liquids and gases and observe changes in state. They will use their knowledge to explore the water cycle and make a model

Children should already know:

- that some materials are used for certain purposes based on their properties.
- the water cycle and process involved e.g. evaporation, condensation and precipitation,

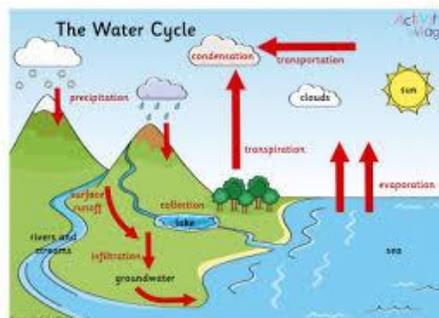
At the end of this unit, children will know:

- that all materials are made from particles, which are so small that we cannot see them without a powerful microscope.
- that particles behave differently in solids, liquids and gases.
- that solids have vibrating particles that are packed closely together and in a fixed position.
- that liquids hold the shape of the container there are in because the particles are packed close together but can move over each other.
- that gases spread out and move in all directions and that they can escape from open containers.
- that when water is heated the particles vibrate faster until they have enough energy to move about freely. The water evaporates into vapour.
- that when water is cooled the particles slow down and form a solid structure. The water has frozen into ice.
- the temperature that water turns to ice is  $0^{\circ}\text{C}$  – this is known as the freezing point.
- the temperature that water boils is  $100^{\circ}\text{C}$  – this is known as the boiling point.
- the part played by evaporation and condensation in the water cycle.

Pupils could investigate:

- whether a material is a solid, liquid or gas.
- the particle structure of solids, liquids and gases.
- the effect of temperature on substances e.g. chocolate.
- the temperature that materials change state.
- evaporation and condensation and the water cycle.
- why the water cycle is important to life.

Material	Melting point ( $^{\circ}\text{C}$ )
glass	1400
aluminium	660
chocolate	35
iron	1525
olive oil	-20
mercury	-39
gold	1064
tin	232
silver	962
salt	800
candle wax	60
sugar	185
ice	0

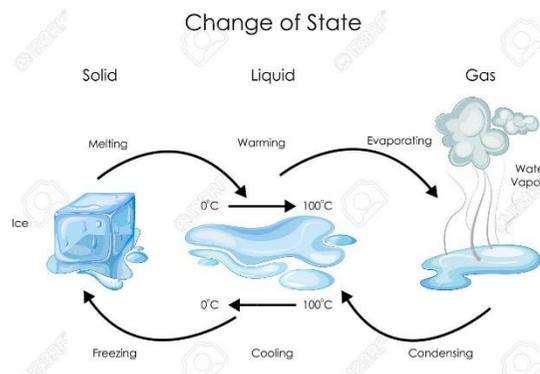


### Key Vocabulary

Celsius	a scale of temperature
change state	from solid to a liquid to a gas, or vice-versa
condensation	small droplets of water forming when water vapour touches a cold surface e.g. a window
degrees	a unit in any scale of temperature
evaporation	when liquid is heated up and turns into a gas or vapour
freezing	when a liquid changes state into a solid
freezing point	the temperature at which a liquid turns into a solid
gas	a state of matter that spreads out easily when it is warmed
liquid	a state of matter that flows easily and takes the shape of the container it is in
melting	the change of a solid into a liquid through increasing heat
particles	a really small part or amount of something
solid	a state of matter that has a firm state and does not change shape
state	a physical condition in to regards to particle structure
substance	a real physical matter
vapour	water or other liquid in a gaseous state
vibrating	shaking with repeated small, quick movements
water cycle	the process by which water on the earth evaporates, then condenses in the atmosphere before falling as precipitation

Key Questions:

- what is a particle?
- what is a solid?
- what is a liquid?
- what is a gas?
- what happens when substances are heated up or cooled down?
- what is the water cycle?



solid	liquid	gas
● rigid	● not rigid	● not rigid
● fixed shape	● no fixed shape	● no fixed shape
● fixed volume	● fixed volume	● no fixed volume
cannot be squashed	cannot be squashed	can be squashed