

States of matter – Year 4

Key vocabulary	
change of state	When a material changes from one state to another.
melting	A solid changing into a liquid.
freezing	When a liquid becomes cold enough to turn solid, it freezes.
melting point	The temperature at which a solid becomes a liquid.
boiling point	The temperature at which a liquid turns into a gas.
evaporation	When liquid changes into a gas.
condensation	The process when a gas changes into a liquid, caused by cooling.
water cycle	The never-ending process of water moving from the oceans, up into the atmosphere, and back to the Earth and oceans.
temperature	The measure of how hot or cold something is.

Solids, liquids and gases

A **solid** keeps its shape and has a fixed volume.

ice



sugar



A **liquid** has a fixed volume but changes in shape to fit the container. It can be poured.

water



honey

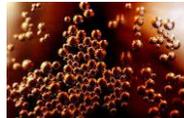


A **gas** fills all the available space; it has no fixed shape or volume.

water vapour



bubbles in cola



Key Science Year 4

The properties of **solids, liquids & gas** – see left.
(Powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped. Each individual grain demonstrates the properties of a solid.)

Melting, freezing and boiling – see below.

Evaporation and condensation – see below.

The Water Cycle – see right.

Melting and freezing



Melting is a change of state from solid to liquid. The melting point of water is 0°C.



Freezing is a change of state from liquid to solid. The freezing point of water is 0°C.

Boiling is a change of state from liquid to gas. Water boils when it is heated to 100°C.



Evaporation and condensation



Evaporating puddles

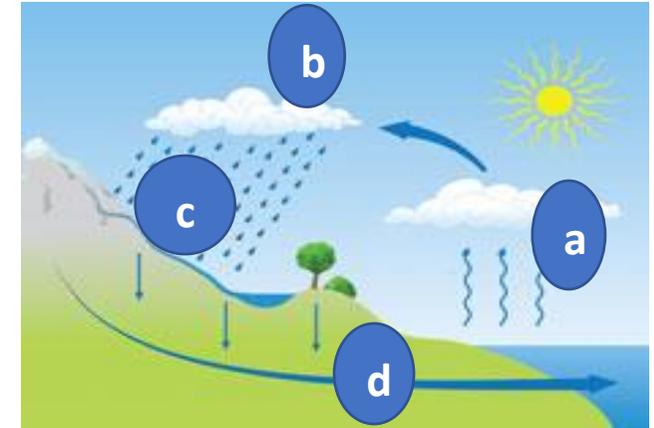
Evaporation is the change from a liquid to a gas at the surface of the liquid.



Condensation in the bathroom

Condensation is the change from a gas to a liquid, caused by cooling.

The Water Cycle



a	Water evaporates into the air The sun heats up water at the surface of seas, rivers, lakes and turns it into water vapour. The water vapour rises into the air.
b	Water vapour condenses into clouds Water vapour in the air cools and changes back into tiny drops of liquid water, forming clouds.
c	Water falls as rain snow, sleet etc When too much water has condensed the water droplets in the clouds get too heavy and water falls back down to Earth in the form of rain, snow, sleet etc. This is called precipitation.
d	Water returns to the sea. Rainwater runs over the land and collects in lakes or rivers which take it back to the sea. The cycle starts all over again