States of matter – Year 4

Key vocabulary	
boiling point	The temperature at which a liquid turns into a gas.
change of state	When a material changes from one state to another.
condensation	The process when a gas changes into a liquid, caused by cooling.
degrees Celsius (°C)	A unit used to measure temperature.
evaporation	When liquid changes into a gas.
freezing	When a liquid becomes cold enough to turn solid, it freezes.
gas	A substance that can move around freely
liquid	A substance with no fixed shape, it flows
melting	A solid changing into a liquid.
melting point	The temperature at which a solid becomes a liquid.
solid	The particles fit very close together.
state	The physical properties of matter.
temperature	The measure of how hot or cold something is.
thermometer	An instrument used to measure temp.
water cycle	The never-ending process of water moving from the oceans, up into the atmosphere, and back to the Earth and oceans.

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.

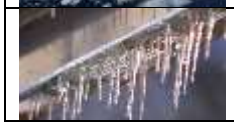
water  honey 

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

water vapour  bubbles in cola 

Significant scientist	
Bernard Palissy *(1510-1590)* 	Bernard Palissy was a French potter and scientist. He is often credited as the man who 'discovered' the modern theory of the water cycle. He asserted that rainfall alone was sufficient for the maintenance of rivers.

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.

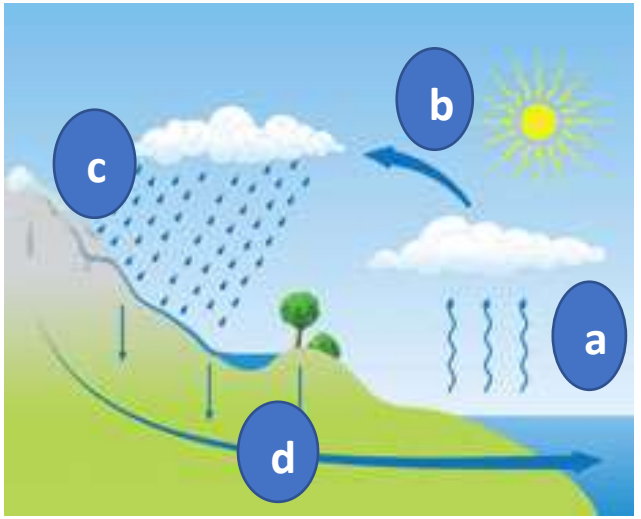
Boiling is a change of state from liquid to gas. Water boils when it is heated to 100°C. 

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**