Trinity Primary School - Science

Topic: States of matter	Year: 4	Strand: Physics

Significant Person

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.

Enquiry questions

What are my properties?

What makes a difference to how fast ice melts?

What are melting and freezing?

Are spaces really empty?

What is evaporation and condensation?

What is boiling?

Where did the water come from?

	Key Vocabulary
melting	A solid changing into a liquid.
freezing	When a liquid becomes cold enough to turn solid, it freezes.
boiling point	The temperature at which a liquid turns into a gas (faster than evaporation)
evaporation	When liquid changes into a gas.
condensation	The process when a gas changes into a liquid, caused by cooling.
precipitation	Water falling as either rain, snow, hail or sleet.
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 (measured in degrees Celsius: °C)

States of matter - key information

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.

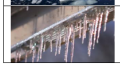
water  honey 

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

water vapour  bubbles in cola 

Melting and freezing

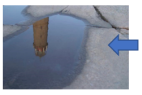
Melting is a change of state from solid to liquid. The melting point of water is 0°C.



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. 

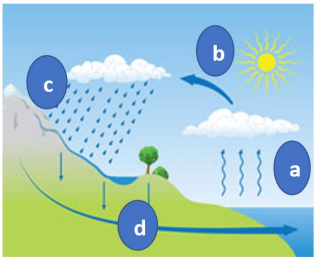
Evaporation and condensation



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**

Retrieval Quiz

For questions 1-4, state whether they are a solid, liquid or gas.

1. paper
2. honey
3. sand
4. oxygen
5. Which state fills all available space – a solid, liquid or gas?
6. At what temperature does water freeze?
7. What happens to lava when it cools down?
8. Tick the two examples of condensation taking place:

Water vapour cooling to form clouds

Water in the sea turning into a gas

Water droplets forming on a mirror when a hot shower is running

Water being put in the freezer

9. At what temperature does water boil?
10. What happens to ice when it is heated?

Useful Websites

States of matter - KS2 Science - BBC Bitesize

Year 4: States of Matter | STEM