

What I should know already

- describe the properties of different materials and
- group different materials together based on what they are made from or their properties.
- how different solid objects can change shape by squashing, bending, folding, etc.

What I will learn in this unit

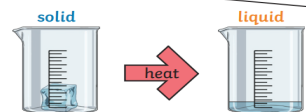
- There are 3 states of matter.
- These are: solids, liquids and gases.
- Each has characteristic properties.

Types of Material	
Solids	*Stay in one place and can be held *Most keep their shape and do not flow like liquids. Some like sand and salt can be poured as they are made up of lots of solid particles. *Always take up the same amount of space (fixed volume)
Liquids	*Can flow or be poured easily and are not easy to hold. *Change shape depending on the container they are in but have a fixed volume.
Gases	*Often invisible *Do not keep their shape – changing this and their volume to fill up whatever container they are in.

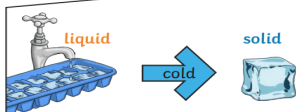
Changes of States

Water has a boiling point of 100° but it freezes and melts at 0° .

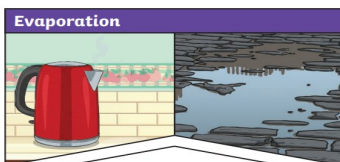
When water and other **liquids** reach a certain temperature, they change state into a **solid** or a **gas**. The temperatures that these changes happen at are called the boiling, **melting** or **freezing** point.



If a **solid** is heated to its **melting** point, it **melts** and changes to a **liquid**. This is because the particles start to move faster and faster until they are able to move over and around each other.



When **freezing** occurs, the particles in the **liquid** begin to slow down as they get colder and colder. They can then only move gently on the spot, giving them a **solid** structure.



Evaporation occurs when water turns into **water vapour**. This happens very quickly when the water is hot, like in a kettle, but it can also happen slowly, like a puddle **evaporating** in the warm air.



Condensation is when **water vapour** is cooled down and turns into water. You can see this when droplets of water form on a window. The **water vapour** in the air cools when it touches the cold surface.



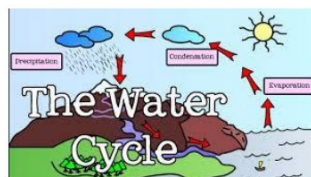
Year 4

Autumn 2

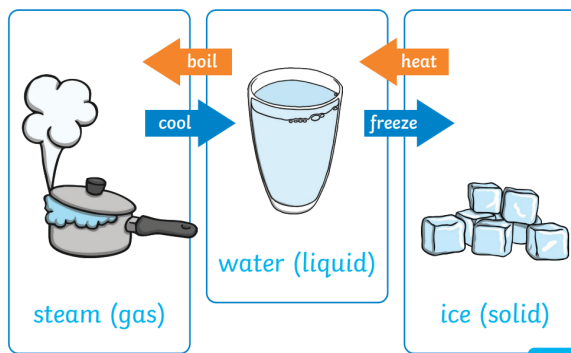
States of matter

Science Focus:

Chemistry



The water cycle is a natural process which occurs when water in seas and oceans are heated by the sun, causing them to evaporate into the sky. Once the water vapour has cooled it condenses and forms clouds. Eventually when the clouds are too full of water droplets precipitation occurs and rain, sleet, hail or snow falls and finds its way back to the water source.



Vocabulary

Word	Definition
Solids	Solids retain their shape unless a force is applied to them.
Liquids	Liquids when transferred from place to place take the shape of the container they are in but do not change in volume.
Gases	Gases change in shape and volume to fill the
Melting	The change from solid to liquid caused by heating.
Particles	Tiny bits of matter that make up everything in the universe.
Freezing	The change from liquid to solid caused by cooling.
Evaporation	The change from liquid to gas.
Boiling	A change from liquid to gas when the liquid is heated to its boiling point.
Condensation	The change from gas to liquid at temperatures between its boiling and freezing points.
Temperature	The measure of warmth or coldness of an object.



Why are there water droplets outside this cup of tea?