

Skills

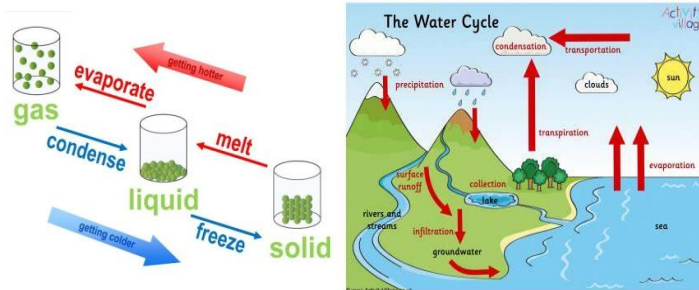
- compare and group materials together, according to whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Knowledge

- A solid keeps its shape and has a fixed volume but liquids have a fixed volume and fit the container. A liquid can be poured and keeps level.
- A gas fills all available space; it has no fixed shape or volume.
- Powders like sand can be confused with liquids because they can be poured, but they do not keep a level surface when tipped. Each individual grain shows the properties of a solid.
- Melting is a state change from **solid** to **liquid**.
- Freezing is a state change from **liquid** to **solid**. The freezing point of water is 0°C.
- Boiling is a change of state from **liquid** to **gas** that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100°C.
- Evaporation is the same state change as boiling (liquid to gas) but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.
- Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. When too much water has condensed the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the **water cycle**.

Subject Specific Vocabulary

boiling point	The temperature at which a liquid turns into a gas(vapour)
change	When the state of matter alters to another
evaporation	When a liquid turns from a liquid to a gas
freezing	The process of a liquid turning into a solid
gas	An air-like substance that moves around freely and takes the shape of the container they are in e.g. a room or bottle. They can flow too.
liquid	It is a state of matter between a solid and a gas with a fixed volume but no fixed shape. It flow and takes the shape of the container it is in.
melting	When a solid changes into a liquid usually by being heated
melting point	The temperature that needs to be achieved for the solid to melt
solid	They are objects that keep their own shape and do not flow. Some can be turned into different shapes like clay.
state	Is the form that matter can take: Solid, liquid or gas
temperature	The degree of hotness of coldness that can be measured using a thermometer.
water cycle	The existence and movement of water in, on and above the Earth. It is always in movement and changing state from liquid to gas to ice and back again.



Facts about Solids, Liquids and Gases

All the water on Earth has been here for millions of years! It just keeps being recycled by the water cycle. The water that we drink might have been swum in by dinosaurs!

Some solids when they are melted and turn to liquids can be frozen again to become solids. This is a reversible change like water (ice) or chocolate.

When some states are changed from one to another they can't go back to the original state – this is an irreversible change e.g. an egg being cooked (liquid to solid).

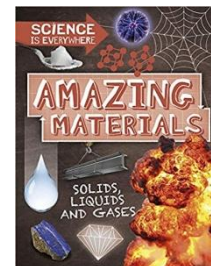
Some metals are liquid at room temperature like mercury which is used in some thermometers.

All matter is made up of particles. These particles arrange themselves close together in solids, close together but with some movement in liquids and in gasses they move around everywhere bumping into each other, filling the space they are in.

Washing on the line dries more quickly on a hot windy day than on a cold still day.

The human body has all three states of matter in it: solids, (bones teeth etc), liquids (blood, saliva etc), gas (air in lungs and in blood etc).

Exciting Books



Amazing Materials:
Solids, liquids and gases
(Science is Everywhere)
by Rob Colson

Useful Websites

<https://www.bbc.co.uk/bitesize/topics/zkgg87h/articles/zsgwwxs>

<https://www.dkfindout.com/uk/science/solids-liquids-and-gases/changing-states/>

<https://www.youtube.com/watch?v=DE3LCPfP8N8&t=50s>