



## States of matter

### We will learn...

Particles are what materials are made from. They are so small that we cannot see them with our eyes. Particles behave differently in solids, liquids and gases.

In the solid state, the material holds its shape. Solids have vibrating particles which are closely packed in and form a regular pattern. This explains the fixed shape of a solid and why it can't be poured. Solids always take up the same amount of space.

In the liquid state, the material holds the shape of the container it is in. This means that liquids can change shape, depending on the container. Liquids have particles which are close together but random. Liquid particles can move over each other. Liquids can be poured.

In the gas state, particles can escape from open containers. Gases have particles which are spread out and move in all directions.

### Key vocabulary:

<b>condensation</b>	Small drops of water which form when water vapour or steam touches a cold surface.
<b>evaporation</b>	To turn from liquid into gas. This happens in the form of vapour.
<b>freezing</b>	If a liquid or a substance containing a liquid freezes, it becomes solid because of low temperatures.
<b>melting</b>	To change from a solid to a liquid state through heat or pressure.
<b>precipitation</b>	Rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere.
<b>particles</b>	A tiny amount or small piece.

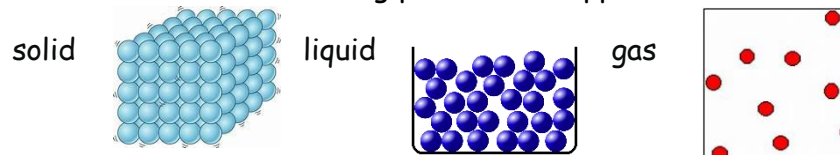
### Investigate:

- Explain the particle structure of solids, liquids and gases.
- Explore the effect of temperature on ice.
- Observe and record evaporation over a period of time, for example, a washing on a line.
- Present what you know about the water cycle.

### Inspirational Scientist

Robert Boyle - a chemist who studied particles

When water (in its liquid form) is heated, the particles start to move faster and faster until they have enough energy to move about more freely. The water has evaporated into a water vapour. When water is cooled, the particles start to slow down until a solid structure (ice) is formed. The water has frozen. The temperature at which water turns to ice is called the freezing point. This happens at 0° C.



### Working scientifically

In this topic we develop the following practical skills:

- ✓ Identifying differences, similarities or changes related to simple scientific ideas and processes
- ✓ Making systematic and careful observations using thermometers and data loggers