

## Science

## States of matter

## Year 4

## Spring Term

### Key Knowledge

States of matter	Materials can be one of three states: solids, liquids or gases. Some materials can change from one state to another and back again.
Solid	In a solid state, the material keeps its shape. Solids have vibrating particles which are closely packed. Solids have a fixed shape and cannot be poured. Ice is the solid state of water.
Liquid	In a liquid state, the material holds the shape of the container it is in. The particles are not as close together as in the solid form. Liquids can change shape, depending on the container it is in, and can be poured.
Gas	In a gas state, particles can escape from open containers. Gases fill all available space. The particles in gas are very apart from each other and moving freely. Water vapour is a gas.
Water Cycle	Water cycle depends upon the processes of evaporation, condensation and precipitation. Precipitation is water falling from the air as rain, snow, sleet or hail. Evaporation occurs on the oceans, land, lakes and rivers. Some of the cooled water vapour condenses on small particles of dust or soot present in the atmosphere and clouds containing water droplets or ice are formed. The water droplets need to reach a certain size before they begin to fall.

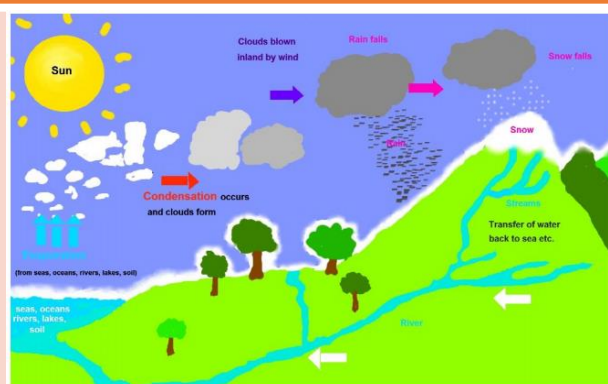
### Statutory requirements

- Compare and group materials together, according to whether they are solids, liquids and 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

### Key Vocabulary

State Change	The process of change from one state of matter to another – this is a reversible change.
Melting	Changing from a solid into a liquid.
Freezing	Changing from a liquid into a solid.
Evaporation	The process of change from a liquid into a gas.
Condensation	The process of change from a gas into a liquid.
Heating	Raising the temperature of a material
Cooling	Lowering the temperature of a material

### Diagrams



### Possible experiences

- Observe change of states over time.
- Play a game of particles: get into groups and demonstrate what the particles would look like.
- Group different objects into solid, liquid and gas depending on their properties.
- Explore the effect of temperature on substances such as chocolate, butter and wax.
- Research the melting, boiling and freezing point of different materials.
- Observe evaporation and condensation by using bowls of water and mirror/ glass.
- Apply knowledge to the water cycle.

solid	liquid	gas
● rigid	● not rigid	● not rigid
● fixed shape	● no fixed shape	● no fixed shape
● fixed volume	● fixed volume	● no fixed volume
cannot be squashed	cannot be squashed	can be squashed