



# Year 4 Science Knowledge Organiser: States of Matter



## Key vocabulary

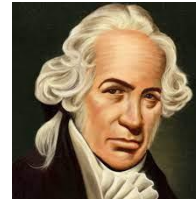
<b>solid</b>	firm or stable in shape—with particles very close together.
<b>liquid</b>	a substance that flows easily but has constant volume—with particles close but moving around.
<b>gas</b>	a substance with no fixed shape that will expand to fill the whole of a container—particles far apart and moving around.
<b>heating</b>	raising the temperature of something.
<b>cooling</b>	lowering the temperature of something.
<b>freezing</b>	turning into ice or another solid as a result of cooling.
<b>freezing point</b>	the temperature at which a liquid turns into a solid when cooled.
<b>melting</b>	turning into a liquid as a result of heating.
<b>melting point</b>	the temperature at which a solid will melt.
<b>temperature</b>	a measure of how hot or cold something is.
<b>condensation</b>	the process of turning from vapour (a gas) into liquid.
<b>evaporation</b>	the process of turning from vapour (a gas) into liquid.
<b>precipitation</b>	rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere.
<b>water cycle</b>	the process by which water on the earth evaporates, then condenses in the atmosphere, and then returns to earth in the form of precipitation.
<b>particles</b>	a tiny amount or small piece.

## Focus scientists

**Dorothy Hodgkin** (1910-1994) is the only British woman to have won the Noble Prize for Chemistry. It was for her work on the structure.



**Daniel Gabriel Fahrenheit** (1686 – 1736) was a physicist, inventor, and scientific instrument maker.



He invented the mercury-in-glass thermometer (first widely used, practical, accurate thermometer) and Fahrenheit scale (first standardized temperature scale to be widely used).

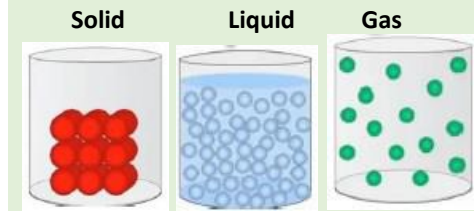
## Key Knowledge

Solids, Liquids and Gases

**What is a solid?** When materials hold their shape. Their particles are closely packed and form a regular pattern. Their shape is fixed and they will always take up the same amount of space. Examples: Ice, Wood, Glass, Diamond.

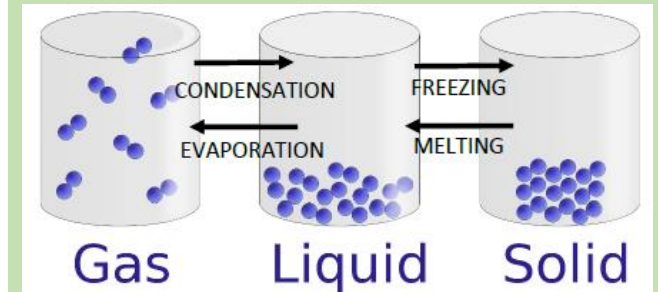
**What is a liquid?** When materials hold the shape of the containers they are in and so can change shape. Their particles are close together but can move over each other. Liquids can be poured. Examples: Water, Milk, washing-up liquid.

**What is a gas?** Gases can escape from open containers. They often cannot be seen. They have particles which can spread it and move in all directions. Examples: Steam, Hydrogen, Oxygen, Carbon Dioxide.



## Changes of State (heating and cooling)

Warming solid ice makes it melt into liquid water. Adding more heat makes it evaporate, at 100°C, into steam (a gas). When it is cooled it condenses back into liquid water. If it is cooled to 0°C it freezes and forms .



## Water Cycle

Water continually moves around the Earth in the water cycle. The Sun evaporates water into water vapour. When the water vapour cools down it turns into liquid water and it rains. In very cold places the water freezes into snow or ice. Snow and ice, when warmed.

