

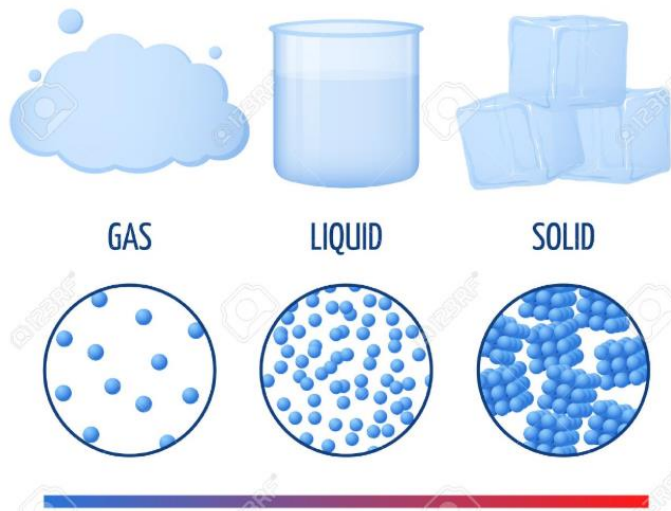
# STATES OF MATTER

## Year 4

## Knowledge Organiser

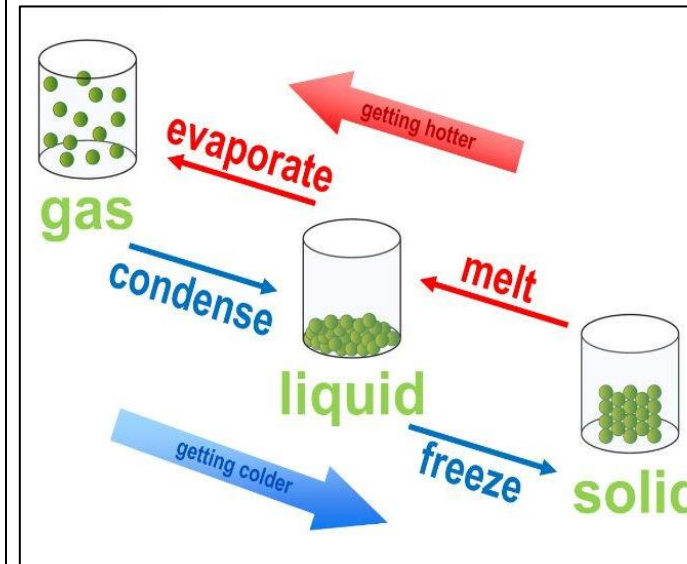


### Overview



- Matter makes up our planet and the whole Universe.
- There are three main states of matter – solids, liquids and gases.
- Matter can change state, depending on its temperature.
- Several processes describe the processes of changing states, e.g. melting, evaporation, freezing and condensation.
- The water cycle depends upon some of these processes.

### Changing States of Matter



- States of matter can change, depending upon the temperature of the matter.
- Melting is the process of changing a solid into a liquid.
  - Evaporation is the process of changing a liquid into a gas.
  - Condensation is the process of changing a gas into a liquid.
  - Freezing is the process of turning a liquid into a solid.

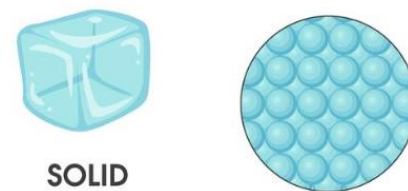
### Solids, Liquids and Gases

All matter exists in three states: solids, liquids, and gases.

**SOLIDS**

- Solids hold their shape
- Solids are rigid
- Solids have a fixed volume

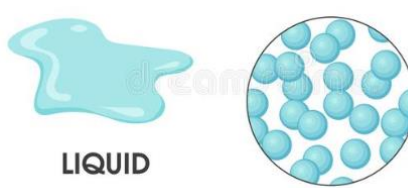
Examples include ice cubes, rock, glass, and most metals.



**LIQUIDS**

- Liquids do not hold their shape
- They are not rigid
- However, they have a fixed volume.

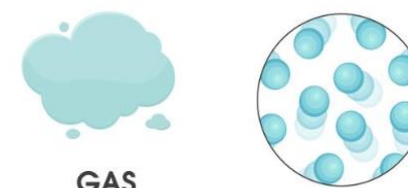
Examples include water, oil, blood and milk



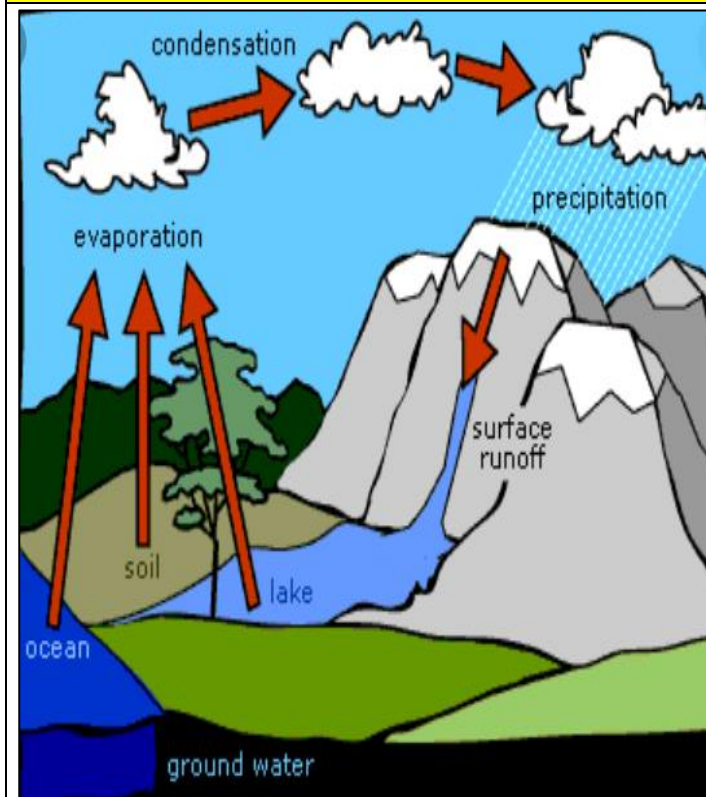
**GASES**

- Gases do not hold their shape
- They are not rigid
- They do not have a fixed volume.

Examples include oxygen, carbon dioxide and helium.



### Role in the Water Cycle



Changing states of matter play an important part in the water cycle:

#### EVAPORATION

Energy from the sun heats up the surface of the Earth. This causes the temperature in rivers, lakes, and oceans to rise, and evaporate into the air.

#### CONDENSATION

As the water vapour rises, it cools in the higher air and turns back into liquid – condensation. This creates clouds.

#### PRECIPITATION

When too much water has condensed, the clouds become too big for air to hold them. Precipitation occurs.

#### Solids

Wood    Ice Cube    Glass

#### Liquids

Coffee    Water    Shower

#### Gases

Carbon Dioxide    Air    Oxygen

### Vocabulary

<b>condensation</b>	small drops of water which form when water vapour or steam touches a cold surface, such as a window
<b>cooling</b>	lowering the temperature of something
<b>evaporation</b>	to turn from liquid into gas; pass away 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>freezing point</b>	The freezing point of a particular substance is the temperature at which it freezes. The freezing point of water is 0°C.
<b>gas</b>	a form of matter that is neither liquid nor solid. A gas rapidly spreads out when it is warmed and contracts when it is cooled.
<b>heating</b>	raising the temperature of something
<b>liquid</b>	in a form that flows easily and is neither a solid nor a gas.
<b>melting</b>	to change from a solid to a liquid state through heat or pressure
<b>melting point</b>	The melting point of a particular substance is the temperature at which it melts.
<b>particles</b>	a tiny amount or small piece
<b>precipitation</b>	rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere
<b>process</b>	a series of actions used to produce something or reach a goal.
<b>properties</b>	the ways in which an object behaves
<b>solid</b>	having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas
<b>temperature</b>	a measure of how hot or cold something is
<b>vibrations</b>	when something vibrates, it shakes with repeated small, quick movements
<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>water vapour</b>	water in the gaseous state, esp when due to evaporation at a temperature below the boiling point