

**Phase:** 3/4

**Subject:** Science

**Focus:** States of Matter

**Term:** Autumn

## What I should already know?

Distinguish between an object and the material it is made from.  
 To name and identify a variety of everyday materials, glass, wood etc.  
 The simple physical **properties** of a variety of everyday materials.  
 Compare and group together a variety of everyday materials on the basis of their simple physical **properties**.  
 Explain why some materials are used for certain purposes because of their **properties**.  
 Know how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

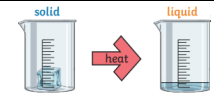
## Vocabulary

<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 <b>temperature</b> of something.
<b>evaporation</b>	To turn from <b>liquid</b> into <b>gas</b> , pass away in the form of vapour.
<b>freezing</b>	If a <b>liquid</b> or a substance containing a <b>liquid</b> freezes, it becomes <b>solid</b> because of low <b>temperatures</b> .
<b>freezing point</b>	The <b>temperature</b> at which a particular substances freezes. The <b>freezing</b> point of water is 0oC.
<b>gas</b>	A form of matter that is neither <b>liquid</b> or <b>gas</b> . A <b>gas</b> rapidly spreads out when it is warmed and contracts when it is cooled.
<b>heating</b>	Raising the <b>temperature</b> of something.
<b>liquid</b>	In a form that flows easily and is neither a <b>solid</b> or a <b>gas</b> .
<b>melting</b>	To change from a sold to a <b>liquid</b> state through heat or pressure.
<b>melting point</b>	The <b>melting</b> point if a particular substance is the <b>temperature</b> at which it melts.
<b>particles</b>	A tiny amount or small piece.
<b>precipitation</b>	Rain, snow, sleet, dew etc formed by <b>condensation</b> 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 <b>liquid</b> or <b>gas</b> .
<b>temperature</b>	A measure of how hot or cold something is.
<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 <b>precipitation</b> .
<b>water vapour</b>	Water in the gaseous state, especially when due to evaporation at a <b>temperature</b> below the boiling point.

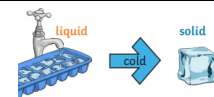
## Knowledge

When water and other **liquids** reach a certain temperature, they change state into a **solid** or a **gas**. The temperatures that these changes happen at are called the boiling, **melting** or **freezing** point.

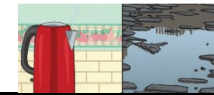
If a **solid** is heated to its **melting** point, it melts and changes to a **liquid**. the **particles** start to move faster and faster until they are able to move over and around each other.



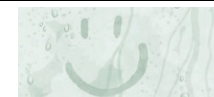
When **freezing** occurs, the **particles** in the **liquid** begin to slow down as they get colder and colder. They can then only move gently on the spot giving them a **solid** structure.



**Evaporation** occurs when water turns into water vapour. This happens very quickly when the water is hot, like in a kettle, but it can also happen slowly, like a puddle evaporating in the warm air.

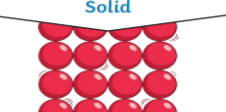




**Condensation** is when water vapour is cooled down and turns into water. You can see this when droplets of water form on a window. The water vapour in the air cools when it touches the cold surface.



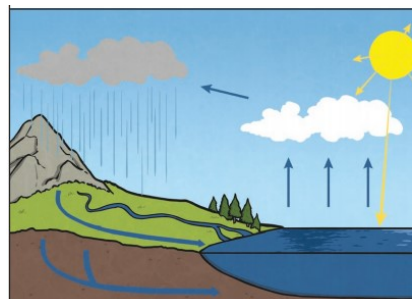
### Key Knowledge

There are three states of matter.

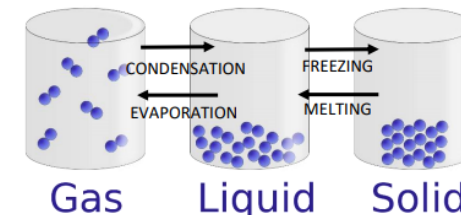
Solid	Liquid	Gas
		
Particles in a <b>solid</b> are close together and cannot move. They can only vibrate.	Particles in a <b>liquid</b> are close together but can move around each other easily.	Particles in a <b>gas</b> are spread out and can move around very quickly in all directions.

A solid keeps its shape and has a fixed volume.  
 A liquid has a fixed volume but can change shape to fit the container.  
 A gas fills all available space with no fixed shape or volume.

**Although granular and powdering materials like sand and salt, can be poured they form a heap and do not keep a level surface when tipped so therefore each individual grain demonstrates the properties of a solid.**



1. Water from lakes, puddles, rivers and seas is **evaporated** by the sun's heat, turning it into **water vapour**.
2. This **water vapour** rises, then cools down to form water droplets in clouds (**condensation**).
3. When the droplets get too heavy, they fall back to the earth as rain, sleet, hail or snow (**precipitation**).



## By the end of the unit I should know...

How to 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.

Measure or research the temperature at which this happens in degrees Celsius (°C).

Understand the part played by evaporation and **condensation** in the water cycle and associate the rate of evaporation with temperature

<u>Question 1 - What is the freezing point of water?</u>	<u>Start of Unit</u>	<u>End of Unit</u>
10 degrees Celsius		
0 degrees Celsius		
100 degrees Celsius		
-10 degree Celsius		
Don't know		

<u>Question 2 - Evaporation is...</u>	<u>Start of Unit</u>	<u>End of Unit</u>
A liquid to a gas		
A gas to a liquid		
When the sun sucks up the water		
Is when water vanishes		
Don't know		

<u>Question 3 - What is a cloud?</u>	<u>Start of Unit</u>	<u>End of Unit</u>
Fluffy cotton wool		
Water vapour rises cools and condenses back into a liquid		
Clouds are made of water vapour		
Clouds are made of steam		
Don't know		

<u>Question 4— What is melting?</u>	<u>Start of Unit</u>	<u>End of Unit</u>
A change of state from solid to liquid		
Same as dissolving		
Liquid becomes solid		
Don't know		

<u>Question 5—Evaporation happens more quickly if... (tick all that are correct)</u>	<u>Start of Unit</u>	<u>End of Unit</u>
The temperature is higher		
The liquid is spread out		
It is windy		
Don't know		

<u>Question 6—Sand, salt and sugar are...</u>	<u>Start of Unit</u>	<u>End of Unit</u>
Solids		
Liquids		
Gases		
Don't know		

<u>What I would like to find out?</u>
.....
.....
.....
.....

<u>Answers to my questions...</u>
.....
.....
.....
.....