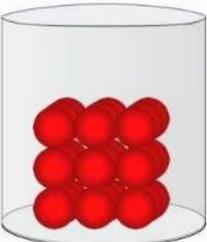
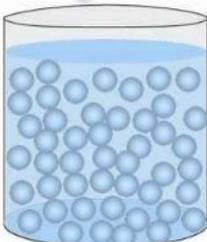
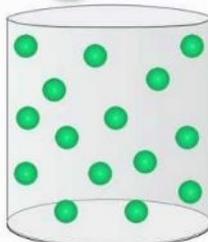


## States of Matter



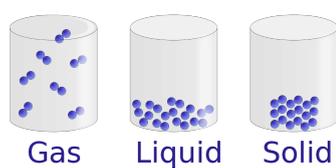
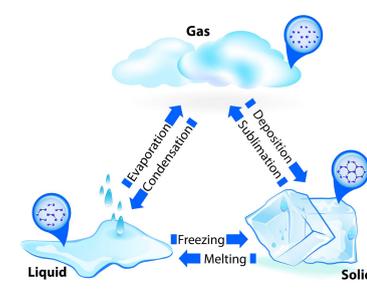
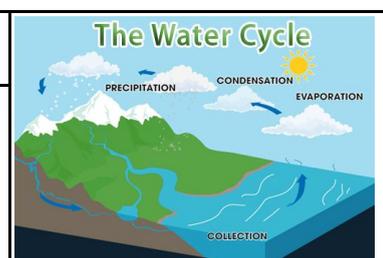
solid	liquid	gas
		
<ul style="list-style-type: none"><li>● rigid</li><li>● fixed shape</li><li>● fixed volume</li></ul>	<ul style="list-style-type: none"><li>● not rigid</li><li>● no fixed shape</li><li>● fixed volume</li></ul>	<ul style="list-style-type: none"><li>● not rigid</li><li>● no fixed shape</li><li>● no fixed volume</li></ul>
cannot be squashed	cannot be squashed	can be squashed

Year 4 - Summer 1

Name: \_\_\_\_\_

Class: \_\_\_\_\_

# Year 4 Science Knowledge Organiser - Summer 1 - States of Matter

<b>1</b>	<b>Solid</b>	In a solid, the particles fit very closely together with very little space between them. They are repeatedly vibrating and twisting but they do not move past their neighbour particles. Solids are difficult to compress and remain in their own shape.	
<b>2</b>	<b>Liquid</b>	In a liquid, the particles are still close together but a little further apart in comparison to a solid. The particles can move around and mix with other particles. Liquids can change shape to according to their container and are difficult to compress.	 Gas      Liquid      Solid
<b>3</b>	<b>Gas</b>	In gases, the particles are much further apart in comparison to both solids and liquids. There is a lot of space in between the particles and they keep moving about. Because the particles can move easily, a gas will fill any container that is put into and can be compressed into a smaller volume when the gas is compressed.	
<b>4</b>	<b>Matter</b>	Anything that has mass and takes up space.	
<b>5</b>	<b>Particle</b>	Atoms - minute building block that makes up matter.	
<b>6</b>	<b>State of Matter</b>	Solids, liquids and gases are the three states of matter.	
<b>7</b>	<b>Temperature</b>	A measure of how hot an object is - usually measured in degrees celsius °C	
<b>8</b>	<b>Heating</b>	Transferring heat energy from object to another, raising the temperature of the object.	
<b>9</b>	<b>Cooling</b>	Losing heat energy, reducing the temperature of the object.	
<b>10</b>	<b>Evaporation</b>	When a liquid turns into a gas.	
<b>11</b>	<b>Condensation</b>	When a gas turns into a liquid.	
<b>12</b>	<b>Solidification</b>	When a liquid turns into a solid.	
<b>13</b>	<b>Freezing</b>	The process when a liquid turns into a solid. Freezing occurs when heat is lost from an object, which causes the molecules to slow down and form tighter bonds. (water freezes at 0°C )	
<b>14</b>	<b>Boiling</b>	The process when a liquid turns into a gas. The temperature at which <b>boiling</b> happens is called the boiling point and depends on the particular nature of the substance. For example, water boils at around 100 °C	
<b>15</b>	<b>Vapor</b>	The sun turns water on the Earth into a vapor. Water comes from the ocean, lakes, rivers and streams.	
<b>16</b>	<b>Precipitation</b>	As the vapor rises, it gets cold. When it gets cold, it gathers in clouds. This is called condensation. When the cloud get too heavy to hold the water any longer, they drop back to Earth in the form of rain, sleet, snow or hail.	

# LESSON ONE: Solid, liquid or gas

## Retrieval Practice

What I already know about states of matter	Questions I still have about states of matter.
•	•
•	•
•	•
•	•

Outcomes	Key Vocabulary
To compare and group materials together, according to whether they are solids, liquids or gases by sorting and describing materials into solids, liquids and gases.	Solid, liquid, gas, particles, state, material, properties.
Knowledge needed	
It will be helpful if children have studied materials and their properties in earlier year groups.	

## Sorting Materials

A material may be in one of three states: solid, liquid or gas.

Can you sort the materials into solids, liquids or gases?

Think carefully about each one and write them into the correct column of the table on the next page.

glass	tea	clay	lemonade	sugar	hot air
pebble	fabric	cola	metal	water	clouds
sand	magnet	milk	cream	paper	soup
coffee	wool	wood	cardboard	juice	oxygen
rocks	rain	plastic	steam	ice	ice lolly

Solid	Liquid	Gas

## Everybody Reads

### Properties of materials - Solids

These items are all solids!



What do they have in common?

Materials in a solid state keep their shape unless a force is applied to them.

Solids can be cut, squashed or twisted. They will not change shape on their own.

Solid materials always take up the same amount of space. They do not spread out or flow. Solids do not have to be hard. They can be squashy or soft

### Properties of materials - Liquids

These items are all liquids!



What do they have in common?

Materials in a liquid state take the shape of the container they are in.

Although liquids can change shape, they do not change their volume. This means they still take up the same amount of space.

Liquids are pulled down to the bottom of a container by gravity.

Liquids can flow or be poured.

## Properties of materials - Gases

These items are all gases!



What do they have in common?

Materials in a gaseous state can spread out to completely fill the container or room they are in.

Gases have weight.

Gases can be squashed.

Gases do not keep their shape.

### Talk Task

Can you match the properties with the correct state?

Talk to your partner to help you.

### Everybody Reads - Particles

We can explain the differences between solids, liquids and gases by knowing what they are made of.

Scientists have found out that all materials are made of very tiny particles. These particles are so small that we cannot see them with our eyes, or even with a microscope!

The position and behaviour of the particles is different in solids, liquids and gases.

### Everybody Watches

The behaviour of particles in solids, liquids and gases, let's watch this video and find out more

<https://www.bbc.co.uk/bitesize/clips/zpbvr82>

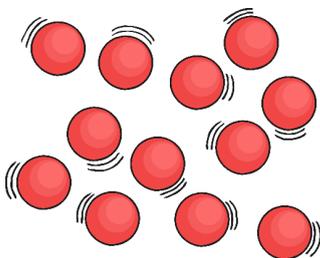
### Group task

You are going to work as groups to demonstrate the differences in each state!

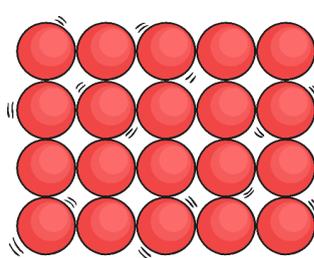
Follow the instructions on your group's Particle Information Card to find out what you need to do.

Then watch each others' demonstrations to learn about the behaviour of particles in solids, liquids and gases.

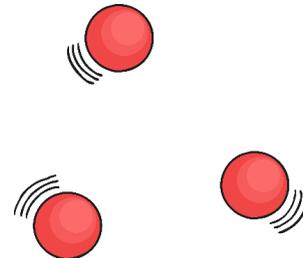
**Liquid**



**Solid**



**Gas**

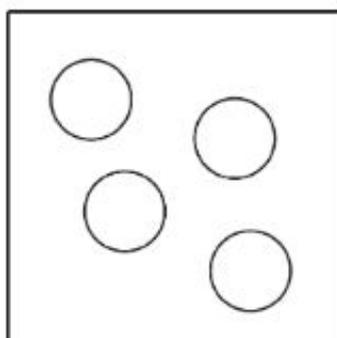


## Independent Task

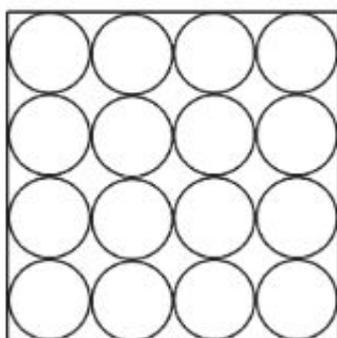
Use the pictures at the bottom of the sheet and draw the correct particle arrangement and write the statements about the particle properties for each state.

State	Particle arrangement	Particle properties
<b>Solid</b>		
<b>Liquid</b>		
<b>Gas</b>		

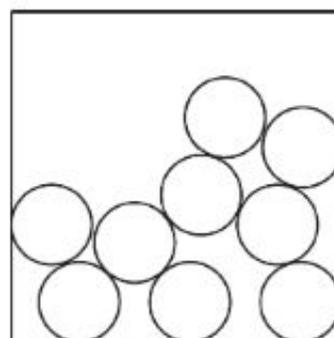
Particles are close together but random. They can move over each other.



Particles are spread out and can move about quickly in all directions.



Particles are closely packed in a regular pattern. They vibrate on the spot.



## Exit Ticket

Watch this video, <https://www.bbc.co.uk/bitesize/clips/zrdkjsx>. See which materials you can spot, and which states of matter they are. Share your ideas with the rest of the class.

## LESSON TWO: Investigating gases

### Retrieval practice

Name 2 gases: \_\_\_\_\_

Name 2 liquids: \_\_\_\_\_

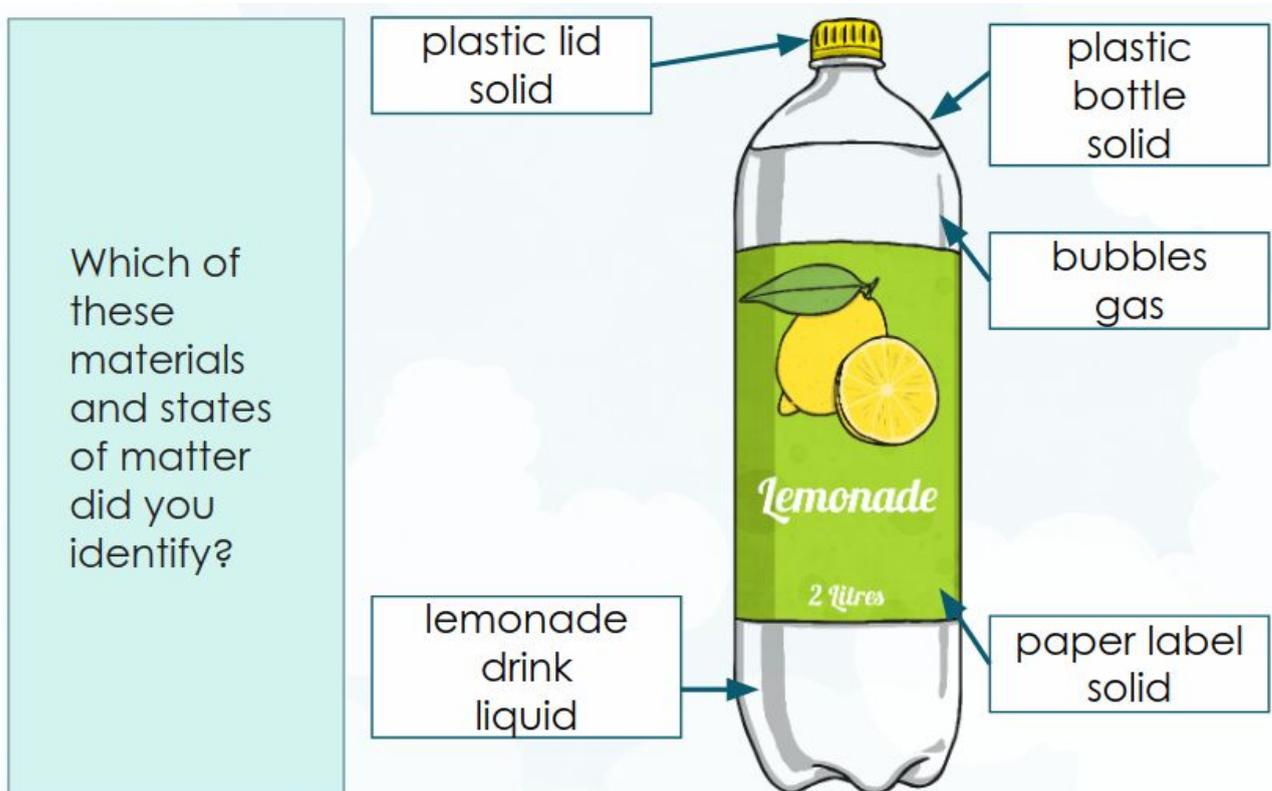
Name 2 solids: \_\_\_\_\_

Outcomes	Key Vocabulary
To compare and group materials together, according to whether they are solids, liquids or gases by investigating gases and their uses.	Gas, carbon dioxide, state, matter, material, weight, mass.
Knowledge needed	
Children will have learnt about solids, liquids and gases in lesson 1.	

### Talk Task

On your table you will see a bottle of fizzy drink.

Which states of matter can you identify in the materials that make up the bottle of fizzy drink?



### Talk Task

What are the bubbles in fizzy drinks made of?

Why are there bubbles in fizzy drinks?

How are fizzy drinks made?

## Everybody Reads

### What Are the Bubbles in Fizzy Drinks Made Of?

Bubbles in fizzy drinks are made from a gas called carbon dioxide.

Carbon dioxide is a gas that is all around us. It makes up only about 0.04% of the Earth's atmosphere.



### Who Invented the First Fizzy Drink?



In 1767, a clergyman and scientist called Joseph Priestly accidentally invented the first fizzy drink. He found a way to dissolve gas in water, making the first soda water, or carbonated water.

When he drank the fizzy water, he described a "peculiar satisfaction".

### How Are Fizzy Drinks Made?

Fizzy drinks are made by adding carbon dioxide to liquid under huge pressure. The carbon dioxide dissolves in the liquid and settles in the space above the liquid in the bottle or can.

When the container is opened, the pressure decreases and the gas escapes quickly, making a hissing sound. The bubbles appear as the carbon dioxide turns into gas.



### Bubbles of Gas



Carbon dioxide can be very useful.

Some fire extinguishers use carbon dioxide to cool flames and to stop oxygen getting to the fire.

Carbon dioxide freezes at  $-78^{\circ}\text{C}$ , and it becomes a solid called dry ice. It is used to transport food that needs to be kept cool and fresh, such as on aeroplanes and trains. And as you have read, carbon dioxide is dissolved in water to create fizzy drinks.

## Talk Task

Do Gases Weigh Anything? Read the different comments, who do you agree with and why?

These children are talking about the weight of gas. Who do you agree with?



Gases are lighter than air, so they do not weigh anything.



Gas has no weight because it is invisible.



A gas does have weight because it is a material.

## Everybody Reads

### Do Gases Weigh Anything?

Maya weighed a glass of fizzy lemonade. It weighed 173.1g. Gently, she swirled the glass around to make the liquid flat, in other words, to remove the carbon dioxide. She weighed the glass again and this time it weighed 172.6g. The drink was lighter after the gas had been removed.

Answer: The glass of fizzy lemonade was heavier than the flat drink because it contained carbon dioxide. Some gases are lighter than air and some are heavier. Carbon dioxide is heavier than air.

## Group Task - Weight of Gases

Using the sheet below make your prediction, and answer the questions about your investigation. When you have gathered your results, come to a conclusion and recommend a drink for Maya to serve at her party.

You will weigh each fizzy drink, then shake it until it is flat and weigh it again. The difference between the two weights will tell you how much carbon dioxide is in each drink.

Maya wants to find the fizziest drink to serve to her friends at her party. You will set up a comparative investigation to find out which fizzy drink has the most carbon dioxide in it, as this is likely to be the fizziest drink. You will weigh each fizzy drink, then shake it until it is flat and weigh it again. The difference between the two weights will tell you how much carbon dioxide is in each drink.

Have a look at the different drinks. Which one do you predict has the most carbon dioxide in it and why?

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How will you know when the fizzy drinks are flat? Think about the bubbles you can see.

How can you make sure your investigation is reliable? Think about what you need to keep the same every time.

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Carry out the investigation and complete the table of results below.

Name of drink:	Weight when fizzy:	Weight when flat:	Weight of carbon dioxide (the difference between the two weights):

Look at your results and come to a conclusion. Which fizzy drink has the most carbon dioxide in? Which drink should Maya serve to her friends at her party? Was your prediction accurate?

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## Exit Ticket

True or False?

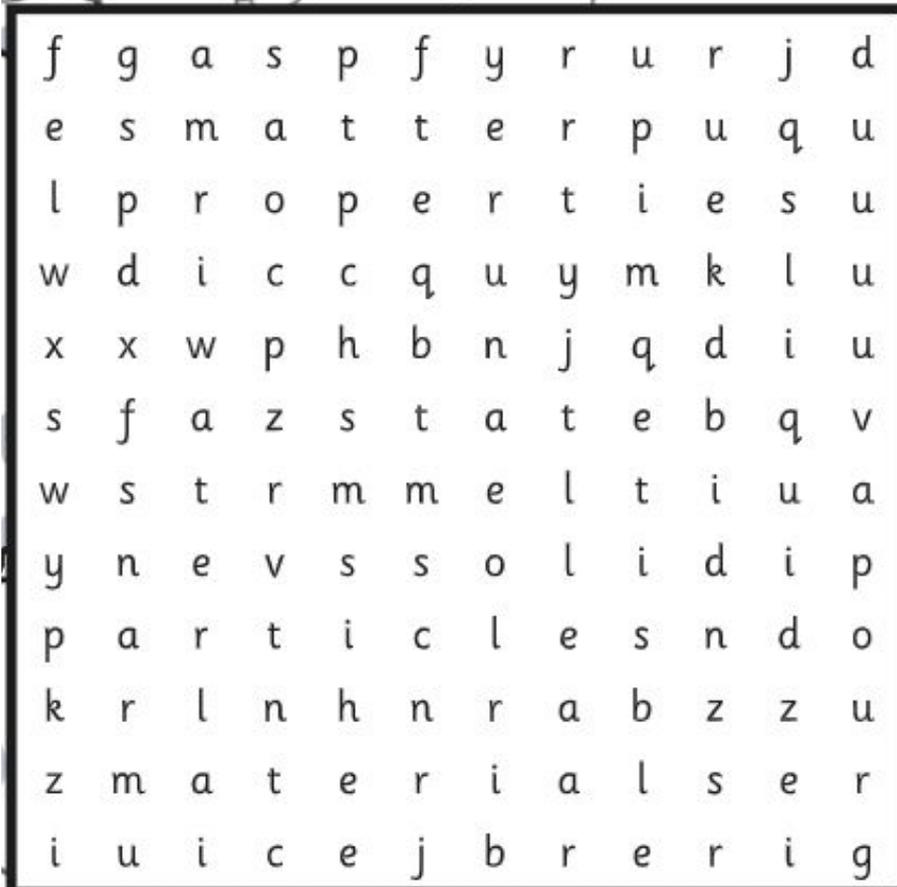
Look at the statements and decide whether they are true or false.

Statement	True	False
Carbon dioxide is a gas at room temperature.		
Gases keep their shape.		
Carbon dioxide is useful.		
The bubbles in fizzy drinks are bubbles of gas.		
Gases that are lighter than air weigh nothing.		
You can find the weight of gases.		

## LESSON THREE: Heating and cooling

### Do Now: Key Vocabulary

# States of Matter



solid  
liquid  
gas  
particles  
state  
materials  
properties  
matter  
melt  
ice  
water  
vapour

Outcomes	Key Vocabulary
To 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 ( $^{\circ}\text{C}$ ) by investigating how heating and cooling can change a material's state.	Solid, liquid, particles, melt, freeze, thermometer, temperature.
Knowledge needed	
The children will have learnt about changing state in lesson 1.	

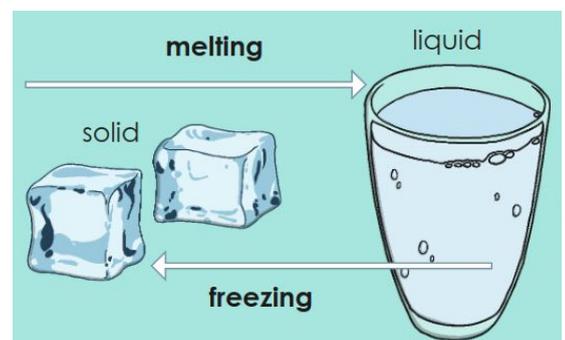
### Everybody Reads

#### What Makes Materials Change State?

Materials can be in three different states: solid, liquid or gas. But how do materials change state?

When a solid turns into a liquid it is called **melting**.

The temperature at which a solid material melts is called its melting point. Different materials have different melting points.



If a solid material is heated to its melting point, it will start to melt and will change state from a solid to a liquid.

In a solid, the particles are closely packed together and are vibrating on the spot. When a solid is heated, the particles start to move faster and faster. If enough heat is applied, the particles will have enough energy to move about. They are still close together, but can move over and around each other. At this point, the solid has melted to form a liquid.

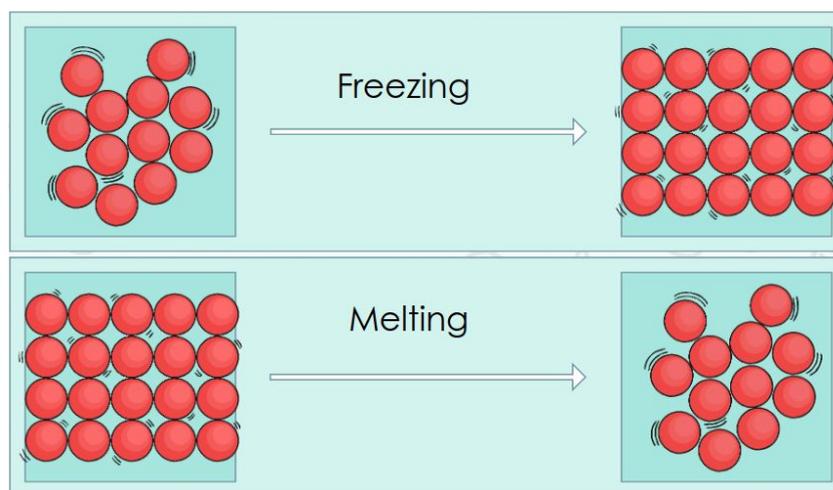
When a liquid turns into a solid it is called freezing.

The temperature at which a liquid material freezes is called its freezing point. Different materials have different freezing points.

It is important to remember that some materials have freezing points above  $0^{\circ}\text{C}$ . For example, the freezing point of iron is around  $1550^{\circ}\text{C}$ ! Interestingly, this means its melting point is also its freezing point, just in reverse! Above this temperature, it will be liquid iron. Below this temperature, it will be solid iron.

If a liquid material is cooled to its freezing point, it will turn from a liquid to a solid.

The particles in a liquid are close together, but can move quite quickly around and over each other. As it is cooled, the particles start to slow down. Eventually, they slow down so much that they only move gently on the spot, and a solid structure is formed. The material has frozen.



### Independent Task

Describe what is happening to the particles as they change state from a liquid to a solid (top picture) and then back to a liquid (bottom picture).

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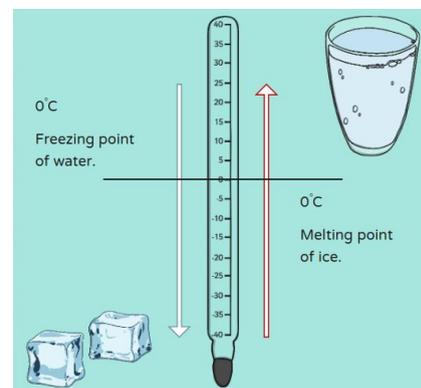
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### Everybody Reads

Melting and Freezing points

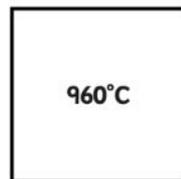
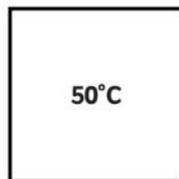
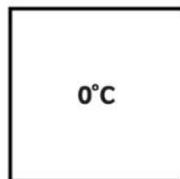
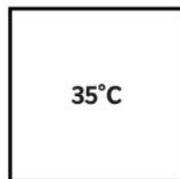
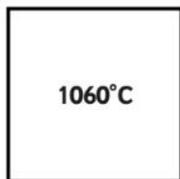
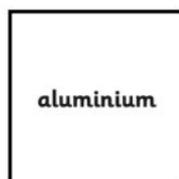
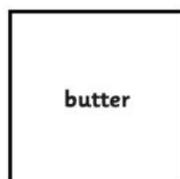
For most materials, their melting and freezing points are the same.

Although it sounds strange, think of the melting and freezing point as a barrier. If the material is heated to a temperature higher than this, it will melt. If the material is cooled to a temperature lower than this, it will freeze.



## Independent Task

Draw lines to match the materials to their melting points.



Why would it be useful for someone to know the melting points of these materials?

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## Group Task

### Melting Chocolate

Maya is getting the food ready for her birthday party, and wants to make some chocolate crispy cakes. Her party is only a few hours away, so she needs to make them fast! She needs to know the best temperature for melting chocolate.

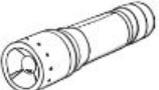
When she has melted the chocolate, she can then add the cereal, shape the mixture into cakes and leave them to freeze in time for her party! Can you help her find the best temperature for melting chocolate?

You will place a piece of chocolate in a foil tin and float each tin on a different temperature of water.

You will see how long it takes for the pieces of chocolate to melt at the different temperatures.

Complete your Melting Chocolate Investigation Activity Sheet with your ideas about the equipment you will need, how you will carry out the investigation and your prediction.

Then carry out your investigation in groups.

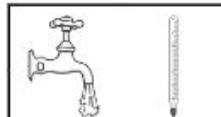
Equipment: Circle the things you will need.		
thermometer 	tape measure 	magnifying glass 
foil tins 	sand 	stopwatch 
torch 	chocolate 	water 
ruler 	pipette 	trays 

You will float the pieces of chocolate in foil tins on trays filled with different temperatures of water. Underline the correct words or phrases below to show how you will make sure your investigation is reliable.

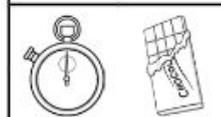
I will make sure each piece of chocolate is the same/a different size. I will use the same/different amounts of water in each tray. The temperatures of the water in each tray should be the same/different.

What will you measure and observe in this investigation? Use the pictures to help you.

I will measure the...



I will measure the...



I will observe the...



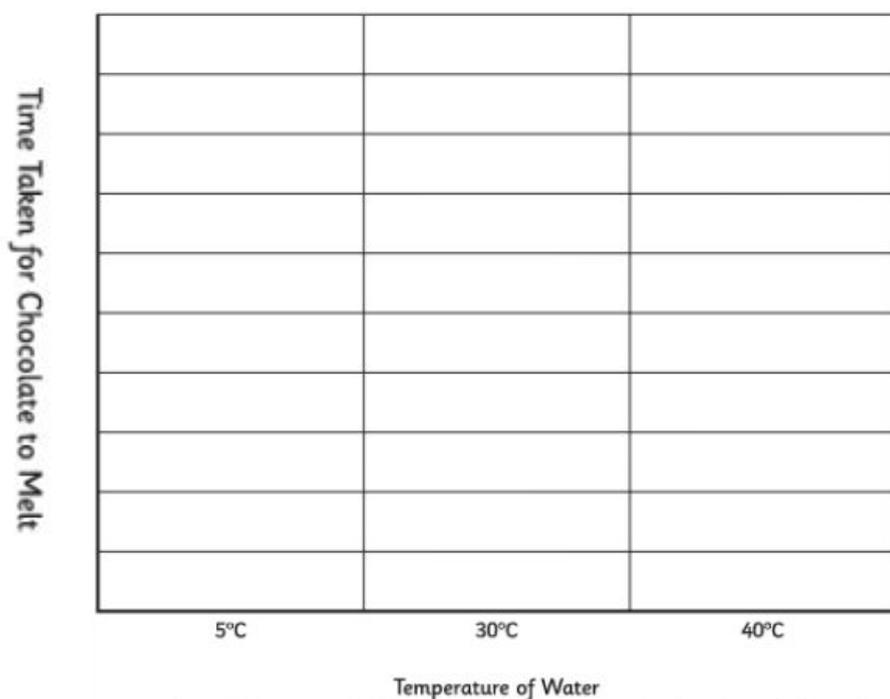
What do you predict will happen? Which temperature of water will melt the chocolate fastest?

### Results

Complete this table with your results:

	Tray 1	Tray 2	Tray 3
Temperature of water			
Time taken for chocolate to melt			

Draw a bar chart using your results



What is your conclusion? Can you tell Maya which temperature melts chocolate the fastest?

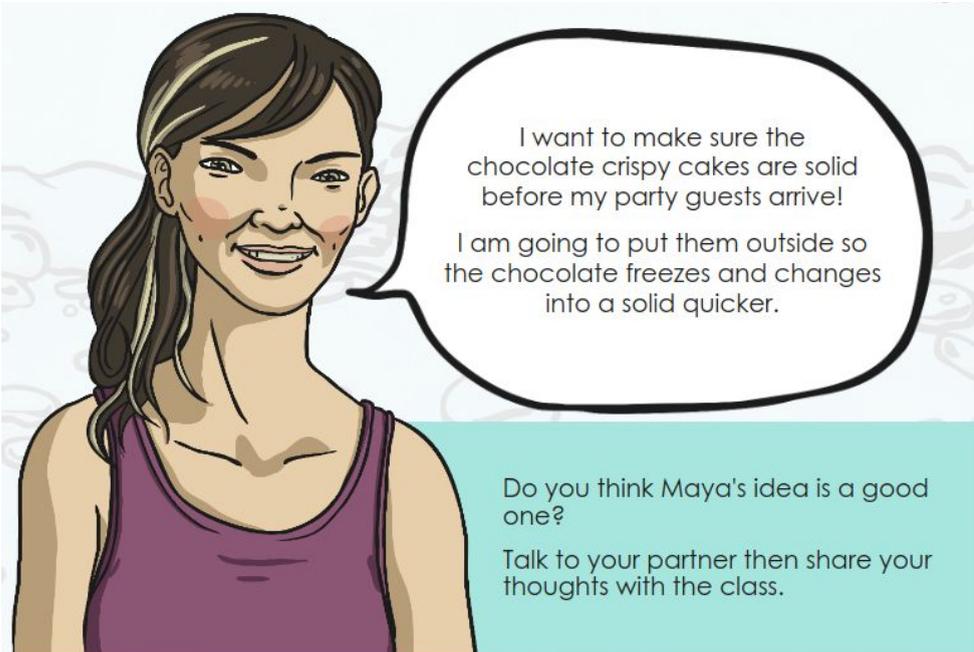
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Use these words to help you.

chocolate	water	hot	cold	faster	slower	shorter	longer
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### Exit Ticket

An illustration of a woman with brown hair in a braid, wearing a purple tank top. She is smiling and has a speech bubble coming from her mouth. The background is light blue with faint floral patterns.

I want to make sure the chocolate crispy cakes are solid before my party guests arrive!

I am going to put them outside so the chocolate freezes and changes into a solid quicker.

Do you think Maya's idea is a good one?

Talk to your partner then share your thoughts with the class.

## LESSON FOUR: Wonderful Water

### Do now: FEEDBACK

Look through what you have completed in your booklet so far and complete any blank pages. If you were absent, read the **Everybody reads** sections and write **ABSENT BUT READ** in **purple pen** and your sign your name.

If you **complete all** of your feedback, on your whiteboard write 5 questions about states for another person in the class to answer.

Outcomes	Key Vocabulary
To 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) by exploring how water can change its state to a solid, liquid or a gas.	Melt, freeze, condense, evaporate, process, state, water, ice, water vapour.
<b>Knowledge needed</b>	
The children will have learnt about changes of state in lessons 1 and 3.	

## Talk Task

Match these answers to the questions. Be careful! Two of the answers do not match!

0°C	Water Vapour	evaporation	ice
100°C	Freezing	1000°C	Melting

Question	Answer
1. What is the solid state of water called?	
2. At what temperature does water freeze?	
3. What is the process whereby ice turns to water?	
4. At what temperature does water boil?	
5. What is the name for water when it is in a gaseous state?	
6. What is the name of the process that turns water to water vapour?	

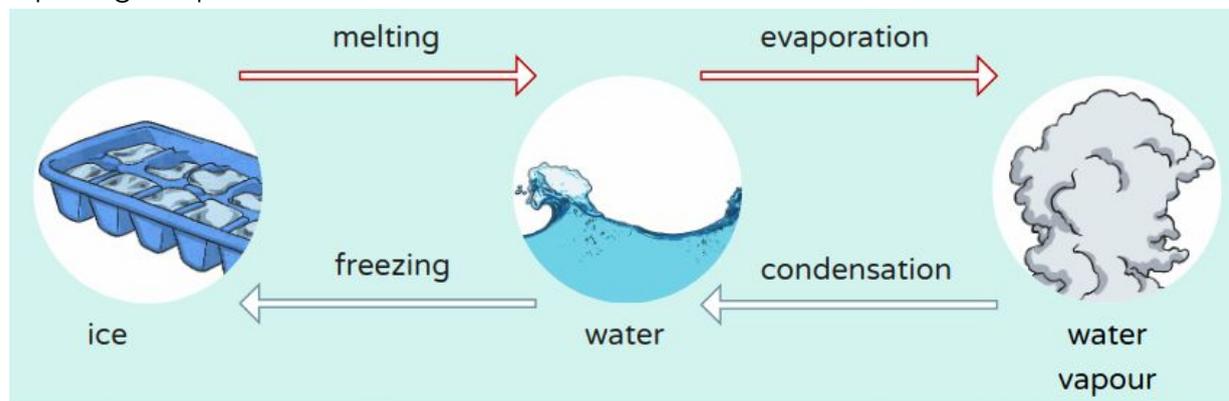
## Everybody plays!

Play this game to find out more about how water changes state, the processes that cause it to change and the temperatures at which it changes.

<http://www.sciencekids.co.nz/gamesactivities/statematerials.html>

## Everybody Reads

Exploring the processes



Water changes state as a result of these processes.

You will move around the classroom to explore the different processes in a series of activities. Keep a record of your observations in the table.

## Ice Cube Investigation

In this activity, you will place two or three ice cubes on some cling film stretched over a container of warm water.

What do you see in the container?

What can you observe on the cling film?

What processes are occurring?



## Reversing Changes

Work with an adult for this activity.

Your teacher will boil a kettle. Watch the water vapour form as it boils.

How can this gas be turned back into a liquid? Can you reverse the change?

Watch your teacher demonstrate this process.

What can you see?

Which processes have you observed?

How has the temperature caused these processes?



## Salt and Ice

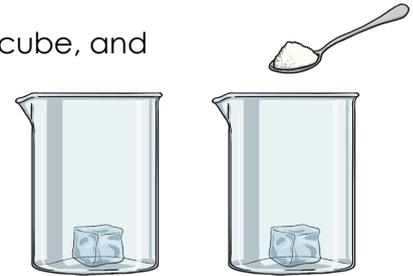
Put two ice cubes in two beakers. Put a teaspoon of salt on one ice cube, and observe what happens over a few minutes.

Use a thermometer to observe how the temperature in the beakers changes.

What do you notice happening to the two ice cubes?

What process is occurring?

What happened to the temperature in the different glasses?



<p style="text-align: center;"><b>Ice Cube Investigation</b></p> <p>Draw a picture of this activity. Add labels to describe the different states of water and to identify the processes that are occurring.</p>	<p style="text-align: center;"><b>Reversing Changes</b></p> <p>Draw a picture of the experiment your teacher carried out. Add labels to describe the different states of water and to identify the processes that occurred.</p>
<p style="text-align: center;"><b>Salt and Ice</b></p> <p>Draw a picture of the investigation you carried out. Add labels to describe the different states of water and to identify the processes that occurred.</p>	<p style="text-align: center;"><b>Changing State Diagram</b></p> <p>Add labels to this diagram to show the processes.</p>

**Exit Ticket - Exam style question - Ice cubes**

(a) Scott makes ice cubes. He pours water into an ice cube tray.



Scott puts the ice cube tray into the freezer.  
The temperature of the water changes when it is in the freezer.  
What happens to the temperature of the water after it is put in the freezer?

.....

1 mark

(b) Name ONE piece of equipment Scott could use to measure the temperature of the water.

.....

1 mark

(c) The water in the ice cube tray freezes and becomes ice.  
Write true or false next to each statement about freezing.

True or false?

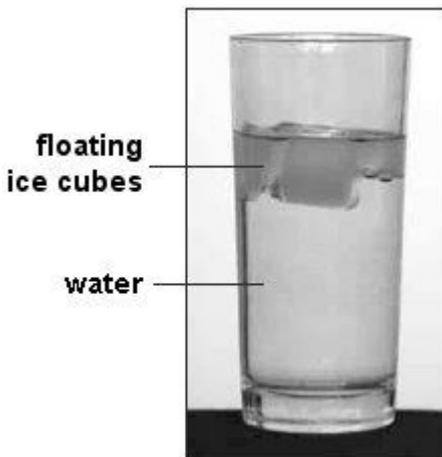
Water freezes at 100°C. ....

Freezing water is a reversible change. ....

Freezing is a change from solid to liquid. ....

1 mark

(d) Scott takes the ice cubes out of the freezer and puts some in a glass of water.



He leaves the glass in a warm room.

Name the scientific process that happens to the floating ice cubes after they are added to the water.

.....

1 mark

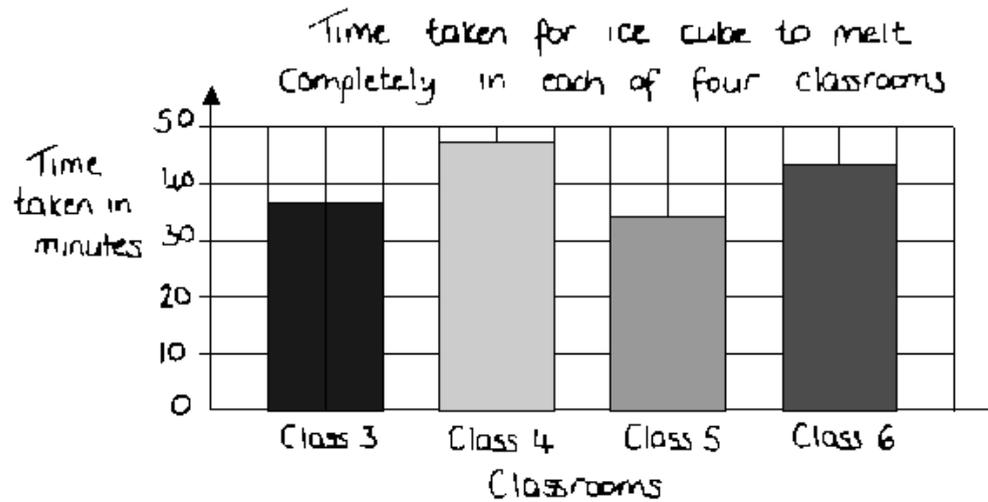
# LESSON FIVE: Evaporation investigation

## Do now: Exam Style Question

(a) Patrick used ice cubes to find the warmest classroom in school.



He put one ice cube on each of four plates and put each plate in a different classroom. He measured the time it took for each ice cube to melt completely.



Look at the graph.  
Which classroom was the warmest?

*Answer* Class .....

1 mark

(b) Describe how the temperature of a room affects the time taken for an ice cube to melt.

*Answer* .....

.....

2 mark

Outcomes	Key Vocabulary
To associate the rate of evaporation with temperature by investigating the effect of temperature on drying washing. To make systematic, careful and accurate observations and measurements and report on findings from enquiries by displaying results and conclusions by investigating the effect of temperature on drying washing.	Evaporation, particles, liquid, gas, weight, dry, energy, state, heat.
Knowledge needed	
The children will have learnt about the evaporation of water in lesson 4.	

## Talk Task

### How Do Wet Clothes Dry?

Evaporation is the process of a liquid changing into a gas.

When clothes dry on the washing line, it is evaporation that causes the liquid on the wet clothes to turn into gas, leaving the clothes dry.

But how is the water evaporated from the wet clothes? Around the room are some children's ideas about what makes this happen.

Have a look at each statement, think about whether you agree or disagree with it.



Agree/disagree? Why?

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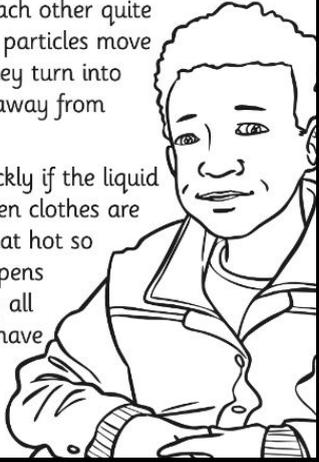
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The particles in a liquid have energy and are moving around each other quite fast. Some of the particles move so quickly that they turn into a gas and move away from the liquid.

This happens quickly if the liquid is boiling, but when clothes are drying it is not that hot so I think it just happens slower. Eventually all the particles will have changed into a gas the clothes will be dry!



Agree/disagree? Why?

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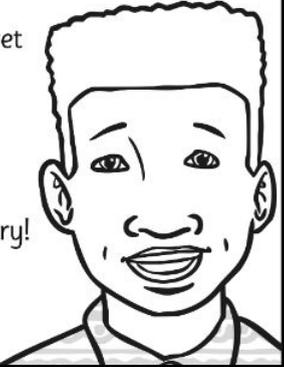
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The Sun shines on the wet clothes and sucks the particles of liquid out of the clothes.

The liquid turns into air and the clothes will be dry!



Agree/disagree? Why?

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When clothes hang on the washing line, the water is absorbed into the clothes by the Sun.

When they have been on the washing line for long enough, all the water will be absorbed and the clothes will be dry!



Agree/disagree? Why?

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## Everybody Reads

### The answer is...

The particles in a liquid have energy and are moving around each other quite fast. Some of the particles move so quickly that they turn into a gas and move away from the liquid.

This happens quickly if the liquid is boiling, but when clothes are drying it is not that hot so I think it just happens slower. Eventually all the particles will have changed into a gas and the clothes will be dry!

When clothes are hung on a washing line to dry, they are exposed to heat. They are not boiling, but there is some heat. The particles in the liquid water are moving around and over each other, and some particles move faster than others.

These particles move so fast that they change state, turning into water vapour. The particles of water vapour move away from the clothes, spreading out into the air.

The particles don't turn into air!

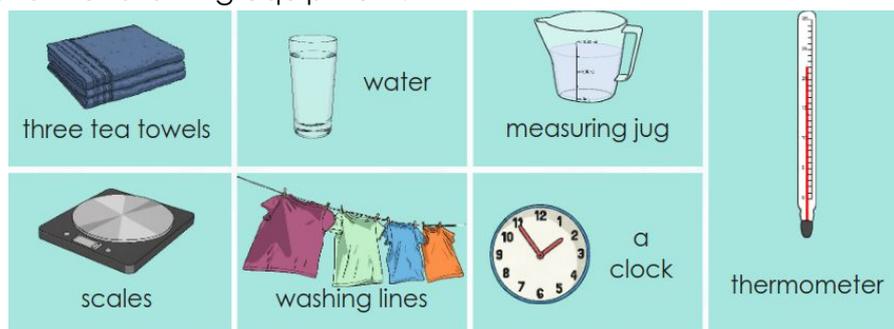
Eventually, if the clothes are left on the washing line for long enough, all the particles of liquid water will change state into gaseous water vapour. The water will have evaporated and the clothes will be dry.

## Group Task

INVESTIGATION QUESTION: Does the Temperature Affect How Fast Towels Dry?

You are going to work in a group to plan and set up an investigation to find the answer to this question.

You will have access to the following equipment:



You will need to decide how to use the equipment to answer this question.

You will also make a prediction about what you think the answer will be.

You must think about how you will make sure each towel is equally wet at the start of the investigation. If one towel is completely wet through but another is just damp then you won't get reliable results!

You should also think carefully about how you will be able to tell how dry the tea towels are after they have been hung up on the washing lines for some time. Will you feel them, observe them, measure their temperature, find their weight, or something else?

### What will you do to find the answer to the question?

1. How will you get the towels wet?

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2. Where will you hang the towels?

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3. When will you check the towels?

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- How will you know how dry they are? What will you measure or observe? (If you choose to use the scales, you must weigh the tea towels at the start of the investigation.)
- How will you make sure your investigation is reliable? Think about what you will keep the same, and which one thing you will change.

Write your prediction. Do you think the temperature will affect how fast the towels dry? Can you explain why you think this?

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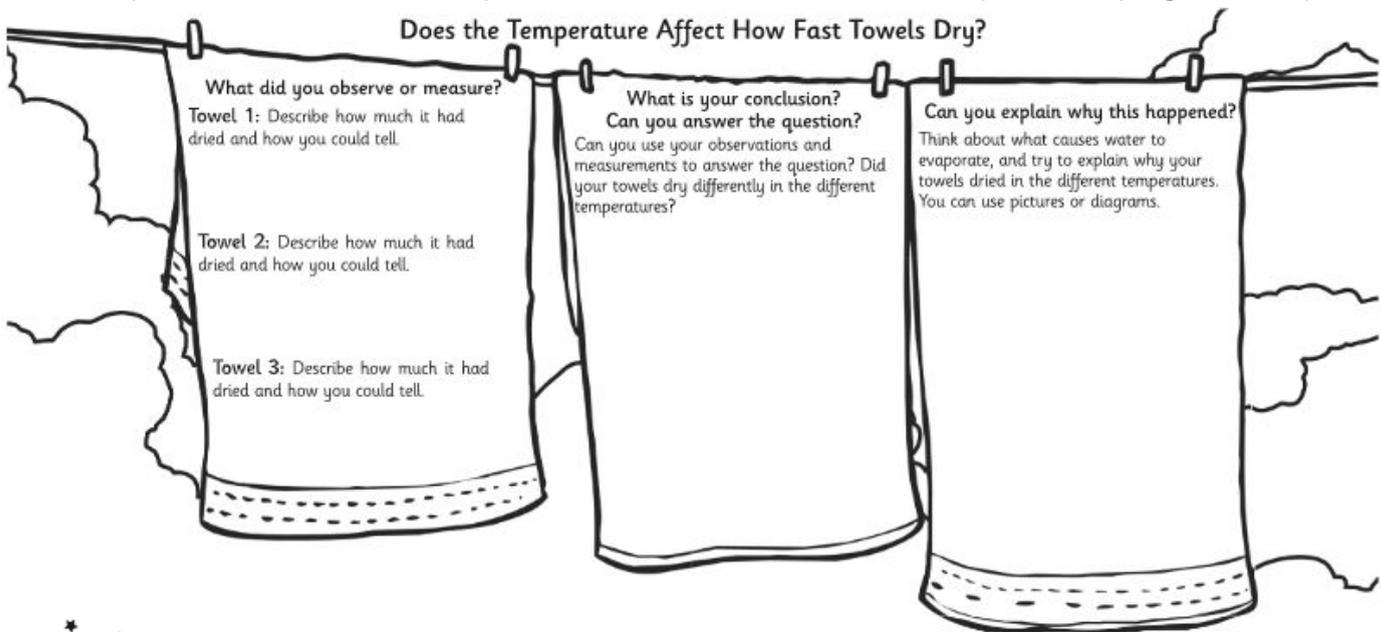
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Carry out your investigation and record your results below.

	Temperature it was hung up in	How wet it was at the start of the investigation	How wet it was at the end of the investigation
Towel 1			
Towel 2			
Towel 3			

### Exit Ticket

Have a look at other group's results and conclusions. Have they found out whether temperature affects how fast towels dry? Do they agree with you?

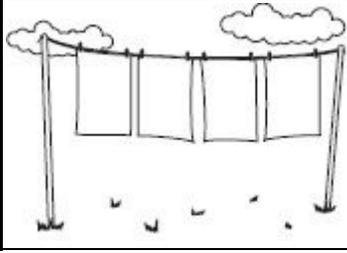


## LESSON SIX: The Water Cycle

### Do now: Exam Style Question

(a)

Kate wants to test how much time it takes for four different types of fabric to dry.



1. She soaks the different types of fabric in water.
2. She hangs the fabrics on a washing line outside.
3. She measures how much time it takes for the fabrics to dry.

Kate's results are shown in the table below.

Fabric type	silk	cotton	nylon	polyester
Drying time (minutes)	60	100	50	35

Which fabric dried the fastest?



\_\_\_\_\_

(b) Kate carried out a fair test.

Read the four statements below.

1. Use fabrics that cost the same amount of money.
2. Use fabrics that are the same size.
3. Hang the fabrics up at the same time.
4. Hang the fabrics in the same place.

Which of these things would have helped make Kate's test fair?

Tick ONE box.



1 only	<input type="checkbox"/>	1 and 3 only	<input type="checkbox"/>
2 and 4 only	<input type="checkbox"/>	2, 3 and 4 only	<input type="checkbox"/>

(c) Drops of water fall from the bottom of very wet washing hanging on a washing line. Write true or false for each of the statements about the drops of water.

 The drops...	True or False?
form because liquids can flow.	_____
may change shape as they fall.	_____
form because the water becomes warm.	_____

(d) Harry dries some T-shirts indoors on a radiator.  
Name the process that happens to the water in Harry's T-shirts as they dry.



\_\_\_\_\_

(e) Harry saw that liquid water formed on the windows in the room when the T-shirts were drying on the radiator.  
Name the process that causes liquid water to form on the windows.



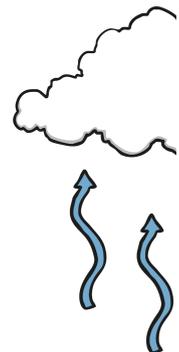
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Outcomes	Key Vocabulary
To identify the part played by evaporation and condensation in the water cycle by creating a model of the water cycle.	Evaporation, condensation, precipitation, collection, clouds, rain, sleet, hail, snow.
<b>Knowledge needed</b>	
The children will have learnt about condensation and evaporation in lessons 4 and 5.	

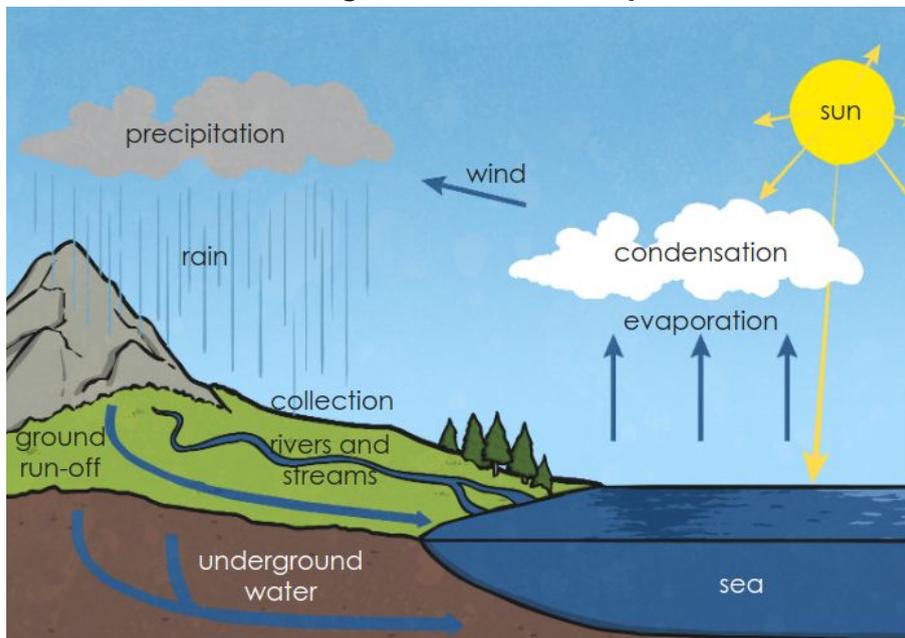
**Everybody Reads**

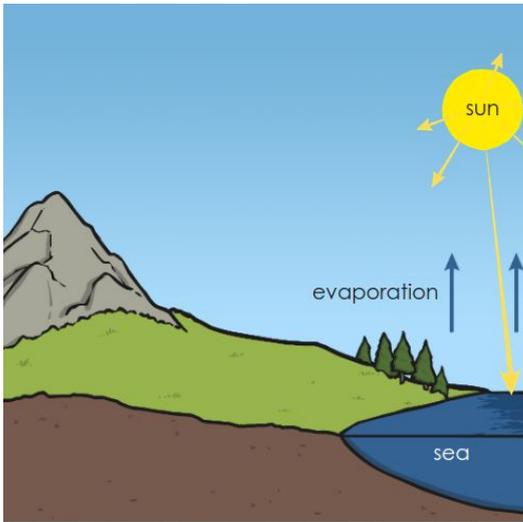
**What is the Water Cycle?**

More than three quarters of the Earth's surface is water. Some of this water evaporates in the heat of the Sun. When the water has evaporated, it is in the form of water vapour. Clouds are made from water vapour that has condensed to form tiny water droplets. When the water droplets get too big, they fall from the clouds. The water droplets can fall as rain, hail or snow. Three hundred millions litres of water falls on dry land each day.



**The Stages of the Water Cycle**





### Evaporation

Heat from the Sun causes water to evaporate from seas, lakes, rivers and streams. Water also evaporates from puddles and ponds.

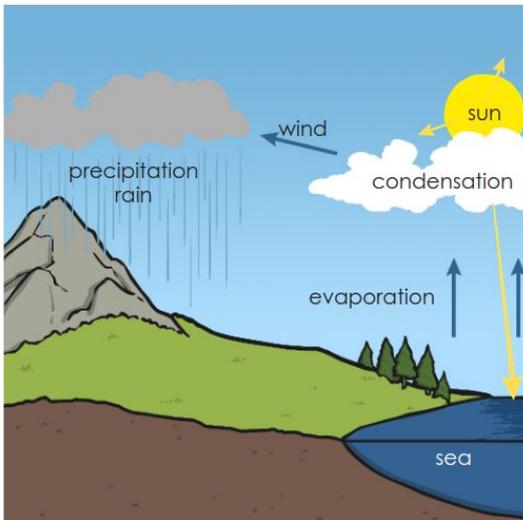
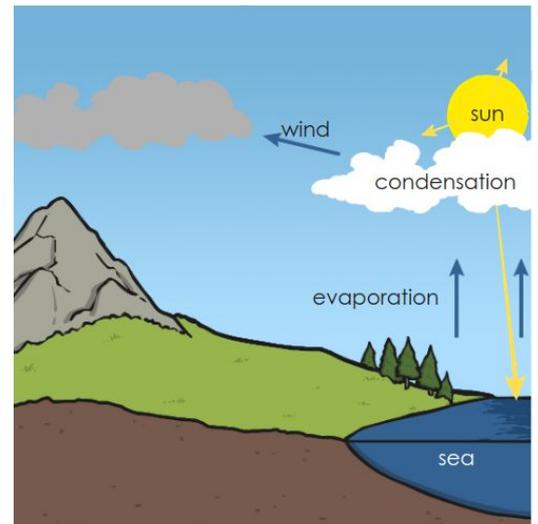
This evaporation happens even on cloudy or cold days. The liquid water turns into water vapour when it has evaporated.

### Condensation

The water vapour in the air rises, and as it does so, it cools down.

Eventually, it cools enough for the water vapour to condense and form small droplets of water.

The droplets of water clump together to form clouds.



### Precipitation

As more water vapour condenses, more water droplets are formed in the clouds.

Eventually, the water droplets are large enough and heavy enough to fall back to the surface of the Earth.

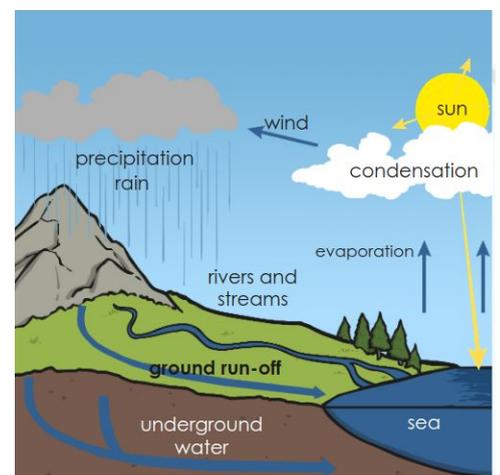
These droplets of water fall from the clouds in the form of rain, sleet, hail or snow.

### Collection

When water falls back to Earth as precipitation, the water may fall on oceans, lakes, rivers or on the ground.

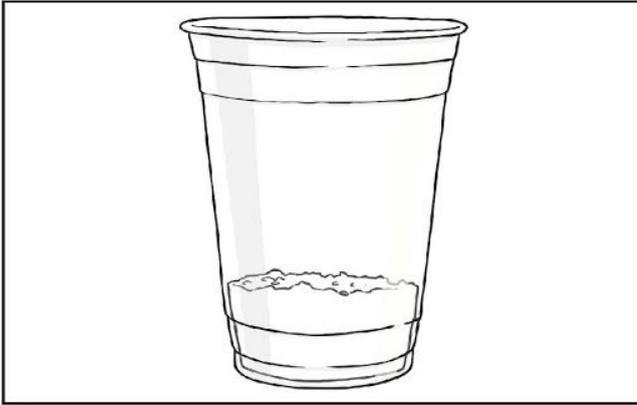
Water that falls on the ground is either absorbed into the soil, and is used as drinking water for animals and plants, or it runs over the ground and collects in the oceans, lakes and rivers.

This water is then evaporated and the cycle starts all over again!

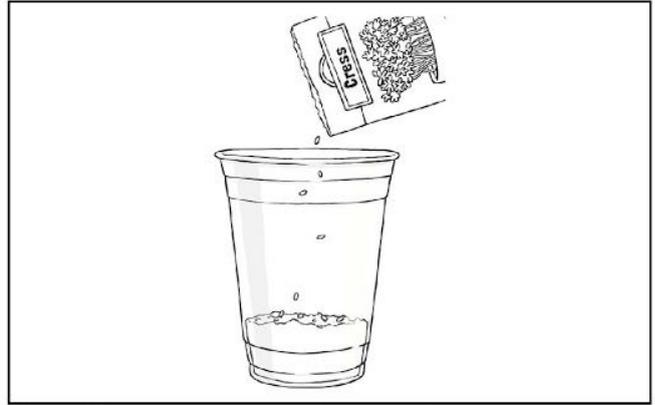


## Independent Task One

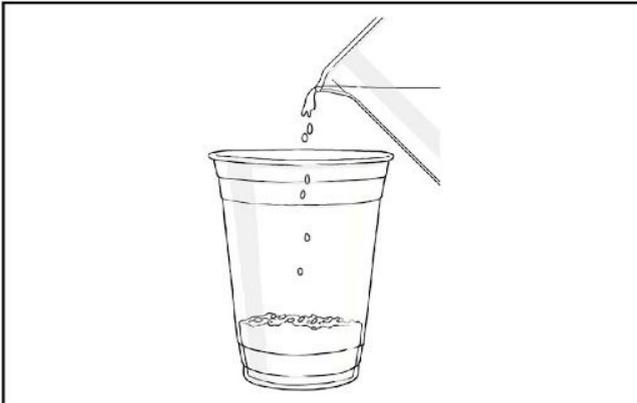
Follow these instructions to make your own Mini Water World!



Place a layer of compost in a clear plastic cup.



Sprinkle some cress seeds onto the compost.



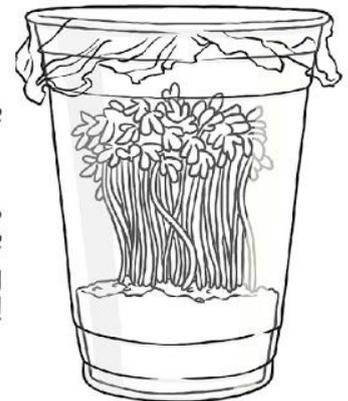
Pour on enough water to make the compost damp, but not soaking.



Stretch cling film over the cup to form a lid.

Over the next few days, watch your Mini Water World. You should be able to see the water cycle in action!

The water from the compost will evaporate as water vapour. When it rises, it will hit the cooler cling film and condense, forming water droplets on the cling film. As these droplets grow bigger, they will get heavier, and eventually fall from the cling film back onto the compost. The cycle will then start again!



## Independent Task Two

Write a story about the water cycle from the point of view of a water droplet! Explain what happens to the water droplet at each stage, and how it changes.

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**Exit Ticket**

Rearrange the letters of each word below to make the name of a stage of the water cycle.  
Can you put the stages in order?

donsaictenon	lictencool
cronitpitpeia	vaintoreapo

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