



Primary Geography

Water and weather

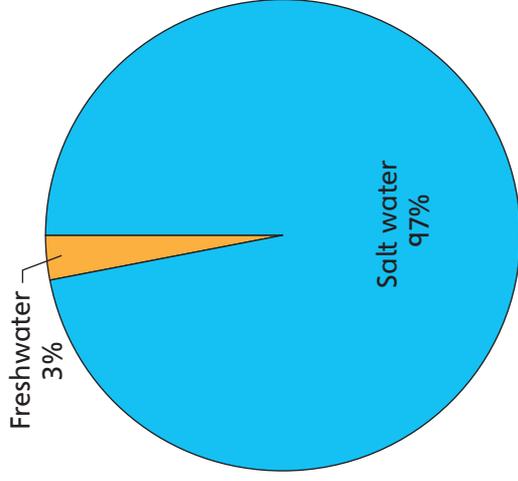
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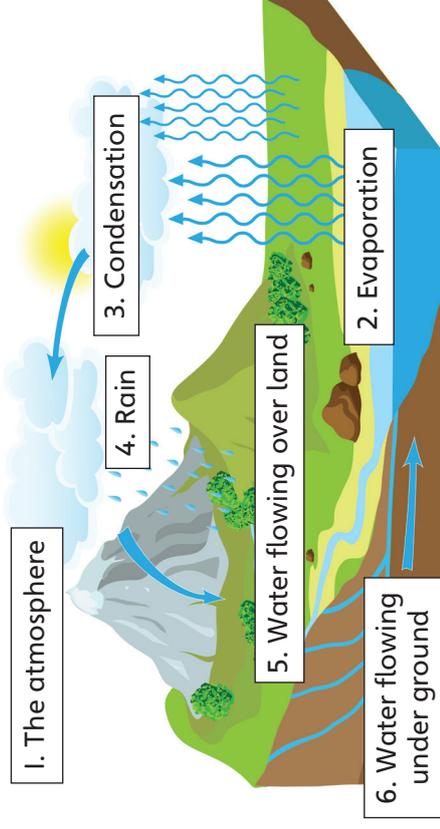
2 Knowledge organiser

Earth's water

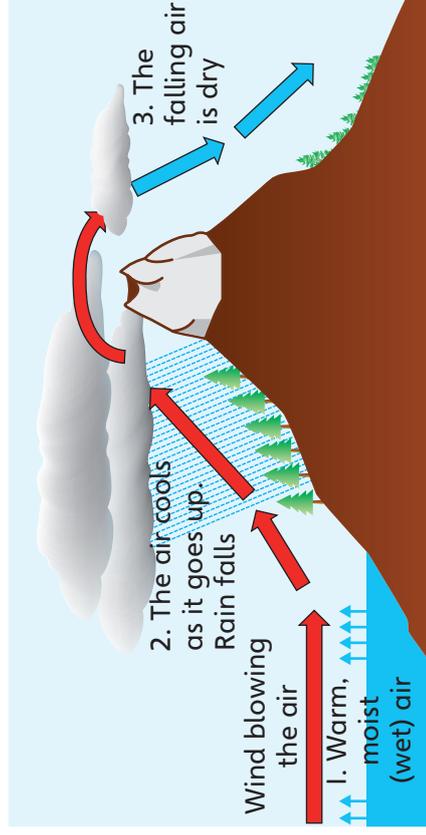
This pie chart shows the percentage of salt water and freshwater on Earth.



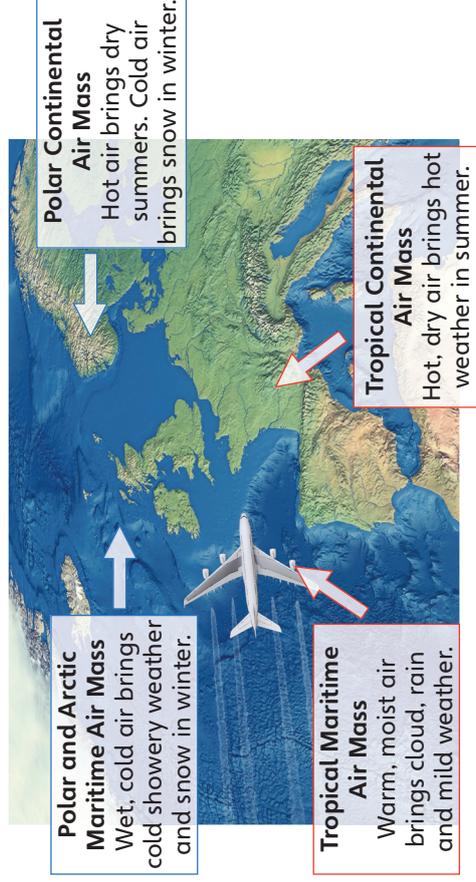
The water cycle



Why does it rain?



Why is the weather in the UK unpredictable?



Vocabulary	
air masses	Huge areas of air that have the same temperature and the same amount of water vapour
condensation	When a gas turns into a liquid
evaporation	When a liquid turns into a gas
forecast	A prediction about what will happen in the future, based on evidence
gravity	An invisible force that pulls things towards the centre of the Earth
hemisphere	Half of the Earth: the top half is the northern hemisphere, the bottom half the southern hemisphere
rain shadow	The side of a mountain that does not get much rain
solar system	The Sun and everything that travels round it
water cycle	How water moves around the Earth, evaporating and condensing
water vapour	Water that is in the form of a gas

4 Learning review

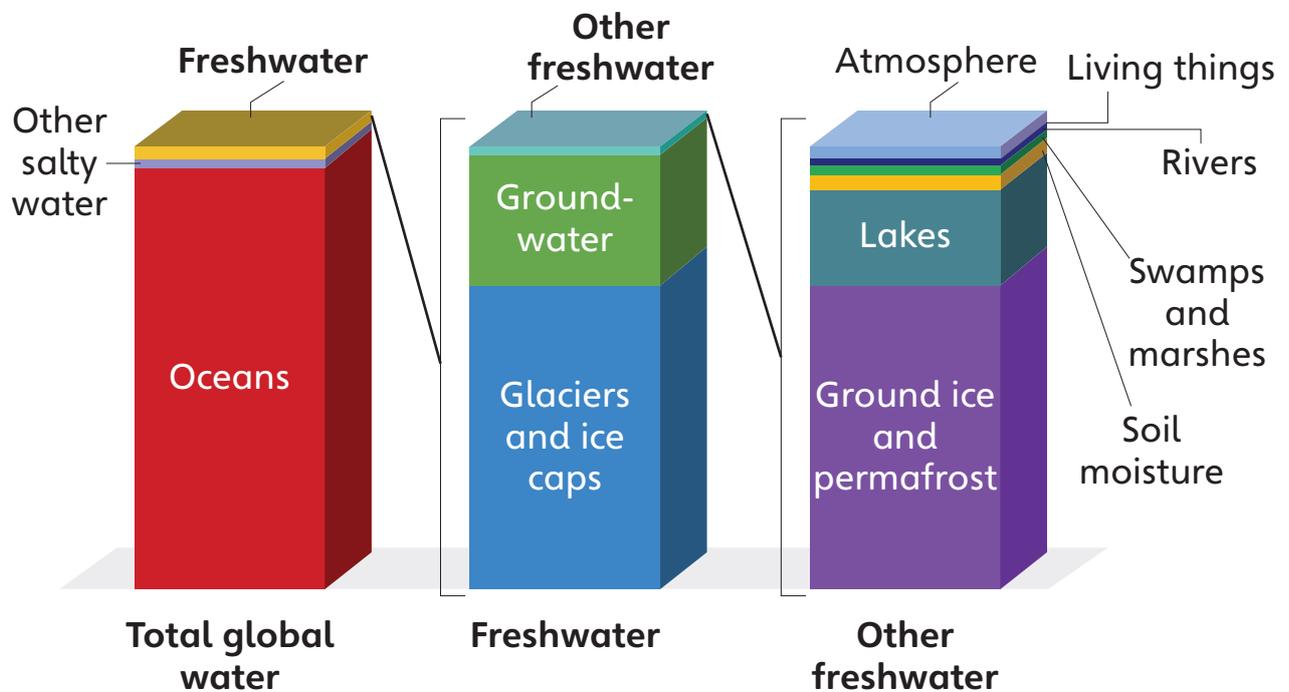
	Lesson	You will learn...	Learning review
1	Where is Earth's water?	<ul style="list-style-type: none"> • Where most of the water is located on Earth. • How water turns from a liquid into a solid or a gas. • What the water cycle is. 	<hr/> <hr/> <hr/> <hr/> <hr/>
2	Why does it rain?	<ul style="list-style-type: none"> • How warm air behaves. • What happens when water cools. • How rain forms over mountains. 	<hr/> <hr/> <hr/> <hr/> <hr/>
3	Why do we have seasons?	<ul style="list-style-type: none"> • What the seasons are. • Why the seasons are different in the northern and southern hemispheres. • How the tilt of the Earth affects the seasons. 	<hr/> <hr/> <hr/> <hr/> <hr/>
4	What is the weather forecast?	<ul style="list-style-type: none"> • What a weather forecast is. • What the symbols on a weather forecast mean. • Why it is important to have a weather forecast. 	<hr/> <hr/> <hr/> <hr/> <hr/>
5	Why is the weather in the UK unpredictable?	<ul style="list-style-type: none"> • What types of weather we experience in the UK. • Which air masses affect the UK. • What air mass is affecting the weather today. 	<hr/> <hr/> <hr/> <hr/> <hr/>
6	Assessment: Why does it rain?		<hr/> <hr/> <hr/> <hr/> <hr/>

Lesson 1

Where is Earth's water?

Earth's water

The graph shows where the water is on Earth and what sort of water it is.



1. Read the statements below. Tick 'True' or 'False' for each one.

- a. Most of Earth's water is in the oceans. True False
- b. Most of Earth's water is freshwater. True False
- c. Most of Earth's freshwater is frozen. True False
- d. There is more surface water in rivers than in lakes. True False



2. Where is most of the water on Earth? Write your answer.

Changing water

Water can be a solid, a liquid or a gas. It changes between solid, liquid and gas many times in nature. Mostly, we see water as a liquid. However, whether water is a solid, a liquid or a gas depends on its temperature (how warm or cold it is):

- When water becomes very cold (below 0°C), it freezes and forms ice. Ice is a solid.
- When water gets very hot, it **evaporates** and forms **water vapour**. Water vapour is a gas.
- When water vapour cools down, it turns back into a liquid. This is called **condensation**.



3. Fill in the blanks to complete these sentences.

a. What happens when water evaporates?

In **evaporation**, water changes from a liquid to a _____.

b. What happens when water condenses?

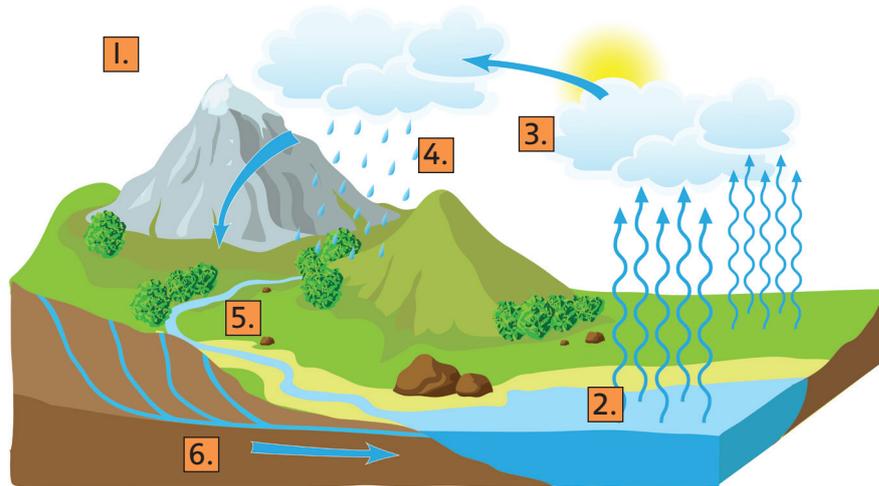
In condensation, water goes from a _____
to a _____.

c. What happens when water goes below 0°C ?

When water gets very cold, it _____
and becomes a _____.

The water cycle

The **water cycle** is the way in which water moves around the world. Water in the water cycle changes between solid, liquid and gas, depending on the temperature (how warm or cold it is).

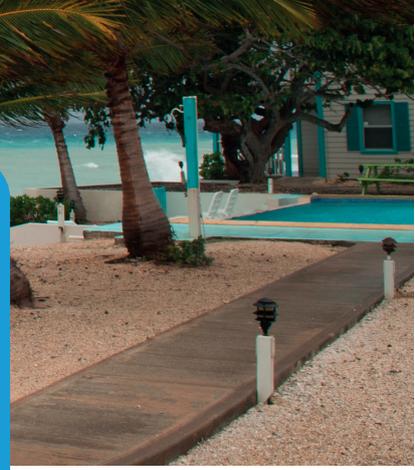


4. Fill in the blanks to complete these sentences.

- When water evaporates, it goes into the [1.] _____.
- When the Sun warms up water, it turns into water vapour. This is called [2.] _____.
- The atmosphere is cold, so when water vapour is produced in the atmosphere, it cools down. The water goes back to being a liquid. This is called [3.] _____. This process forms clouds.
- The clouds will continue to grow as more water droplets form. Eventually, the droplets become too heavy to stay in the atmosphere. They fall to the ground as [4.] _____. If it is cold, they may fall as snow.
- Some rainwater flows into rivers and returns to the sea as [5.] _____.
- Some rainwater flows into the soil and into the rocks. It returns to the sea more slowly, as [6.] _____.

Lesson 2

Why does it rain?



Quiz

1. Read the statement below. Tick 'True' or 'False'.

Planet Earth has more freshwater than salt water. True False

2. Cross out the incorrect word to complete this sentence.

Evaporation / Condensation is when liquid water becomes a gas.

3. Where is most of the Earth's water found? Write your answer.

4. In the water cycle, where does some rainwater go? Tick the correct answers.

a. into rivers

b. into space

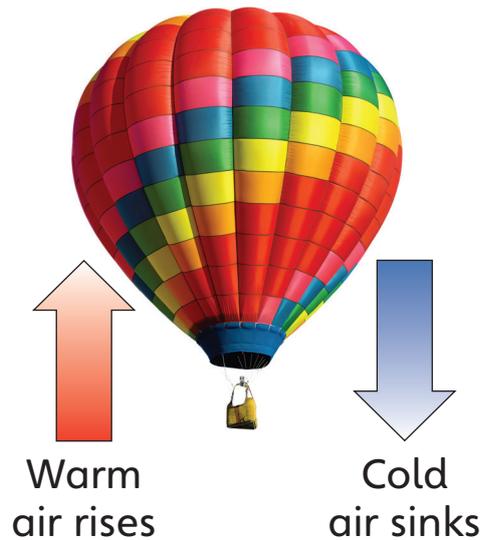
c. under ground

d. between clouds

5. What are the three states water can be found in? Write your answer.

How does a hot air balloon work?

A hot air balloon has a burner, which makes a flame to heat up the air inside the balloon. Warm air rises and this causes the hot air balloon to lift up into the sky. When the burner is turned off, the air inside the balloon begins to cool down and so the hot air balloon begins to fall.



1. Match the boxes to make three correct sentences about the water cycle. Draw a line between them.

As the Sun warms up the water...

...it forms clouds.

As air rises, it cools. When water vapour in the air gets cooler...

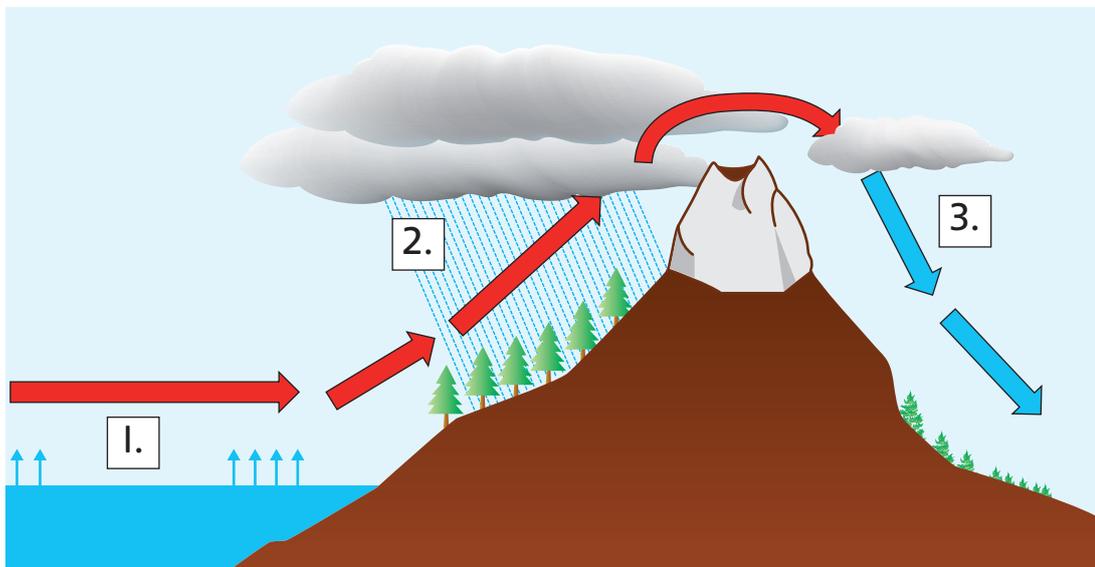
...they eventually fall to the ground as rain.

When many water droplets join together in the sky...

...it turns into water vapour.



2. How does rain form over mountains? Complete the diagram below. Write your answer.



1. _____
2. _____
3. _____

Rain shadows

Usually, the side of a mountain that faces the sea gets the most rainfall. This creates a **rain shadow** on the other side of the mountain where there is much less rain. This is because the air is dry there. Because there is less rain, there are not as many plants.

You can see a rain shadow in this photo.

- On the side nearest the ocean, the mountains are green with vegetation.
- On the northern side, the mountains are brown. Where there is less rain, fewer plants can grow.



The Himalayan Mountains

3. Why does it rain as air rises over a mountain? Write your answer.

4. What is a rain shadow? Write your answer.

Lesson 3

Why do we have seasons?

Quiz

1. Read the statement below. Tick 'True' or 'False'.
Most of the Earth's water is freshwater. True False
2. Cross out the incorrect words to complete these sentences.
Water in the sea is a **liquid** / **gas**. When water **heats up** / **cools down**, it turns into water vapour. **Ice** / **glass** is water in its solid form.
3. Read the statement below. Tick 'True' or 'False'.
Hot air rises. True False
4. In the water cycle, what is it called when water vapour cools down and turns back into a liquid? Write your answer.

5. What is the name for the side of a mountain that does not get much rain? Tick the correct answer.
 - a. rainbow
 - b. drought
 - c. desert
 - d. rain shadow

I. Which season is each photograph showing? Write your answers.



Opposite seasons

The seasons in the northern and southern **hemispheres** are opposites.

- When it is winter in the northern hemisphere, it is summer in the southern hemisphere.
- When it is spring in the northern hemisphere, it is autumn in the southern hemisphere.

Northern hemisphere	Winter	Spring	Summer	Autumn
Southern hemisphere	Summer	Autumn	Winter	Spring

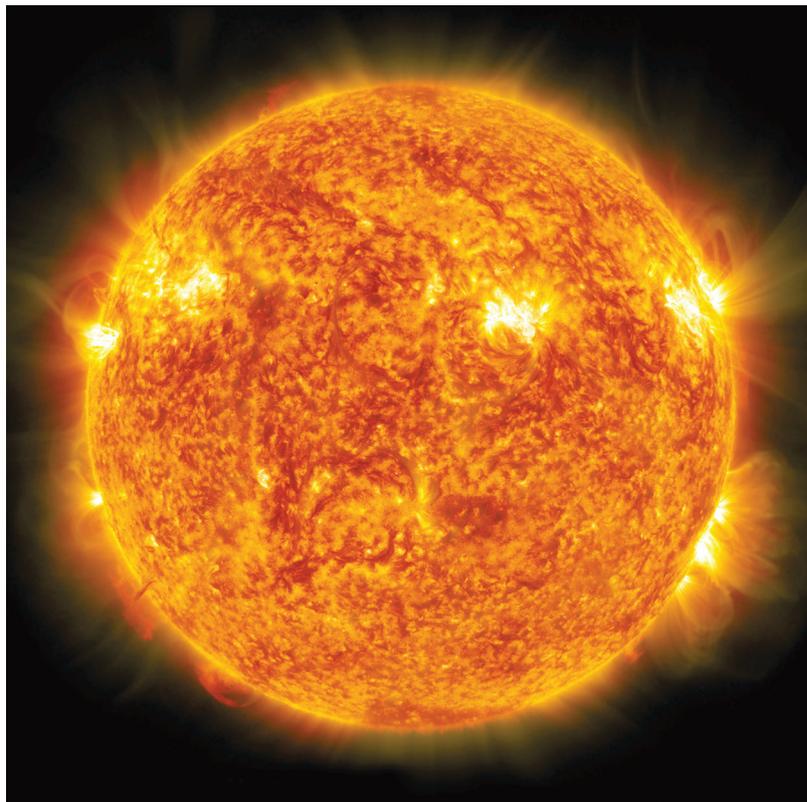
2. Read the statements below. Tick 'January' or 'July' for each one.

a. When would be the best time to go skiing in Italy? January July

b. When would be the best time to go to the beach in Australia? January July

The Sun

The Sun is a star. It is a giant ball of gases at the centre of our **solar system**. The Sun's **gravity** holds our solar system together. Life on Earth is only possible because of the Sun's energy. Our Sun is one of billions of stars in the Milky Way galaxy. It is summer where the Sun's rays hit the Earth most directly. It is at this point that the Earth receives the most heat and hours of sunlight.



3. What is the Sun? Write your answer.

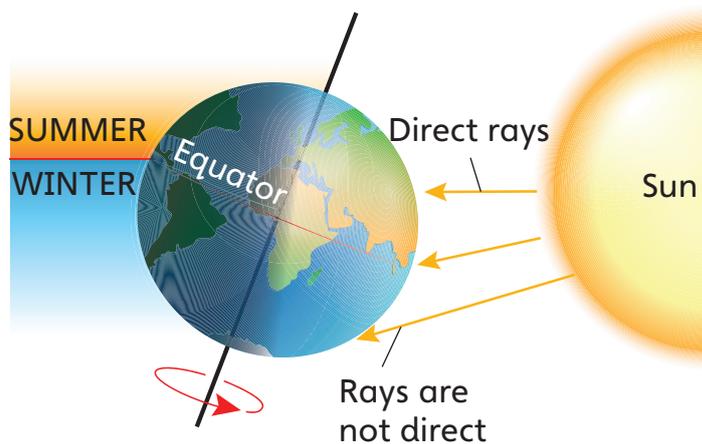
4. What is the Sun made of? Write your answer.

5. What galaxy do we live in? Write your answer.

The seasons

Every year the Earth travels round the Sun. The Earth is tilted as it goes around the Sun, meaning it is at an angle and the North Pole does not point directly 'up'.

- Where the Earth is tilted towards the Sun, that part of the Earth receives direct rays from the Sun. These direct rays make the Earth hotter. That gives us summer.
- Where the Earth is tilted away from the Sun, the Sun's rays are not direct. They do not heat up the Earth so much. That gives us winter.
- When the northern hemisphere is tilted towards the Sun, the southern hemisphere is tilted away. That makes it summer in the northern hemisphere and winter in the southern hemisphere. That is how we have seasons.



6. What is the name of the imaginary line around the Earth that divides the northern hemisphere from the southern hemisphere? Write your answer.

7. What season is it in the northern hemisphere when the southern hemisphere is tilted towards the Sun? Write your answer.

8. What season is it in the southern hemisphere when the northern hemisphere is tilted towards the Sun? Write your answer.

Unit progress check in

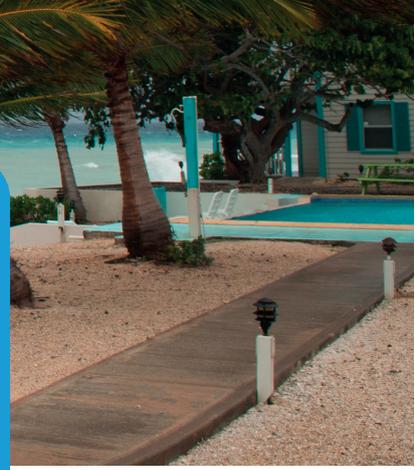
- Where is most of the world's water stored? Tick the correct answer.
 - in the oceans
 - in rivers
- What is the name of the process in which water becomes a gas? Tick the correct answer.
 - evaporation
 - condensation
- Fill in the blanks to complete these sentences.

condensation evaporation rain

- When the Sun warms up water to create water vapour, it is called _____.
 - When water vapour cools down, it returns to liquid. This is called _____.
 - When clouds become too heavy with water droplets, _____ falls to the ground.
- Read the statements below. Tick 'True' or 'False' for each one.
 - As warm air rises, it evaporates. True False
 - As warm air rises, it cools to form water vapour. True False
 - Read the statements below. Tick 'True' or 'False' for each one.
 - A rain shadow is the side of the mountain nearest the sea that often does not receive much rain. True False
 - A rain shadow is the side of the mountain furthest from the sea that does not receive much rain. True False
 - When it is summer in the UK, which way is the northern hemisphere tilting? Tick the correct answer.
 - away from the Sun
 - towards the Sun

Lesson 4

What is the weather forecast?



Quiz

1. What happens when the Earth goes round the Sun? Tick the correct answer.

a. The Earth is tilted towards the Sun.

b. The Earth gets closer and closer to the Sun.

2. Cross out the incorrect words to complete this sentence.

It is summer in the northern hemisphere when the northern hemisphere is tilted **towards** / **away from** the Sun.

3. Read the statement below. Tick 'True' or 'False'.

When it is summer in the southern hemisphere, it is spring in the northern hemisphere.

True False

4. Fill in the blanks to complete this sentence.

directly hemisphere towards warmer

It is _____ when a _____ is tilted _____ the Sun because the Sun's rays hit the Earth _____.

5. What is the imaginary line between the northern and southern hemispheres called? Tick the correct answer.

a. the solar system

b. evaporation

c. the Equator

d. rain shadow



1. What is the weather like today? Write your answer.

2. What season are we in? Write your answer.



3. What do you think the weather will be like in six months' time?
Write your answer.

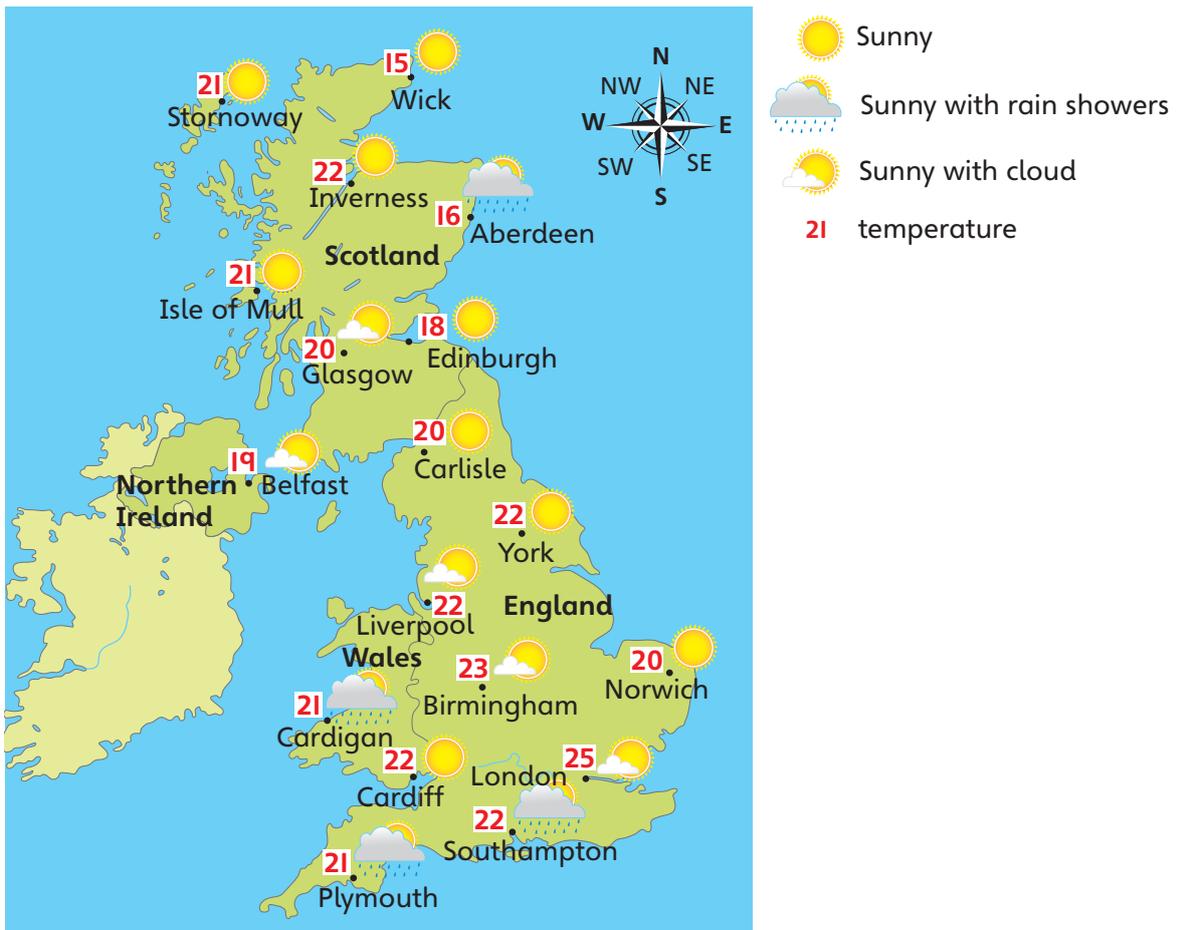
4. What season will it be in six months' time? Write your answer.

Weather forecasts

A weather **forecast** describes what the weather will be like in the future – later today, tomorrow or next week. We have weather forecasts every day to help us prepare for changes in the weather.

Weather forecasts can tell us if it is likely to be hot or cold, rainy or dry, windy or calm, cloudy or clear. The weather affects people’s daily lives. People have to think about the weather when they are deciding what to wear, how and where to build their house, and what food to grow. Farmers need to know about the weather, as rain is good for their crops, but a storm could damage them.

Temperature is measured in degrees Celsius (°C).



5. Look at the weather forecast map. Where is it raining in Wales? Write your answer.

 6. What temperature is it in Liverpool? Write your answer.

 7. Is there rain to the north-east of London or is it dry? Write your answer.

 8. How much colder is Edinburgh compared to Belfast? Write your answer.

 9. Complete the boxes with the correct weather symbols.

The weather at our school

--	--	--

Yesterday

Today

Tomorrow

The weather on a typical summer and a typical winter day

--	--

Summer

Winter

Lesson 5

Why is the weather in the UK unpredictable?



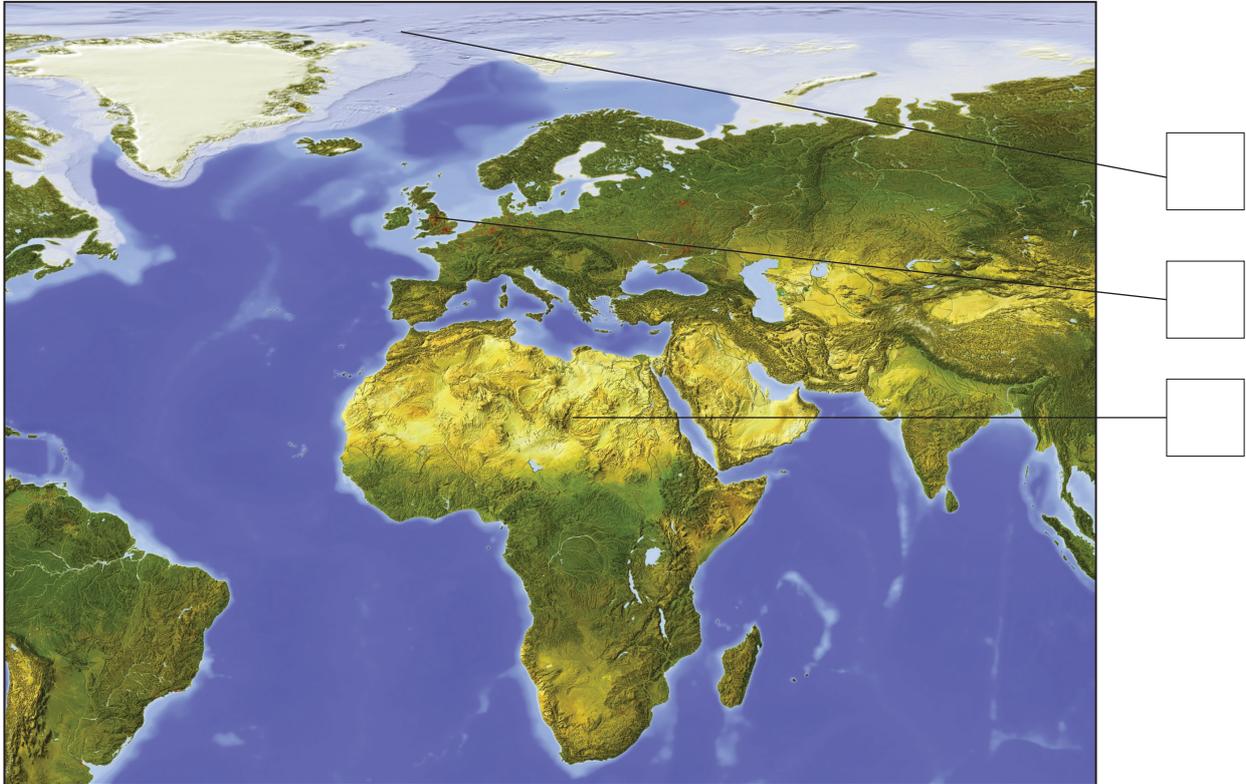
Quiz

1. Cross out the incorrect word to complete this sentence.
A weather forecast describes the weather in the **past** / **future**.
2. Read the statement below. Tick 'True' or 'False'.
In some countries, like the UK, weather can change quickly. True False
3. Fill in the blank to complete this sentence.
People have to think about the weather when they are deciding what to _____.
4. Read the statement below. Tick 'True' or 'False'.
Temperatures on weather forecasts show how windy it will be. True False
5. Why do farmers need weather forecasts? Tick the correct answer.
 - a. to decide where to build houses
 - b. to decide whether they need to water their crops
 - c. to decide what to wear



I. Add the letters of the following labels to the image below.

- a. UK
- b. Sahara Desert, North Africa
- c. Arctic



Weather in the UK

The weather in the UK is unpredictable. That means people in the UK and visiting the UK need to be prepared for all types of weather at all times of year.

The UK has unpredictable weather because of its location. Its location means that **air masses** from different parts of the world can affect the UK's weather. For example:

- Air masses from the Arctic bring cold air and cold, wet weather.
- Air masses from North Africa bring hot air and hot, dry weather.

Water and weather

2. What sort of weather does each air mass bring? Add labels to the map below. Use a maximum of four words for each arrow.



3. Fill in the blanks to complete these sentences.

The air mass that brings my favourite weather is:

_____.

That is because my favourite weather is: _____.

This air mass comes from _____, so the air is

_____.

Lesson 6

Unit check out



I. Write an answer to this question: Why does it rain?

Key words		
atmosphere	cooler	water vapour
clouds	evaporation	
condensation	rainfall	

Title: Why does it rain?	<hr/> <hr/>
Paragraph 1 <ul style="list-style-type: none">• How does water get into the atmosphere?• What is the name we give to water when it is a gas?	<hr/> <hr/> <hr/> <hr/>
Paragraph 2 <ul style="list-style-type: none">• What happens to warm air?• What happens to the temperature of the atmosphere as you go up?• What is the process that turns cooling water vapour into water droplets?	<hr/> <hr/> <hr/> <hr/>

<p>Paragraph 3</p> <ul style="list-style-type: none">• What happens to the droplets in the clouds?• When do the droplets fall as rain?	<hr/> <hr/> <hr/> <hr/>
<p>Extension Paragraph</p> <ul style="list-style-type: none">• Draw and label a diagram of the water cycle to demonstrate how and why it rains.	<hr/> <hr/> <hr/>
<p>Conclusion</p> <ul style="list-style-type: none">• Which air masses bring rain to the UK?• Why is rain useful to farmers?• Why is it useful to know when it is going to rain?• How do weather forecasts help us?	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

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Primary Geography

Water and weather

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