



NMSSA Science Toolkit - Assessment 2

This is an assessment of your learning in science.

In this test there are four different types of questions for you to answer. You might need to:

1. **Click on one or more answers to select them.**
2. **Choose a word from a drop down menu to complete a sentence.**
3. **Draw and/or label diagrams.**
4. **Write a response to a question.**





When you have answered a question click on the Next button . To go back to a question you have already attempted click on the grey back arrow button. 

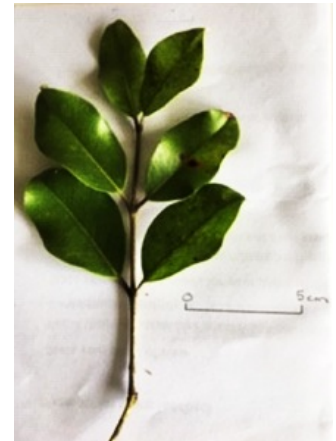
You may need to scroll down the page to read all the information.

There are **36** questions in this test. It should take you about 45 minutes to complete. Try to answer all the questions.

Native leaves

Table of some New Zealand native trees

Name of native tree	Leaf shape	Edge of leaf	Arrangement of leaves on stem	Approximate size of leaf
kōwhai	round	smooth	 opposite	1 cm
mānuka	oval	smooth	 alternate	1 cm
rātā	oval	smooth	 alternate	3-6 cm
pōhutukawa	oval	smooth	 opposite	3-10 cm



1) Use the table to identify the leaf in the photo above.

kōwhai

mānuka

rātā

pōhutukawa

Table of some New Zealand native trees


Name of native tree	Leaf shape	Edge of leaf	Arrangement of leaves on stem	Approximate size of leaf
kōwhai	round	smooth	↓ opposite	1 cm
mānuka	oval	smooth	↓ alternate	1 cm
rātā	oval	smooth	↓ alternate	3-6 cm
pōhutukawa	oval	smooth	↓ opposite	3-10 cm

2) Which of these claims can be justified (supported by) using only the data in the table? Choose **two**.

- | | | | |
|--|--|--|---|
| <input type="radio"/> Mānuka and kōwhai leaves are smaller than rātā leaves. | <input type="radio"/> All NZ native trees have leaves with smooth edges. | <input type="radio"/> Not all NZ native trees have the same shaped leaves. | <input type="radio"/> Pōhutukawa and rātā both have alternating leaves. |
|--|--|--|---|

Energy bulbs 2

Energy usage table

Incandescent bulb	 <small>KMJ CC-BY-SA 3.0</small>	1600	100 watts
CFL bulb	 <small>© Sun Ladder CC-BY-SA 3.0</small>	1600	25 watts
LED bulb	 <small>Dinkar.shukla CC-BY SA 4.0</small>	1600	20 watt

All the light bulbs above lose energy as heat. The more heat they lose, the more electricity they need to make the same amount of light.

3) Which light bulb loses the **most** heat energy?

- | | |
|--|---|
| <input type="radio"/> The incandescent light bulb. | <input type="radio"/> The CFL light bulb. |
| <input type="radio"/> The LED light bulb. | <input type="radio"/> They are all losing the same heat energy. |

Energy usage table

Incandescent bulb	 <small>KMJ CC-BY SA 3.0</small>	1600	100 watts
CFL bulb	 <small>Sun Ladder CC-BY-SA 3.0</small>	1600	25 watts
LED bulb	 <small>Dinkar.shukla CC-BY SA 4.0</small>	1600	20 watts

Energy can change from one form to another.

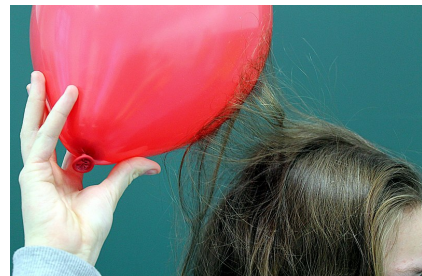
4) What energy changes are correct for the LED bulb?

<input type="radio"/> electricity to heat	<input type="radio"/> electricity to light
<input type="radio"/> electricity to light and heat	<input type="radio"/> electricity to electricity

Static electricity

Read the information below then click on the Next button to answer some questions.

Students in room 6 were investigating static electricity. They rubbed a balloon on different materials and held it above their hair. When their hair stood up, their teacher said they had made static electricity. Here are the results of their investigation.



© MikeRun | Wikipedia, CC-BY SA 4.0

Room 6 investigation Materials tested for static electricity

cotton	N	N	N	Y	N
rayon	N	N	N	Y	Y
polyester	Y	Y	Y	Y	Y
wool	Y	Y	Y	Y	Y
silk	Y	Y	Y	Y	Y

Key:

Y	Hair stood up	Static electricity was made
N	Hair did not stand up	Static electricity was not made

Room 6 investigation
Materials tested for static electricity

cotton	N	N	N	Y	N
rayon	N	N	N	Y	Y
polyester	Y	Y	Y	Y	Y
wool	Y	Y	Y	Y	Y
silk	Y	Y	Y	Y	Y

Key:

Y	Hair stood up	Static electricity was made
N	Hair did not stand up	Static electricity was not made

Some of the students discussed the class results.

Polyester, wool, and silk make static electricity.

Sienna

Silk makes static electricity, but cotton does not.

Tom

Wool makes static electricity, but rayon does not.

Georgia

Cotton and rayon sometimes make static electricity.

Jayson

5) Whose statement can you be **most sure** is correct?

Sienna's

Tom's

Georgia's

Jayson's

Room 6 investigation
Materials tested for static electricity

cotton	N	N	N	Y	N
rayon	N	N	N	Y	Y
polyester	Y	Y	Y	Y	Y
wool	Y	Y	Y	Y	Y
silk	Y	Y	Y	Y	Y

Key:

Y	Hair stood up	Static electricity was made
N	Hair did not stand up	Static electricity was not made

Two groups found that rayon **did** make static electricity.

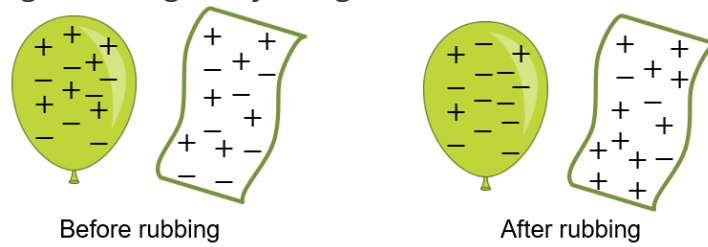
Georgia's group found that rayon **did not** make static electricity.

6) What could the class do to find out which result was correct?

The teacher said the balloon had been given a charge from the material. A charge can be positive + or negative - .

If an item has more positive charges it is positively charged.

If it has more negative charges it is negatively charged.



In the before rubbing diagram the charges are the same so neither the balloon nor the material is charged.

7) After the balloon has been rubbed onto the material, what sort of charge do they each have?

- | | |
|--|--|
| <input type="radio"/> The balloon is positively charged, and the material is negatively charged. | <input type="radio"/> The balloon is negatively charged, and the material is positively charged. |
| <input type="radio"/> The balloon and the material are both positively charged. | <input type="radio"/> The material and balloon are both neutral (no charge). |



When things have different charges, they **move towards** each other.
When things have the same charge, they **move away** from each other.

8) The student's hair stood up because

- | | |
|---|--|
| <input type="radio"/> the balloon had a different charge to the student's hair. | <input type="radio"/> the balloon had the same charge as the student's hair. |
| <input type="radio"/> the balloon and the student's hair were not charged. | |

Kea and kākā

Living things change over time. This helps them survive when the conditions of the places they live in change.

Kea and kākā look similar. Scientists think that a long time ago they had the same ancestor.

Kea



© J.Fisher | PhotoKete

Kākā



© Rosino | Flickr, CC-BY 2.0

- found in forests and mountains of the South Island of New Zealand
 - mostly olive-green with a brilliant orange under their wings
 - nest in burrows or crevices among the roots of trees
 - eat dead animals, roots, leaves, berries, nectar, and insects.
- found in lowland native forest throughout New Zealand
 - strongly patterned brown/green/grey feathers with orange and scarlet flashes under the wings
 - make their nests in hollow trees
 - eat fruits, berries, seeds, flowers, buds, nectar, sap, plants, and insects.

Use the information in the fact file and in the introduction to answer the following question.

9) Which statement **best** supports why scientists think that the kea and the kākā have the same ancestor?

- Their names are similar.
- They have many similar features.
- They live in New Zealand forests.
- They eat the same types of food.

Kea



Kākā



- found in forests and mountains of the South Island of New Zealand
 - mostly olive-green with a brilliant orange under their wings
 - nest in burrows or crevices among the roots of trees
 - eat dead animals, roots, leaves, berries, nectar, and insects.
- found in lowland native forest throughout New Zealand
 - strongly patterned brown/green/grey feathers with orange and scarlet flashes under the wings
 - make their nests in hollow trees
 - eat fruits, berries, seeds, flowers, buds, nectar, sap, plants, and insects.

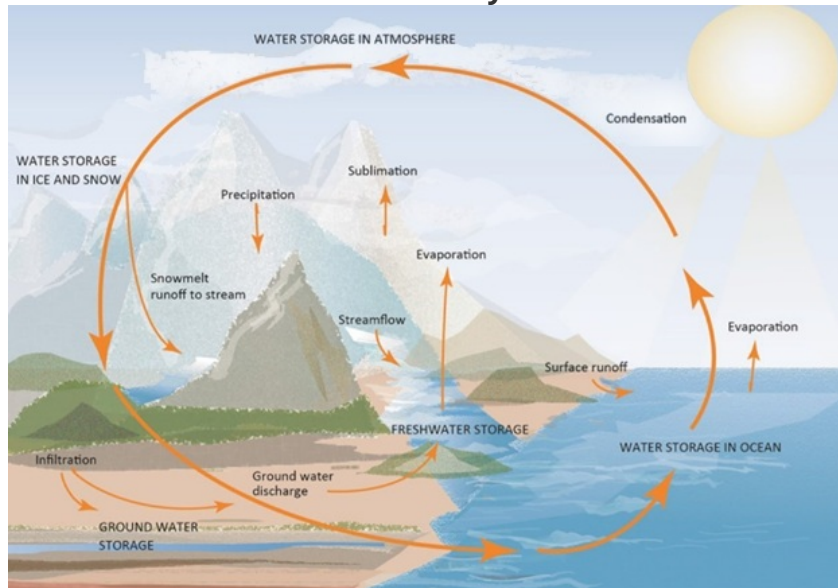
Use the information in the fact file to answer the following question:

10) Which statement **best** explains why both the kea and kākā changed over time?

- | | |
|--|--|
| <input type="radio"/> The kea changed to survive in cold mountain climates. | <input type="radio"/> The kākā changed to survive in lowland forests. |
| <input type="radio"/> The kea and kākā changed to survive in different climates. | <input type="radio"/> The kea and kākā changed because they live in New Zealand forests. |

Water cycle system

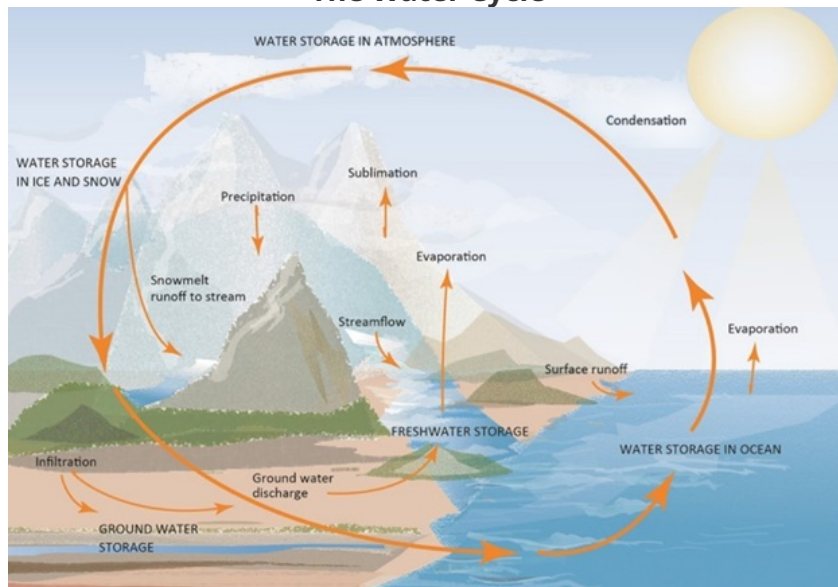
The Water Cycle



Use the diagram to answer the following question:

11) Name 5 places water is stored.

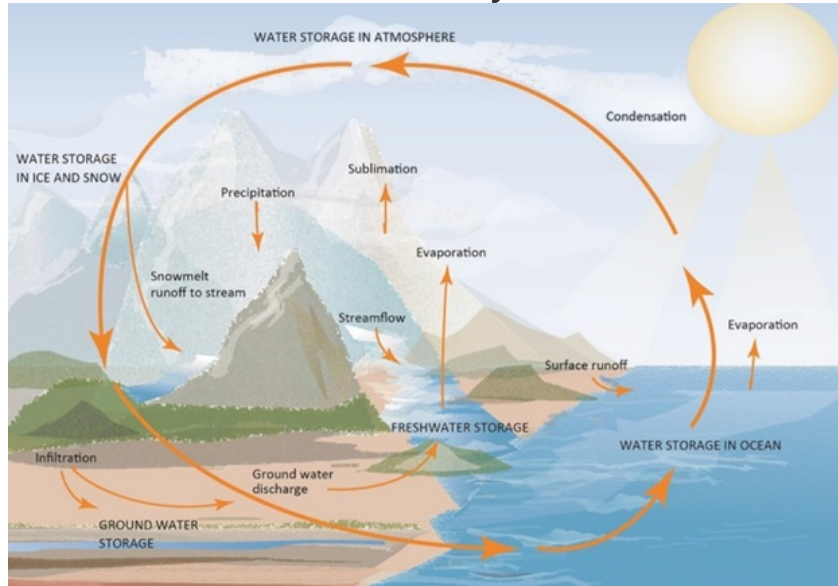
The Water Cycle



Use the diagram to answer the following question:

12) When water particles move from the sea to the air what is the process called?

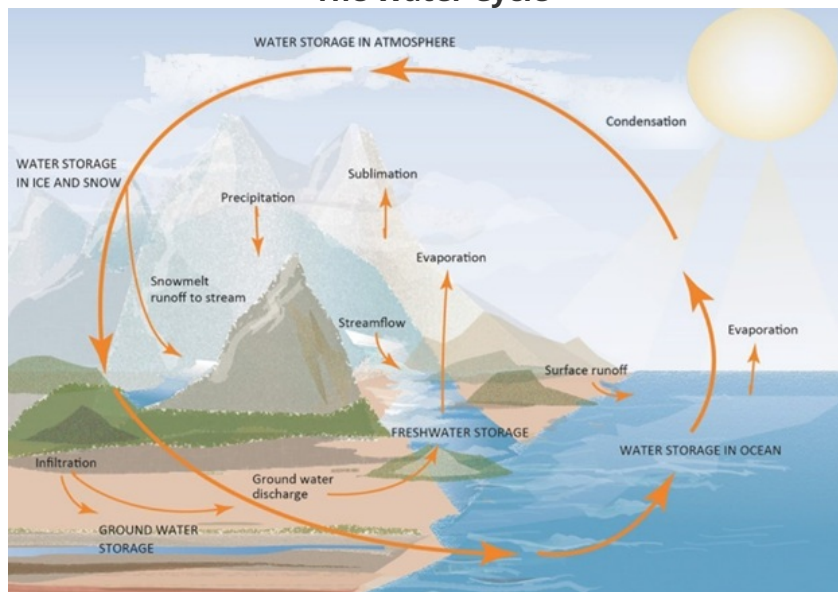
The Water Cycle



Use the diagram to answer the following question:

13) When water soaks into the ground what is the process called?

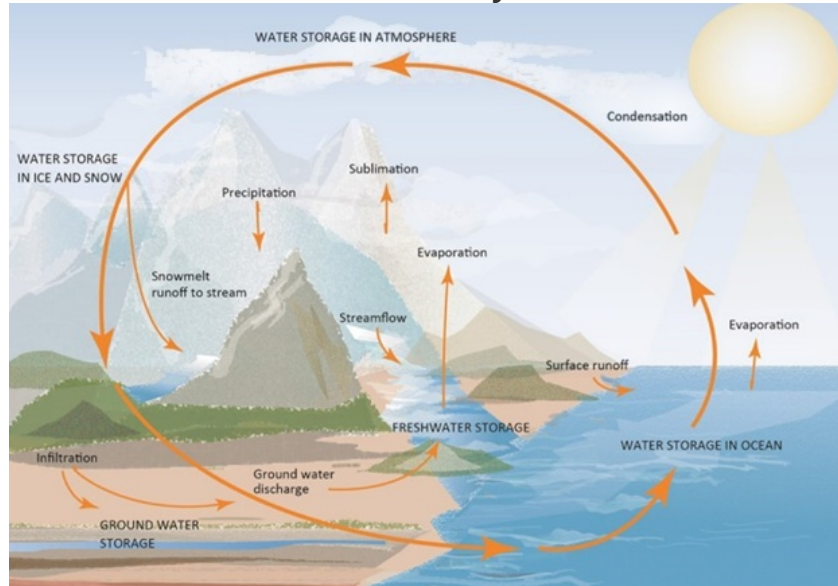
The Water Cycle



Use the diagram to answer the following question:

14) When ice turns into water vapour what is the process called?

The Water Cycle



Use the diagram to answer the following question:

15) What do the arrows show?

1080

The Department of Conservation (DOC) sometimes uses a poison called 1080 to kill pests such as mice, rats, and possums.



© Herb Christophers | DOC, CC-BY SA 4.0

16) Do you think this is a good thing for DOC to do?

Yes

No

17) Give **two** reasons that support your opinion.

Running



Source: Dreamstime

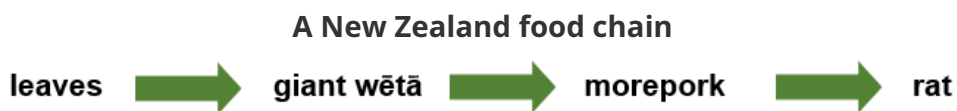
18) When I run fast, I notice that first my breathing gets faster and then my heart beats faster too. This is because:

- | | |
|--|--|
| <input type="radio"/> running is good for you and keeps you fit and healthy. | <input type="radio"/> the lungs and heart both work to get more oxygen to your muscles. |
| <input type="radio"/> the heart's job is to pump blood around the body. | <input type="radio"/> when you run, you breathe through your mouth instead of your nose. |

19) Which of the questions below could be answered by doing an investigation? Choose **all** that apply.

- | |
|---|
| <input type="radio"/> What effect does exercise have on your heart rate? |
| <input type="radio"/> Why do we have two lungs and one heart? |
| <input type="radio"/> What is the most common season for catching a cold? |
| <input type="radio"/> Do grazes heal faster with or without plasters? |

Predators

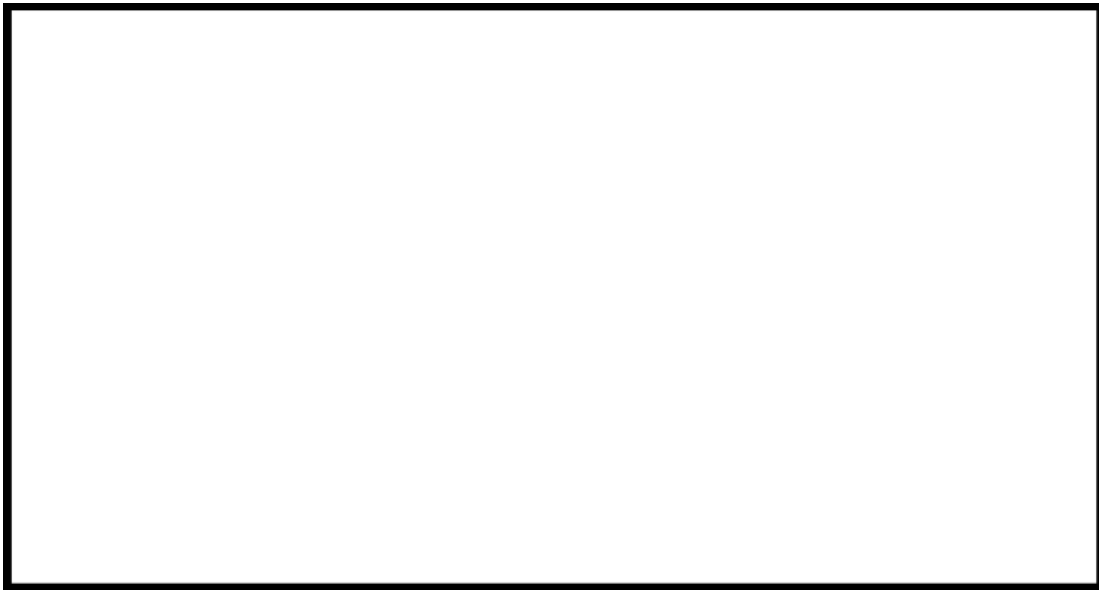


20) What does the food chain above tell you about moreporks?

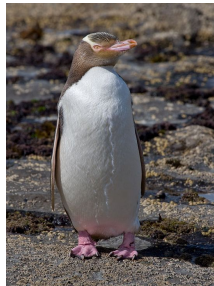
- | |
|---|
| <input type="radio"/> Moreporks eat rats. |
| <input type="radio"/> Giant wētā eat moreporks. |
| <input type="radio"/> Moreporks eat leaves. |
| <input type="radio"/> Rats eat moreporks. |

Yesterday Sarah watched her cat catching and eating a blackbird. The blackbird was busy eating a snail that it had picked off a cabbage. The cabbage leaves were full of holes where the snail had been feeding.

21) Draw a food chain to show what Sarah saw.



Fact file on Hoiho



© Christian Mehlführer | CC-BY 2.5

- Hoiho (yellow-eyed penguins) are endangered.
- They build their nests on land and catch their food in the ocean.
- Predators attack them at sea and on land.

Some predators of hoiho

Natural predators

barracudas, sharks, seals, sea lions

Introduced predators

cats, stoats, dogs, ferrets

Use the fact file on hoiho and the table of predators to answer the question below.

22) What can introduced predators do that natural predators cannot?

- | | | | |
|--|--|--|---|
| <input type="radio"/> Eat plants that hoiho eat. | <input type="radio"/> Eat the chicks and eggs in the nest. | <input type="radio"/> Eat the adults when they are hunting for food. | <input type="radio"/> Eat the food the adults catch for their chicks. |
|--|--|--|---|

Fact file on Hoiho



© Christian Mehlführer | CC-BY 2.5

- Hoiho (yellow-eyed penguins) are endangered.
- They build their nests on land and catch their food in the ocean.
- Predators attack them at sea and on land.

Some predators of hoiho

Natural predators

barracudas, sharks, seals, sea lions

Introduced predators

cats, stoats, dogs, ferrets

Use the fact file on hoiho and the table of predators to answer the question below.

23) What is the most important information from the table when deciding on **practical actions** to take to protect hoiho?

- | | | | |
|---|--|---|---|
| <input type="radio"/> The natural predators are bigger than introduced predators. | <input type="radio"/> The introduced predators all live on land. | <input type="radio"/> The natural predators are more dangerous. | <input type="radio"/> The introduced and natural predators both eat penguins. |
|---|--|---|---|

Letting the light through

A class was investigating which things let light through. They held different objects up to a torch. The table shows the results of all 6 groups in the class.

Glass of water	///// /		
Glass of orange juice	///	///	
Leaf	/	//	///
Feather	/	/////	
A piece of plastic	///		///
A towel		//	////
A tissue		////////	
A piece of cardboard		/	/////

24) Which statement is **best** supported by the results?

- | | | | |
|--|---|---|---|
| <input type="radio"/> A tissue is translucent. | <input type="radio"/> A leaf is opaque. | <input type="radio"/> Plastic is transparent. | <input type="radio"/> A glass of orange juice is transparent. |
|--|---|---|---|

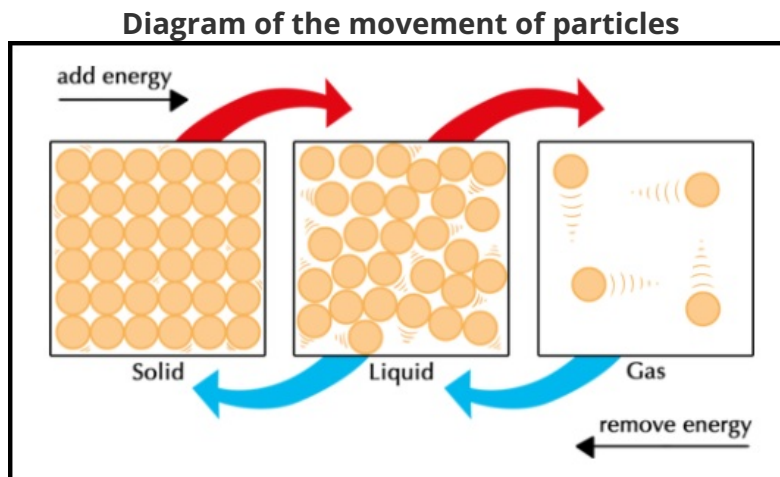
Glass of water	///// /		
Glass of orange juice	///	///	
Leaf	/	//	///
Feather	/	/////	
A piece of plastic	///		///
A towel		//	////
A tissue		////////	
A piece of cardboard		/	/////

25) What might have caused different groups to get different results? Choose **all** that apply.

- | | |
|--|--|
| <input type="radio"/> Different groups measured the light getting through in different ways. | <input type="radio"/> Some groups had brighter torches than others. |
| <input type="radio"/> The objects tested by each group were not exactly the same. | <input type="radio"/> The groups did not test all the objects for the same amount of time. |

Water particles

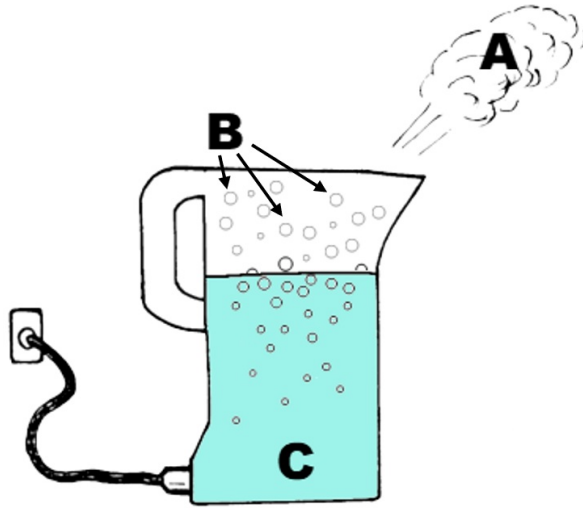
Everything is made up of particles. Particles are so small that we can't see them. Scientists use diagrams to explain how particles move when water changes from a solid to a liquid to a gas.



In the diagram, the symbols are used to show how fast the particles are moving.

26) Which of the following statements describes what is happening to the particles when liquid changes to a gas?

- | | | |
|--|---|--|
| <input type="radio"/> The particles move faster. | <input type="radio"/> The particles move at the same speed. | <input type="radio"/> The particles slow down. |
|--|---|--|

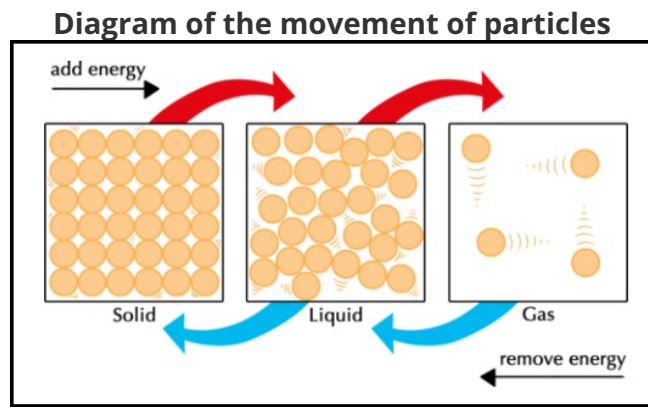


27) Look carefully at the diagram above. A, B and C all show forms of water.
 Select the word that describes the form of the water for each letter.
 Some words may be used more than once.

A. *solid / liquid / gas*

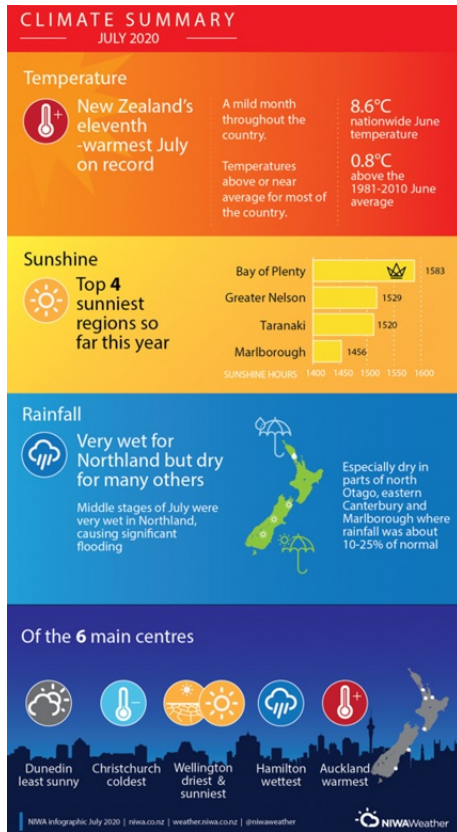
B. *solid / liquid / gas*

C. *solid / liquid / gas*



28) Explain what happens to water particles when water changes to a gas. Write so that a six-year-old child could understand your explanation.

Climate summary



© NIWA

July 2020 Climate Statistics (Main Centres only)

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland	11.6	+0.7	Above average
Tauranga	10.9	+0.6	Above average
Hamilton	9.3	+0.6	Above average
Wellington	9.6	+0.7	Above average
Christchurch	6.4	+0.6	Above average
Dunedin	7.2	+0.7	Above average

Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland	94	69	Below normal
Tauranga	85	66	Below normal
Hamilton	106	82	Near normal
Wellington	59	43	Well below normal
Christchurch	67	103	Near normal
Dunedin	70	123	Above normal

Sunshine	
Location	Sunshine (hours)
Auckland	116
Tauranga	118
Hamilton	116
Wellington	148
Christchurch	119 ²
Dunedin	114

© NIWA

29) Use the diagram **and** the table to decide which one of the statements below is **definitely true**.

- | | |
|---|---|
| <input type="radio"/> In July 2020 Hamilton had the highest rainfall in New Zealand. | <input type="radio"/> July 2020 was the warmest July ever in New Zealand. |
| <input type="radio"/> In July 2020 Wellington had less rain than it usually gets in July. | <input type="radio"/> In July 2020 it was sunnier in New Zealand than usual for July. |

Climate summary

>

30) Whose idea fits the evidence **the best**?

<input type="radio"/> This July Climate Survey shows that New Zealand's climate is heating up. Amy	<input type="radio"/> I don't agree with Amy because there was lots of rain in some places. Aroha	<input type="radio"/> I don't think we can tell by looking at just one month. Leah	<input type="radio"/> I think Amy is right because the temperature was 0.8 degrees above the June Hani
---	--	---	---

Carbon cycle

All living things have carbon in them - Plants take carbon dioxide out of the air to make food - Animals get carbon from plants and breathe out carbon dioxide - Carbon dioxide can be produced when things are burned.

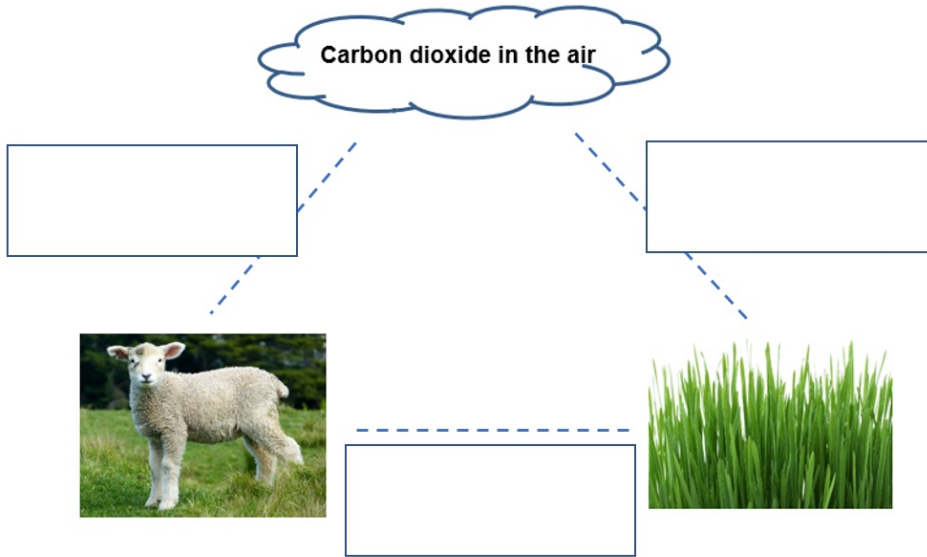
In the diagram below,

31) draw arrows to show how carbon moves from the air into plants and animals then back into the air.

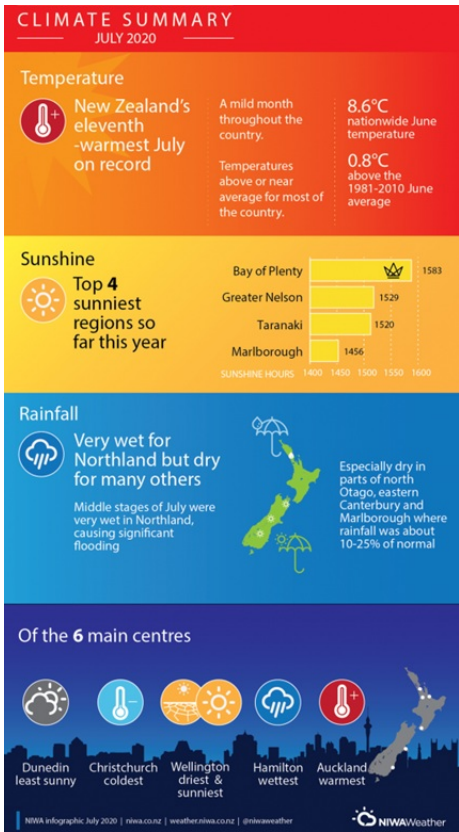
Carbon dioxide in the air



32) Label the dotted lines to show what is happening.



33) Forest fires cause levels of carbon dioxide in the air to increase in two ways.
What are the **two** ways?



© NIWA

July 2020 Climate Statistics (Main Centres only)

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland	11.6	+0.7	Above average
Tauranga	10.9	+0.6	Above average
Hamilton	9.3	+0.6	Above average
Wellington	9.6	+0.7	Above average
Christchurch	6.4	+0.6	Above average
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Sunshine			
Location	Sunshine (hours)		
Auckland	116		
Tauranga	118		
Hamilton	116		
Wellington	148		
Christchurch	119 ²		
Dunedin	114		

© NIWA

1.

2.

Birdsong

Scientists have done different studies about the songs of city and country birds. They have observed that birds of the same species sing differently if they live in the city or in the country. Here is what they found out.

- sing their songs more loudly than country birds
- sing longer songs than country birds
- sing their songs faster than country birds
- sing their songs more quietly than city birds
- sing shorter songs than city birds
- sing their songs more slowly than city birds



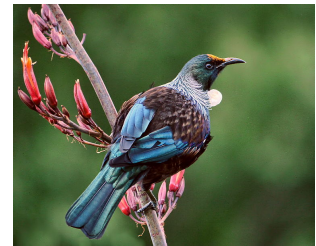
© Sid Mosdell | Wikipedia, CC-BY 2.0

In one study scientists observed that city birds sang more quickly and for a longer time than country birds.

34) What would scientists have been observing to make them think this? Choose **two**.

- | | |
|--|---|
| <input type="radio"/> How loudly city and country birds sing. | <input type="radio"/> The length of time city and country birds sing. |
| <input type="radio"/> The different songs city and country birds sing. | <input type="radio"/> How quickly city and country birds sing. |

- sing their songs more loudly than country birds
- sing longer songs than country birds
- sing their songs faster than country birds
- sing their songs more quietly than city birds
- sing shorter songs than city birds
- sing their songs more slowly than city birds



© Sid Mosdell | Wikipedia, CC-BY 2.0

Singing slowly makes a lower sound that carries better over city noise.

Because of this, some scientists thought that city birds would sing more slowly than country birds.

35) Which observation shows their idea is wrong?

- | | |
|---|--|
| <input type="radio"/> City birds sing their songs more loudly than country birds. | <input type="radio"/> City birds sing their songs faster than country birds. |
| <input type="radio"/> Country birds sing shorter songs than city birds. | <input type="radio"/> Country birds sing their songs more quietly than city birds. |

Shadows

The netball goal post at school is **2** metres high. We measured the length of its shadow at 3 different times during the day, at 4 different times during the year.

Length of Shadow

1 February	2.0m	1.0m	2.0m
1 May	4.6m	2.8m	4.6m
1 August	20.0m	7.2m	20.0m
1 November	3.4m	2.2m	3.4m

36) Which of these statements are supported by the data? (Choose **all** that apply.)

<input type="radio"/> Shadows are longer in the morning than in the afternoon.	<input type="radio"/> Shadows are longer in winter than in summer.	<input type="radio"/> Shadows are shorter at midday than in the morning.
<input type="radio"/> Shadows are always longer than the object that is blocking the light.	<input type="radio"/> When the sun is high in the sky, the shadows are shorter.	<input type="radio"/> The length of a shadow changes during a day.

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