
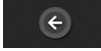


# NMSSA Science Toolkit - Assessment 1

This is an assessment of your learning in science.

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

1. Click on one or more answers to select them.
2. Click on an answer and move it to the right place on the screen.
3. 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.

## Wasps

In Aotearoa New Zealand we have several types of wasp. We can identify them by looking carefully at their features.

German wasps:

- are yellow and black
- have black spots running down their back
- have black antennae (feelers).

Photo 1



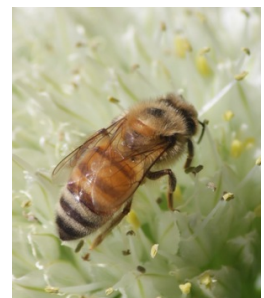
Photo 2



Photo 3



Photo 4



© Public domain | Needpix.com © gailhampshire | Flickr, CC BY 2.0 © Bob Peterson | Flickr, CC-BY 2.0

© J.Fisher | PhotoKete

1) Which photo shows a German wasp?

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5



© J.Fisher | PhotoKete

German wasps:

- are yellow and black
- have black spots running down their back
- have black antennae (feelers).

2) Use the information about German wasps to give one reason why photo 5 is not a German wasp.

### Water cycle

Water Source	Total Water (%)
Oceans	97.24
Glaciers & Snows	2.14
Aquifers	0.61
Rivers & Lakes	0.017
Ground	0.005
Atmosphere (w/clouds)	0.001
Plants	0

©NZCER

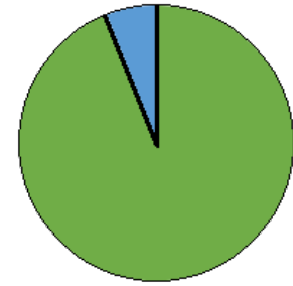
Use the table above to answer the following question.

3) There is more water stored in the ground than in the atmosphere.

True

False

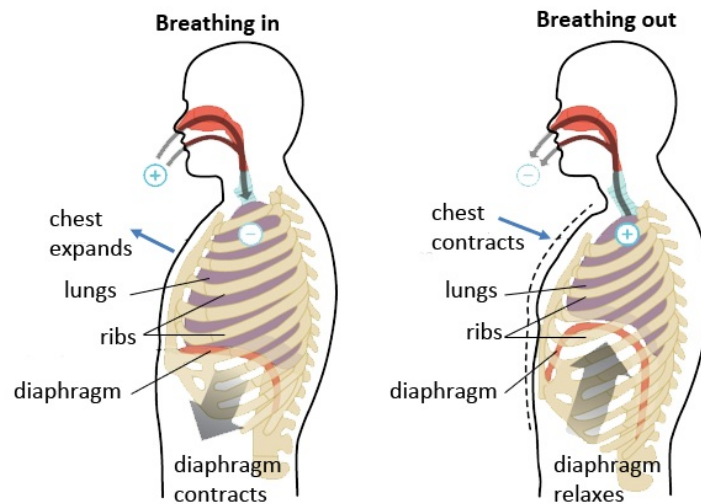
Water Source	Total Water (%)
Oceans	97.24
Glaciers & Snows	2.14
Aquifers	0.61
Rivers & Lakes	0.017
Ground	0.005
Atmosphere (w/clouds)	0.001
Plants	0



©NZCER

4) The data from this table is represented as a pie chart. What does the green section represent?

## Breathing



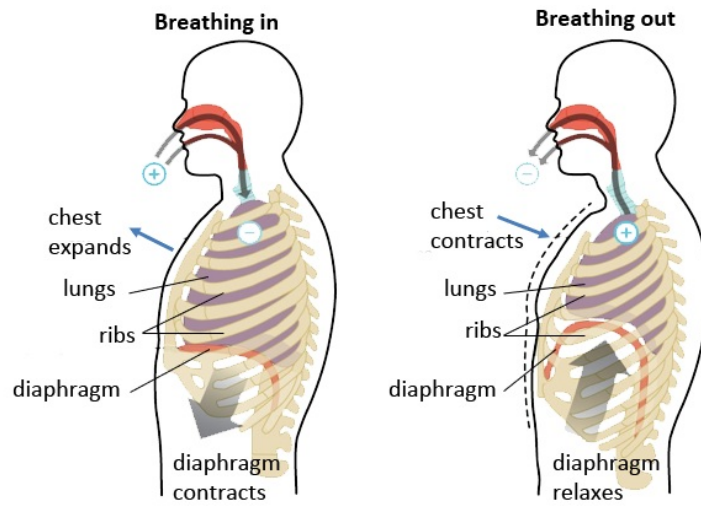
© Openstax (derived) | CC-BY SA 4.0

Look at the diagram above.

5) Name **two** things about our bodies that change when we breathe in and out.

1.

2.



© Openstax (derived) | CC-BY SA 4.0

Look at the diagram above.

6) Name **two** things about our bodies that stay the same whether we are breathing in or out.

1.

2.

## Vaccinations



Image: Public domain | immunize.org

Some people think it is very important to be vaccinated against diseases such as measles. Others disagree.

7) Give one reason why someone might **choose to be** vaccinated.

8) Give one reason why someone might **choose not to be** vaccinated.

## Lupins

In some parts of New Zealand lupins are a weed. When they grow along rivers, lupins change the water flow and cause flooding and erosion. They alter the environment for native birds and plants that live and grow there.



Lupin

© J. Fisher | PhotoKete

9) Describe this lupin plant in enough detail that a person working on killing weeds could recognise the correct plant and destroy it.

## Energy Bulbs 1

### Types of bulbs



Incandescent

© KMJ | CC-BY SA 3.0



CFL

© Sun Ladder | CC-BY-SA 3.0



LED

© Dinkar.shukla | CC-BY SA 4.0

Energy can change from one form to another. All these light bulbs produce heat as energy changes inside them.

10) Which of the following statements correctly describes the energy changes for all these light bulbs?

electricity to light and heat

electricity to light

electricity to heat

electricity to electricity

## Kākāpō



Department of Conservation | CC-BY-2.0

### Fact file

- Kākāpō are the only parrots in the world that can't fly.
- They have strong legs for climbing.
- They are nocturnal.
- They are the heaviest parrots in the world, reaching up to 4kg.
- Kākāpō have yellowish-green feathers.
- They live in forests, grasslands, and coastal areas.
- They eat very low-quality food.
- They have a musty, sweet smell.
- When kākāpō feel threatened, they freeze.

The kākāpō are an endangered bird. Before humans came to New Zealand, the only predators of the kākāpō were the eagle, harrier, and falcon. These large birds used sight to hunt for their prey.

Use the fact file to answer the following question.

11) Describe **two** features of the kākāpō that made it difficult for the eagle, harrier, and falcon to see them.

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Department of Conservation | CC-BY-2.0

### Fact file

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- When kākāpō feel threatened, they freeze.

When humans arrived in New Zealand, they brought in animals from other countries, such as rats, cats, ferrets, and stoats. These animals use their senses such as smell and hearing when hunting.

Use the fact file to answer the following question.

12) Describe **two** features of the kākāpō that made them easy prey for rats, cats, ferrets, and stoats.

### Kākāpō



Department of Conservation | CC-BY-2.0

### Fact file

- Kākāpō are the only parrots in the world that can't fly.
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- They live in forests, grasslands, and coastal areas.
- They eat very low-quality food.
- They have a musty, sweet smell.
- When kākāpō feel threatened, they freeze.

13) What is the **most** important thing people need to think about if they want to help the kākāpō survive?

<input type="radio"/> The speed they run.	<input type="radio"/> The food they eat.
<input type="radio"/> The predators that hunt them.	<input type="radio"/> The trees they can climb.



## Rainwater runoff

When rain falls it either:

- soaks into the ground to become rainwater
- evaporates, or
- flows over the surface of the land.

In some places the surface of the land is **permeable** and the water soaks through and goes into the groundwater.



© Public domain | Public domain pictures

In other places the surface is **impermeable** and the water flows over the land into rivers, lakes, and the sea. This is called runoff or storm water.

14) Which of the following surfaces do you think are **permeable**? (Choose as many as you like.)

gardens

bush areas

concrete paths

grassed areas

sand dunes

roads

When rain falls it either:

- soaks into the ground to become rainwater
- evaporates, or
- flows over the surface of the land.

In some places the surface of the land is **permeable** and the water soaks through and goes into the groundwater.

In other places the surface is **impermeable** and the water flows over the land into rivers, lakes, and the sea. This is called runoff or storm water.

15) Where do you think there would be more runoff - in towns or rural (country) areas?

Town areas

Rural (country) areas

Explain your answer



16) Runoff can cause damage. Drag each reason to the box with the matching idea.

Limits the amount of plastic carried to the sea by runoff.

Allows runoff to be carried out to the sea rather than flowing over the surface.

Waste-water seeps into the ground rather than flowing over the surface.

Don't leave rubbish lying around.

Wash your car on the grass.

Keep storm water gutters free of leaves and debris.

### Breakfast cereals

The table shows how much fibre, protein, sugar, and fat (per 100g) there are in 3 different breakfast cereals.

<b>A</b>	9.2g	9.3g	22.2g	1.1g
<b>B</b>	3.2g	7.4g	25.8g	11.9g
<b>C</b>	10.4g	14.9g	13.6g	28.9g

17) If you wanted to eat a high fibre/low sugar breakfast, which cereal would be the best choice?

A

B

C

<b>A</b>	9.2g	9.3g	22.2g	1.1g
<b>B</b>	3.2g	7.4g	25.8g	11.9g
<b>C</b>	10.4g	14.9g	13.6g	28.9g

18) If you wanted to eat a high protein/low fat breakfast, which cereal would be the best choice?

A

B

C

<b>A</b>	9.2g	9.3g	22.2g	1.1g
<b>B</b>	3.2g	7.4g	25.8g	11.9g
<b>C</b>	10.4g	14.9g	13.6g	28.9g

One of the cereals contains a lot of dried fruit.  
Dried fruit contains fibre and sugar.

19) Which cereal is most likely to contain a lot of dried fruit?

A
  B
  C

**Forces**

Geordie wants to test whether a marble travels further on smooth or rough surfaces. The table below shows the things he could use for his investigation.

big marble



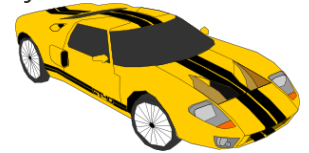
piece of lino



ramp with a steep slope



toy car



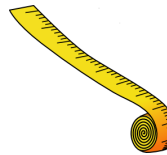
small marble



piece of carpet








tape measure













ramp with a gentle slope








20) Which 5 things will Geordie need for his investigation to test whether a marble travels further on smooth or rough surfaces?

21) To make sure he can trust his results, what should Geordie do?

- |   |   |
|---|---|
| <input type="radio"/> Time carefully how long it takes the marble to roll down the slope. | <input type="radio"/> Repeat his experiment several times with the same marble. |
| <input type="radio"/> Ask a friend to measure how far the marble travels.                 | <input type="radio"/> Measure carefully the height of the ramp.                 |

### Magnets

Students in Room 4 were asked to do an investigation to find out what magnetic materials have in common. Mahana's group recorded their results in a table.



Source: Dreamstime

Material	Stuck to the magnet
metal paperclip	yes
plastic paperclip	no
rubber eraser	no
plastic ruler	no
soft drink can	yes
pen	no
pencil	no
phone	no
zip on jacket	yes
dollar coin	yes

Use the information in the table to answer the following question.

22) What was the same about the materials that stuck to the magnet?

- |  |  |  |   |
|--|--|--|---|
| <input type="radio"/> They were all metal. | <input type="radio"/> They were all plastic. | <input type="radio"/> They were all heavy. | <input type="radio"/> They were all rubber. |
|--|--|--|---|

Material	Stuck to the magnet
metal paperclip	yes
plastic paperclip	no
rubber eraser	no
plastic ruler	no
soft drink can	yes
pen	no
pencil	no
phone	no
zip on jacket	yes
dollar coin	yes

23) Elijah said "All small things were attracted to the magnet". Which **one** of these things from the investigation tells us he is wrong?

- |  |  |
|--|--|
| <input type="radio"/> The plastic paperclip did not stick to the magnet. | <input type="radio"/> The metal paperclip did stick to the magnet.   |
| <input type="radio"/> The dollar coin did stick to the magnet.           | <input type="radio"/> The plastic ruler did not stick to the magnet. |

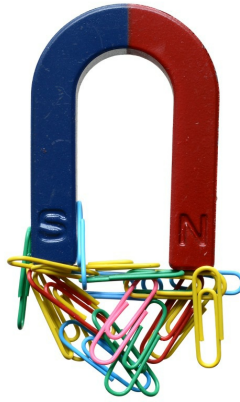
24) Which question below could **not** be answered by doing a practical investigation?

Are the magnets in our class the same size?

Do the magnets in our class pick up the same things?

How are magnets made?

Does a rubber band stick to a magnet?



Source: Dreamstime

Erin said if magnets are the same size, they are also the same strength.

25) Which test results would show she is wrong? Choose **two**.

Magnets of the same size picked up the same number of paperclips.

Magnets of different sizes picked up the same number of paperclips.

Magnets of the same size picked up different numbers of paperclips.

Magnets of different sizes picked up different numbers of paperclips.

### Crabs

Scientists do tests to find out what might happen to animals if the climate gets warmer.

One test they did was to find out what happened to crabs when the water the crabs lived in was made warmer.



© J.Fisher | PhotoKete

26) Which of the following results from the scientists' test would **most likely** mean there would be fewer crabs in the future?

The crabs were able to survive in the warmer water.

The crabs moved more slowly in the warmer water.

The crabs had fewer baby crabs in the warmer water.

The crabs did not grow as big in the warmer water.

27) Explain why you chose this answer.

The crabs were able to survive in the warmer water.

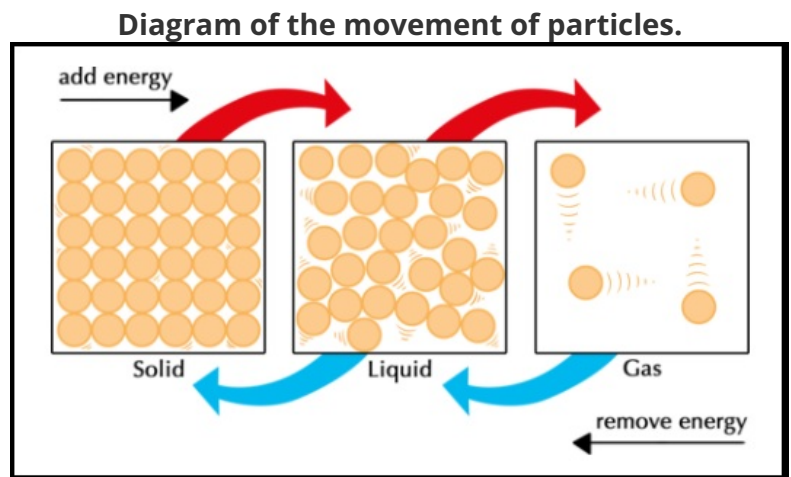
The crabs moved more slowly in the warmer water.

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### Particles

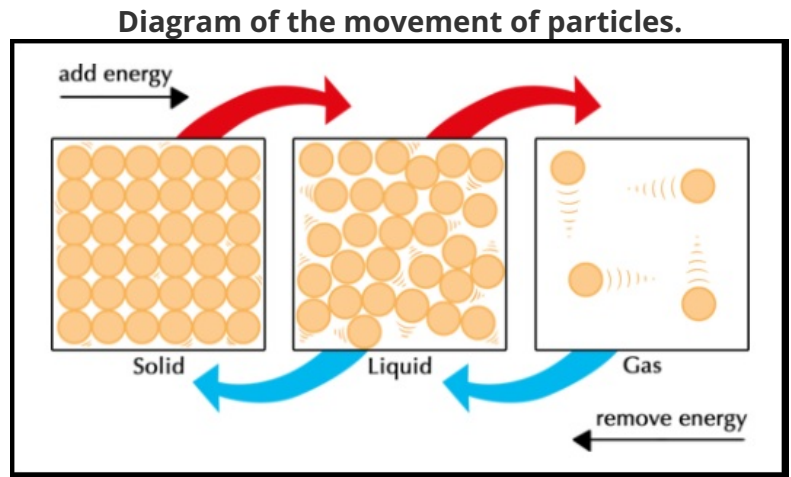
Everything is made up of particles. Particles are so small that we can't see them. Scientists use diagrams to explain how particles move when water changes from a solid to a liquid to a gas.



28) Which of the following statements describes what is happening when a block of ice melts?

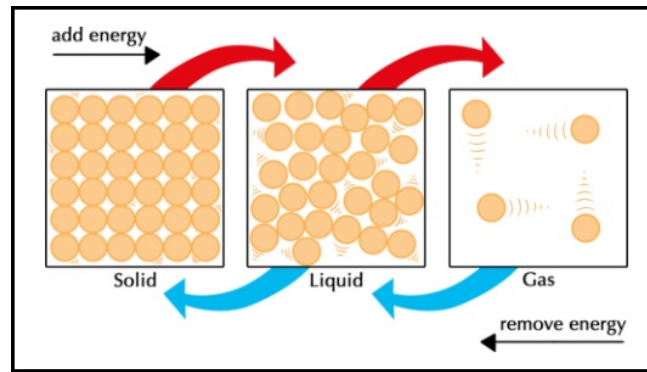
- |  |   |   |   |
|--|---|---|---|
| <input type="radio"/> Water is changing from a solid to a gas. | <input type="radio"/> Water is changing from a liquid to a solid. | <input type="radio"/> Water is changing from a liquid to a gas. | <input type="radio"/> Water is changing from a solid to a liquid. |
|--|---|---|---|

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.



29) Which statement best describes the energy change that happens when ice turns into water?

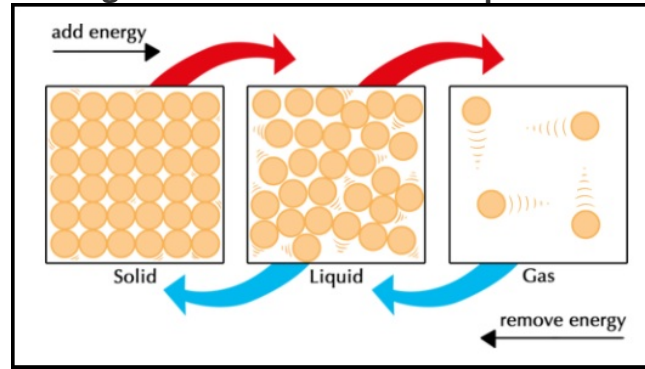
- |  |  |  |  |
|--|--|--|--|
| <input type="radio"/> Energy is added to a solid to make a liquid. | <input type="radio"/> Energy is removed from a liquid to make a solid. | <input type="radio"/> Energy is added to a liquid to make a gas. | <input type="radio"/> Energy is removed from a gas to make a liquid. |
|--|--|--|--|



30) Which type of energy would change ice to water?

- |                            |                            |                             |                                   |
|----------------------------|----------------------------|-----------------------------|-----------------------------------|
| <input type="radio"/> Wind | <input type="radio"/> Heat | <input type="radio"/> Light | <input type="radio"/> Electricity |
|----------------------------|----------------------------|-----------------------------|-----------------------------------|

### Diagram of the movement of particles.



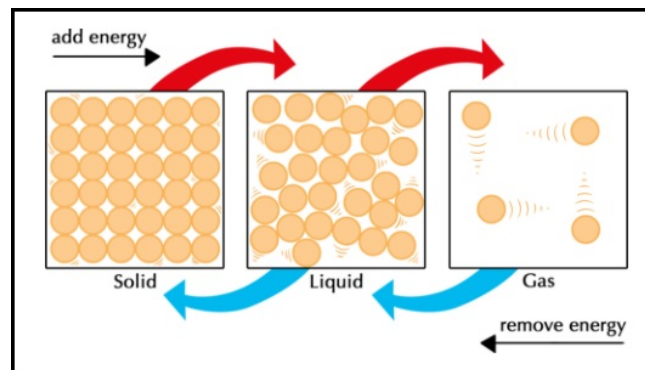
In the diagram, the symbols are used to show how fast the particles are moving.

31) Which statement correctly describes the particle movement when a liquid changes to a gas?

The particles slow down.

The particles speed up.

The particles stay at the same speed.



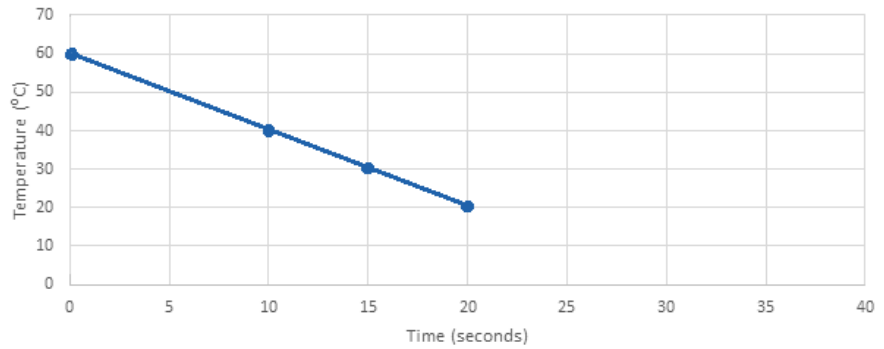
32) Explain what happens to water particles when ice melts. Write so that a six-year-old child could understand your explanation.



## Dissolving sugar

Some students dissolved sugar in water at different temperatures. Each time, they measured the temperature of 100 mls of water, put 1 teaspoon of sugar in the water, and stirred until all the sugar was dissolved. Here is a graph of their results.

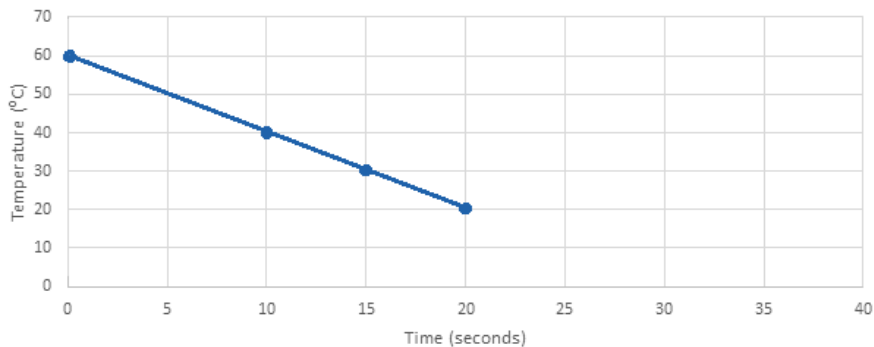
Time taken to dissolve one teaspoon of sugar in 100 mls of water at different temperatures



33) What does the graph show?

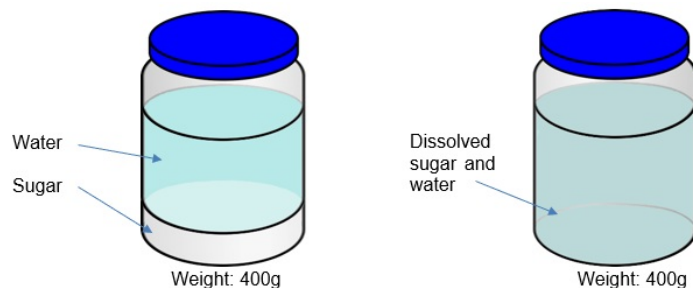
- |  |  |
|--|--|
| <input type="radio"/> Sugar dissolves more quickly in hot water than cold water. | <input type="radio"/> Sugar needs to be left in water for a long time to dissolve. |
| <input type="radio"/> The less sugar there is, the more quickly it dissolves.    | <input type="radio"/> Sugar dissolves more quickly in cold water than hot water.   |

Time taken to dissolve one teaspoon of sugar in 100 mls of water at different temperatures



34) Use the graph to predict how long it would take for the sugar to dissolve at 5° C.

Sam put some sugar and water in a jar. He weighed the jar of sugar and water straight away and again when the sugar had dissolved. Here are his results.



35) Which statement is backed up by Sam's evidence?

- |  |   |
|--|---|
| <input type="radio"/> The sugar has gone because you can't see it in the water.      | <input type="radio"/> The sugar is still there because the water will taste sweet.      |
| <input type="radio"/> The sugar is still there because the jars are the same weight. | <input type="radio"/> The sugar could be gone because there is no evidence it is there. |

## Cooling drinks

Alice wanted to find out if some drinks cooled faster than others. She put 250 ml of water, tea, coffee, and milk into 4 cups.

She heated each cup in the microwave for 90 seconds. Then she timed how long it was before she could put her finger in the liquid.

From her investigation she decided that milk cooled more quickly than water, tea, or coffee.



36) Maya said the results could not be trusted. Choose **three** reasons she might think this.

- |   |   |  |
|---|---|--|
| <input type="radio"/> The amount of drink in each cup is different. | <input type="radio"/> The cups are different shapes.                  | <input type="radio"/> She didn't time the heating of the drinks carefully. |
| <input type="radio"/> She didn't measure how hot each drink got.    | <input type="radio"/> She didn't measure the temperatures accurately. | <input type="radio"/> She didn't time how long the drinks took to cool.    |

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