

Sc

KEY STAGE

2

LEVELS

3–5

Science sampling test

Test B

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
Please circle one	Boy			Girl		
School name						

2012

PLEASE DO NOT WRITE ON THIS PAGE

INSTRUCTIONS

Read this carefully.

You have **45 minutes** for this test.

Answers



This pencil shows where you will need to put your answer.

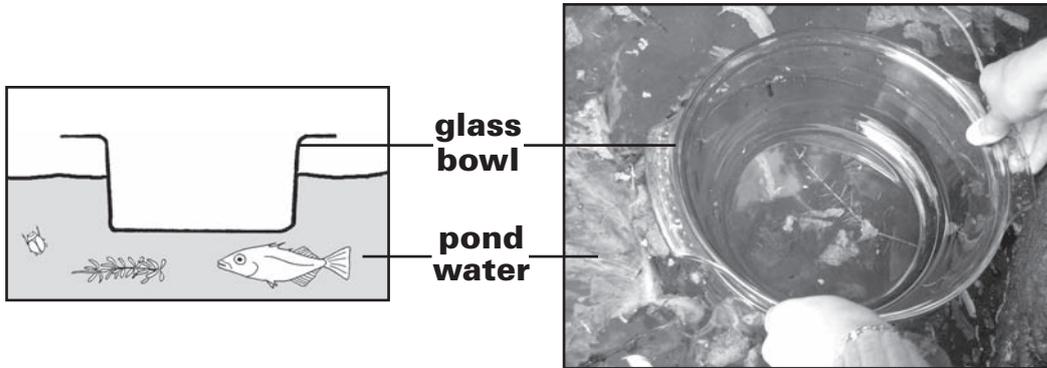
For some questions you may need to draw an answer instead of writing one.

Do not write in the grey margins.

Do not write on or near the bar codes.

1 Pond life

- (a) Tom is finding out about pond life. He holds a glass bowl in the water and watches the pond life underneath.

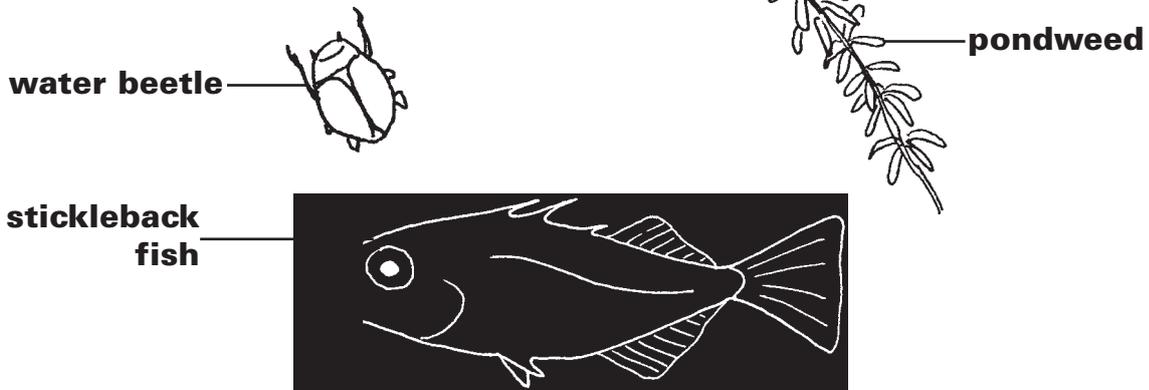


What property of the bowl allows Tom to see the pond life?

 The glass bowl is

(1 mark)

- (b) The pictures below show some of the things Tom sees underneath the bowl.



The stickleback fish is a predator.

Tick **ONE** box to show why the stickleback fish is a predator.

-  It eats plants. It eats other animals.
- It hides near pondweed. It gets eaten by other animals.

(1 mark)

(c) The pondweed is a producer.

Write **true** or **false** next to each of the following statements about producers.

True or false?



Producers are at the start of the food chain.

Producers catch their food from the water.

Producers use sunlight to make new materials for growth.

(1 mark)

(d)



Tom

Micro-organisms are living in the pond water.

(i) Explain why Tom **cannot** see the micro-organisms in the water.



.....

(1 mark)

(ii) Why does it help to have some micro-organisms living in the pond?



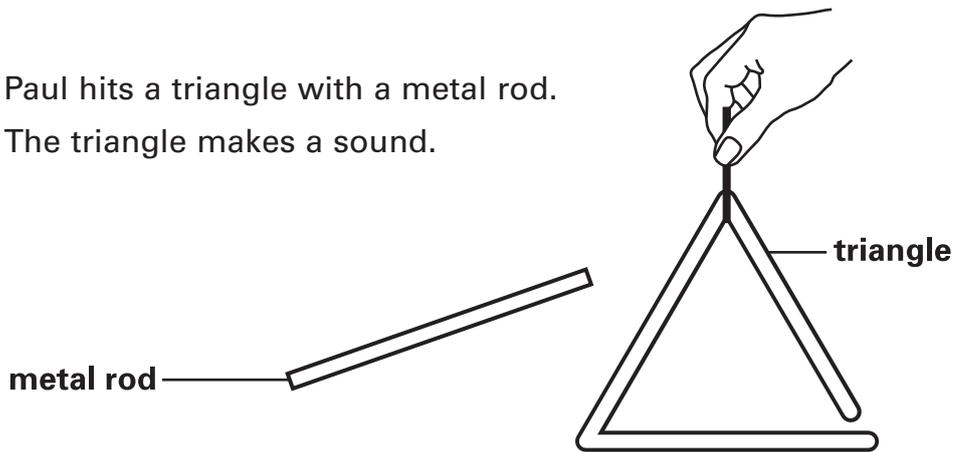
.....

.....

(1 mark)

2 Triangles

- (a) Paul hits a triangle with a metal rod.
The triangle makes a sound.

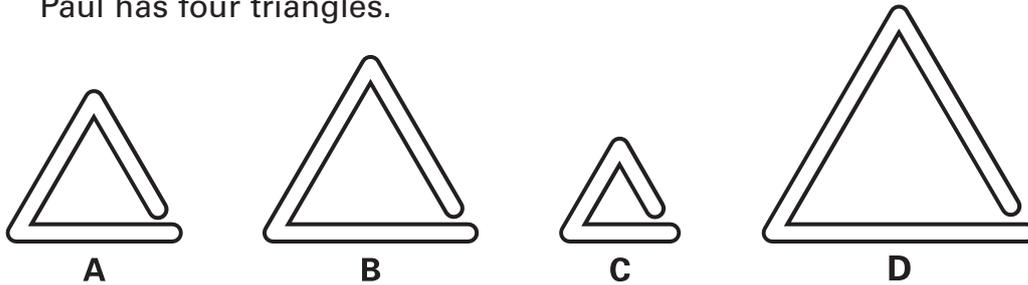


What happens to the triangle for Paul to hear a sound when it is hit?



(1 mark)

- (b) The size of a triangle affects how high or low the sound is.
Paul has four triangles.



Write the letters **A, B, C, and D** to order the sound the triangles make from **highest** to **lowest**.



Highest → **Lowest**

(1 mark)

- (c) What scientific term is used to describe how high or low a sound is?



(1 mark)

- (d) Paul takes one triangle. He investigates how the volume of the sound changes when he hits the triangle with different amounts of force.

He uses a sound sensor to measure the volume.

He repeats his test three times for each force.

Complete each row of the table to show how hard the triangle was hit. Use the words in the box below.

gently quite hard very hard



How hard the triangle was hit	Volume (units)		
	Test 1	Test 2	Test 3
.....	12	15	14
.....	8	10	6
.....	16	19	21

(1 mark)

- (e) Explain why Paul repeats his test three times for each force.



.....

.....

(1 mark)

- (f) Paul hit the triangle gently three times.
The volume was not the same each time.

Explain why the volume of the sound was not the same each time.



.....

.....

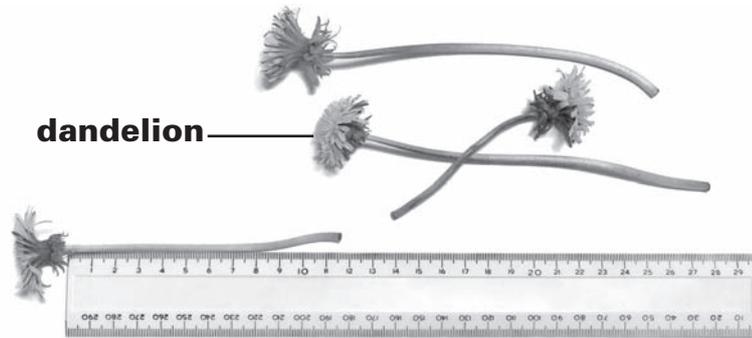
(1 mark)

3 Dandelion

- (a) Class 5 want to compare dandelions growing in short grass and dandelions growing in long grass.

They collect 20 dandelions from each place.

They measure the length of the dandelion stems.



This table shows the number of stems at each length in short grass and long grass.

Length of grass	Length of dandelion stem (cm)				
	3-6	7-10	11-14	15-18	19-22
Short	4	12	4	0	0
Long	0	1	6	11	2

Tick **ONE** box to show the most common length of dandelion stems in **long** grass.



7-10 cm	<input type="checkbox"/>	11-14 cm	<input type="checkbox"/>
15-18 cm	<input type="checkbox"/>	19-22 cm	<input type="checkbox"/>

(1 mark)

- (b) In the table, how many dandelions had stems of 15 cm and longer?



.....

(1 mark)

- (c) Before the test, the children made some predictions about the dandelions in short and long grass.

Tick **ONE** box in each row to show whether each prediction is supported by the evidence from their table of results.

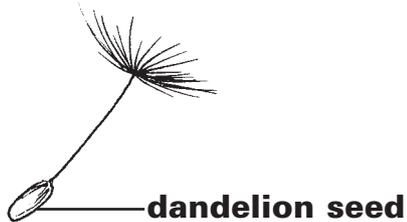


Prediction	Supported by the evidence	Not supported by the evidence
Where dandelions grow makes a difference to the stem length.		
There will be more dandelions in the short grass than in the long grass.		

(1 mark)

- (d) Dandelion stems need to be longer than the grass they grow in to help the seeds disperse.

Look at the picture of the dandelion seed.



How is the dandelion seed usually dispersed?



.....

(1 mark)

- (e) Seed dispersal is part of a life process of the dandelion plant.

Tick **ONE** box to show which life process seed dispersal is part of.



pollination

nutrition

reproduction

growth

(1 mark)

4 Identifying solids

- (a) Mia has four different solids.
Her teacher asks her to find out what the solids are.
Mia mixes a teaspoon of each solid into different beakers of water.
She records her observations in Table 1.

Table 1

Solid	Observation after mixing with water
A	Most solid floats on top of the water. The solid turns the water misty.
B	The solid cannot be seen. The liquid is clear.
C	The solid cannot be seen. The liquid is clear.
D	Some solid sinks to the bottom. The solid turns the water cloudy.

What is the name of the process that has happened to solids **B** and **C**?



.....

(1 mark)

- (b) Mia tries to separate a mixture of solids A and D using a sieve.
Mia records her observations in Table 2.

Table 2

Solid	Observation after sieving
A	The solid stays in the sieve.
D	The solid goes through the sieve.

Describe **ONE** difference between solids **A** and **D** that stops solid A going through the sieve.



.....

(1 mark)

- (c) Next Mia puts a teaspoon of solid B into a beaker of vinegar. Then she puts a teaspoon of solid C into another beaker of vinegar. She records her observations in Table 3.

Table 3

Solid	Observation after mixing with vinegar
B	The solid cannot be seen. The liquid is clear.
C	The mixture bubbles and fizzes.

- (i) Which solid has a non-reversible change when mixed with vinegar? Tick **ONE** box.



solid B

solid C

- (ii) What evidence shows the change to the solid you chose is non-reversible?



.....

(1 mark)

- (d) The teacher tells Mia the names of the four solids.

Draw **FOUR** lines to match each solid to its name. Use the information in Tables 1, 2 and 3 to help you.



Solid

A

B

C

D

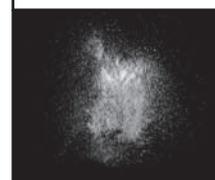
Name of solid

flour

coconut

salt

bicarbonate of soda

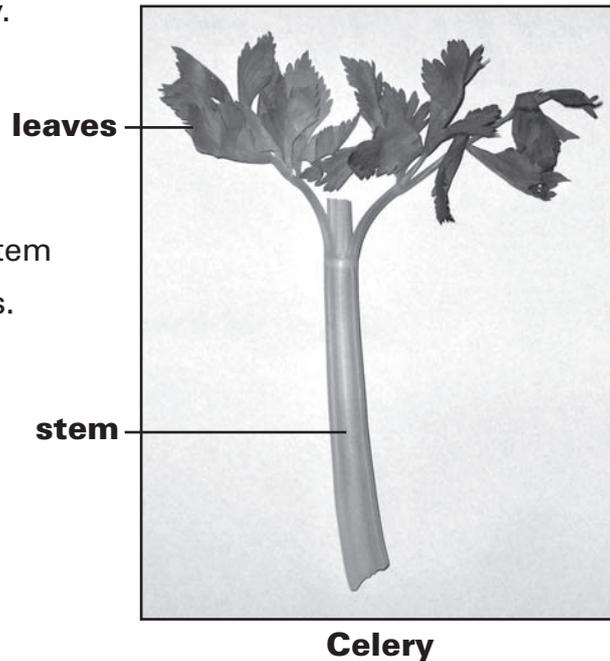


(2 marks)

5 Celery

- (a) Sandeep has some celery.

Water can travel up the stem of the celery to the leaves.



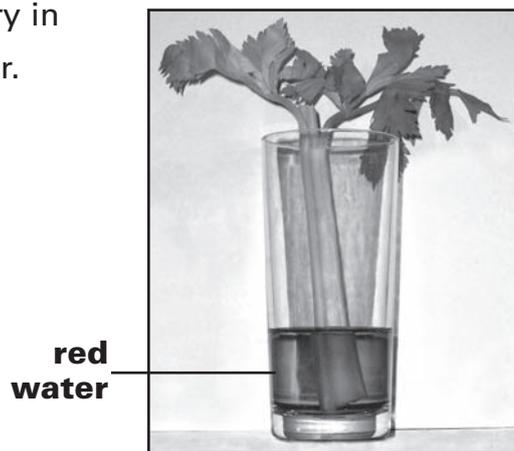
Give **ONE** function of the leaves for the celery plant.



.....

(1 mark)

- (b) Sandeep puts a stick of celery in a glass of red-coloured water.



When the water reaches the leaves, the leaves turn red.

Sandeep wants to find out if the temperature affects how quickly the water gets to the leaves.

Think about an investigation you could do to find out if the temperature affects how quickly the water gets to the leaves.

Answer the questions below about your investigation.

The variable I will change in my investigation is:



.....

(1 mark)

(c) The equipment I will use to measure the time it takes for the red water to get to the leaves is:



.....

(1 mark)

(d) **TWO** variables I will keep the same to make my investigation fair are:



1

2

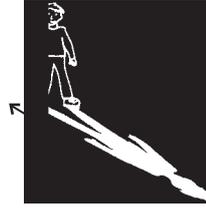
(1 mark)

6 Jack's shadow

- (a) Class 3 are investigating shadows in the playground.
It is a bright sunny day.

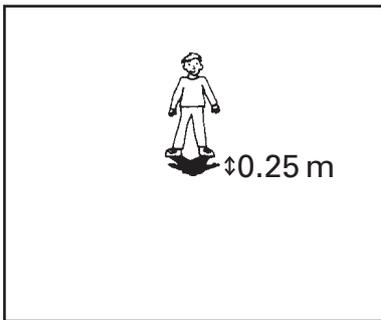


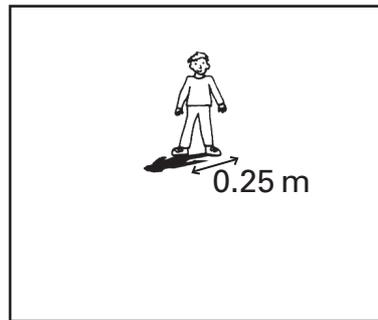
Susie measures the length of Jack's shadow at **9 am**.

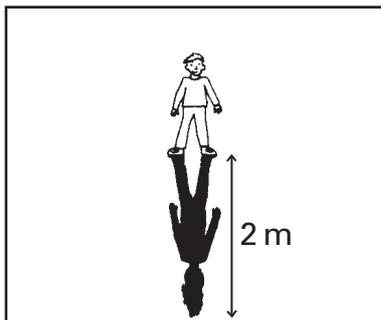


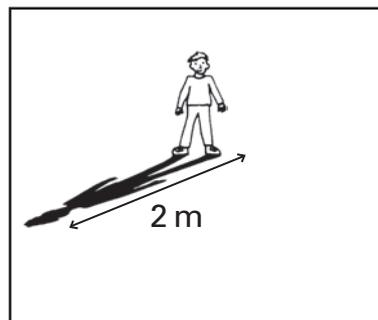
Then she measures the length of Jack's shadow at midday.
Jack stands in the same position in the playground.

Which picture shows Jack's shadow at **midday**? Tick **ONE** box.









(1 mark)

- (b) Explain why a shadow forms on the ground when the sunlight shines on Jack.



.....

.....

(1 mark)

- (c) At **3 pm** Jack stands in the same place in the playground. Susie measures Jack's shadow again. His shadow has changed position.

What movement in space causes Jack's shadow to change position?



.....

(1 mark)

- (d) The class observed Jack's shadow on a sunny day.

Tick **ONE** box to show why the class should **not** do their test on a cloudy day.



On a cloudy day...

Jack's shadow is very dark.

Jack's shadow is difficult to see.

Jack's shadow does not change position.

Jack's shadow is very big.

(1 mark)

- (e) Susie has some ideas about shadows.

Write **true** or **false** under each idea about shadows.



The colour of a car's shadow depends on the colour of the car.

You can tell if Jack's eyes are shut by looking at his shadow.

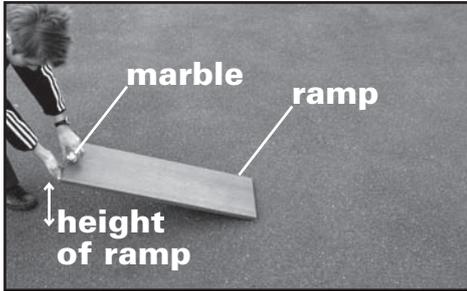
The shape of the shadow depends on the shape of the object.

Only light from the Sun causes a shadow.

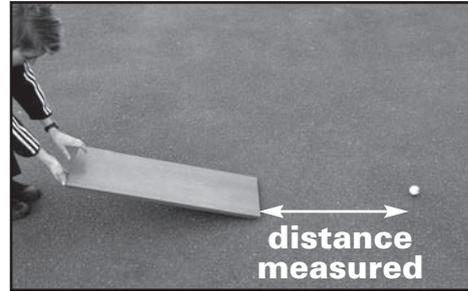
(2 marks)

7 Rolling marble

(a) John and Ravinder are investigating a marble rolling down a ramp.



Photograph A



Photograph B

They change the height of the ramp.

They measure **how far** the marble rolls from the bottom of the ramp.

They repeat their test with the ramp at different heights.

What equipment could be used to measure the height of the ramp?

.....

(1 mark)

(b) Tick **ONE** box in each row of the table to show how they should do their investigation to make sure their test is **fair**.



Variable	Must be the same	Must be different	Makes no difference
surface of the ramp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
height of the ramp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
size of the marble	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mass of the marble	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(2 marks)

- (c) John and Ravinder must decide what heights they should put the ramp at.

Look at this photograph.

John says, 'This ramp is too steep. It will **not** give good results.'



Photograph C

Explain why the ramp in photograph C is too steep to get good results.



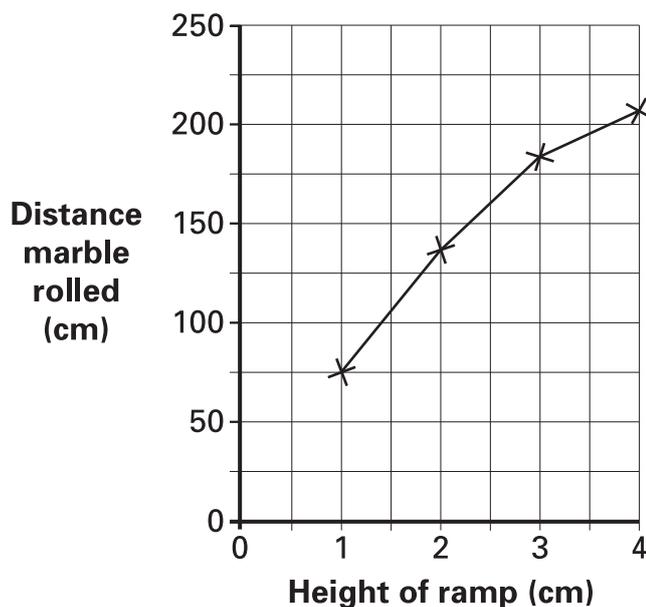
.....

.....

(1 mark)

- (d) Ravinder plots a graph to show their results.

Draw a cross **on the graph** to show the distance the marble would roll if the ramp was 0 cm high.



(1 mark)

8 Candles

(a) Justine lights a candle.



Justine

When a candle burns, a non-reversible change happens.

Complete the table to show if the observation is evidence of a reversible or a non-reversible change. Tick **ONE** box in each row.

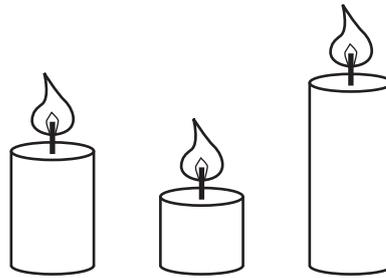


Observation	This is evidence of a reversible change.	This is evidence of a non-reversible change.
The wax melts.		
Smoke is given off.		

(1 mark)

(b) Justine has candles of different heights but the same width.

She wants to burn them all down to a height of 1 cm.



Describe the relationship between the **height** of the candle and the **time** it takes the candle to **burn** down to 1 cm.



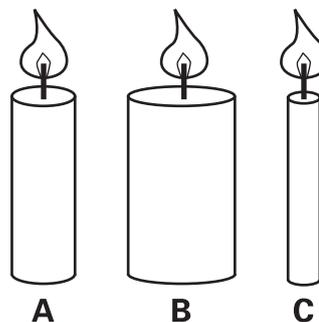
.....

.....

(1 mark)

(c) Justine has three new candles.

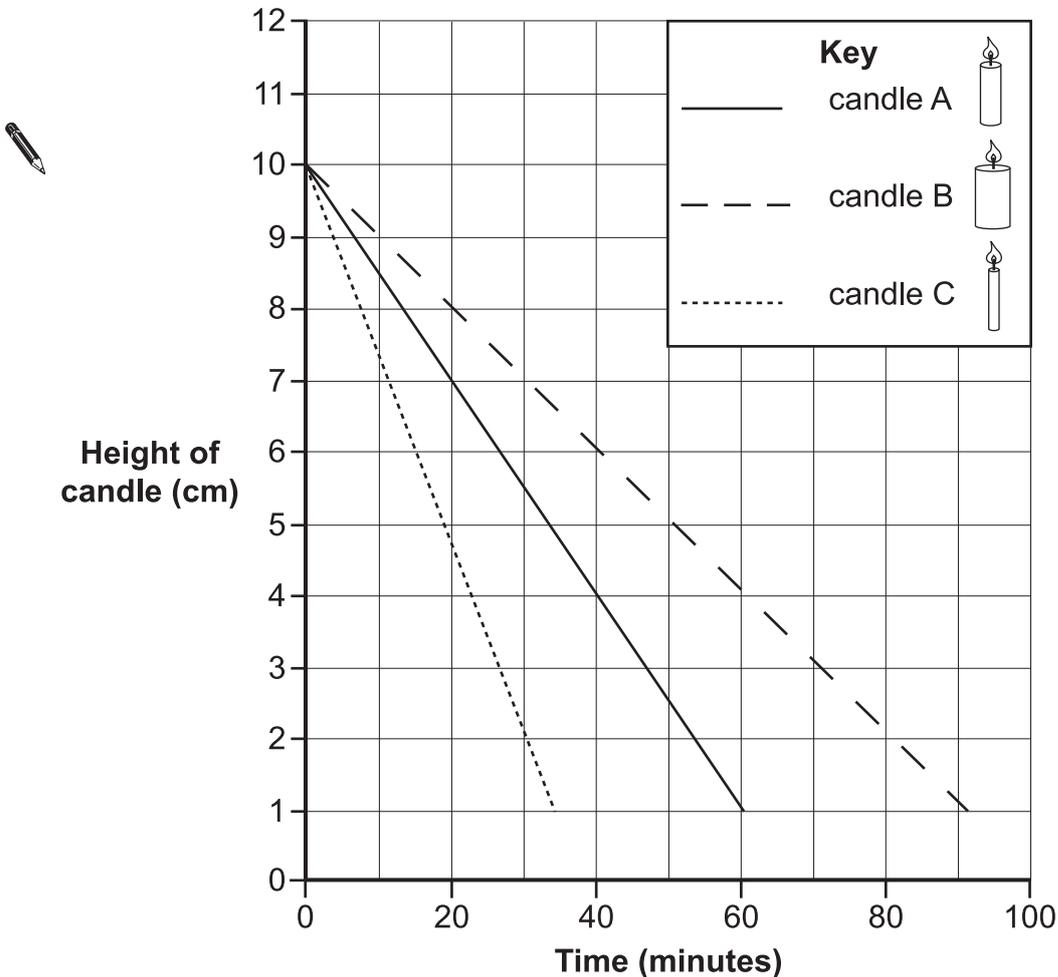
They are the same height but have different widths.



Justine wants to find out if the width of the candle affects the time it takes to burn down.

She times how long it takes for each candle to burn down to 1 cm.

The graph below shows Justine's results.



Candle C burnt down the quickest.

How many minutes did it take candle C to burn down to **4 cm**?

..... minutes.

(1 mark)

- (d) Justine has another candle.
It is thinner than candle C but it is the same height.

Draw a line on the graph to show how quickly the new candle will burn down to 1 cm.

(1 mark)

© Crown copyright 2012

STA/12/5593 (Pupil pack)

STA/12/5591 (Mark schemes pack)