

Sc

KEY STAGE

2

LEVELS

3-5

2011

# Science sampling test

## Test A



First name \_\_\_\_\_

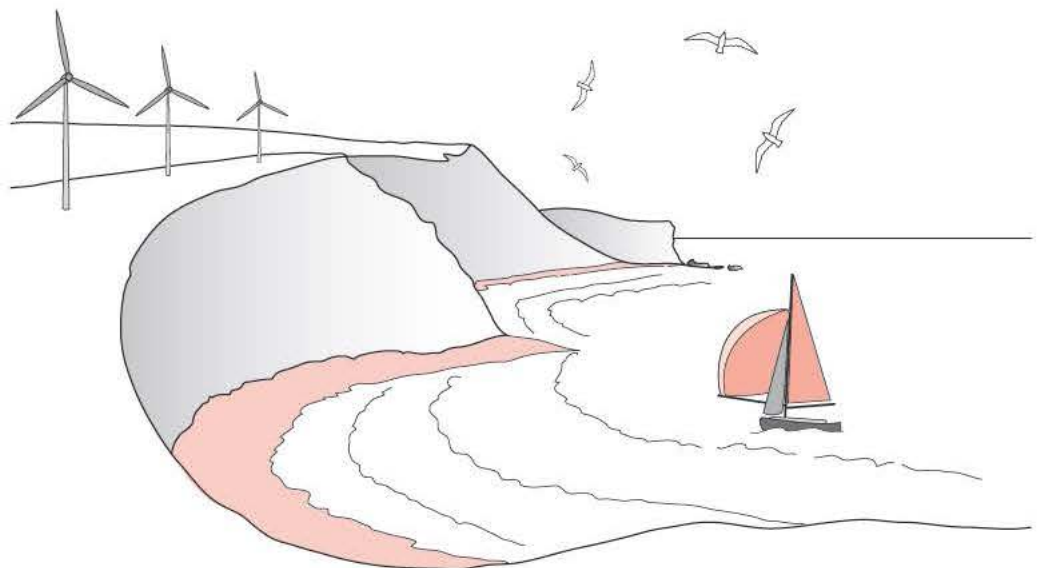
Middle name \_\_\_\_\_

Last name \_\_\_\_\_

Date of birth      Day                      Month                      Year

Please circle one      Boy                      Girl

School \_\_\_\_\_



**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 barcodes.

Some questions may have a box like this for you to write down your thoughts and ideas.



# 1 Growth and health

(a) Sue writes down some different stages of the human life cycle.

**Some stages of the human life cycle**

**A** adult                      **B** old age                      **C** toddler

**D** teenager                      **E** newborn

Write the correct **letter (A–E)** in each box on the chart below to order the stages of the human life cycle from youngest to oldest.



Chart showing the stages of the human life cycle.

.....

.....

.....

.....

.....

**Youngest** → **Oldest**

(1 mark)

(b) Sue describes some of the stages of the human life cycle in the table below.

Which stages of the human life cycle (**A, B, C, D** or **E**) are being described? Write **ONE** letter next to each description.



Stage (write the letter)	Description of stage
.....	<ul style="list-style-type: none"> <li>■ has just learned to walk</li> <li>■ is learning to talk</li> <li>■ is learning to use a toilet</li> </ul>
.....	<ul style="list-style-type: none"> <li>■ body gets taller quickly and changes shape</li> <li>■ more body hair starts to grow</li> <li>■ may get spots (acne)</li> </ul>

(1 mark)



(c) There are different life processes that humans do.

Complete the table below to show the missing life processes and evidence. One row of the table has been done for you.



Life process	Evidence of the life process
growth	People get taller.
.....	People walk.
nutrition	People .....
.....	People have babies.

(2 marks)

(d) Sue knows that what you eat can help you live a healthy life.

(i) What is **best** for Sue to do to help her have a healthy diet? Tick **ONE** box.



Sue should...

not eat sugary foods.

eat a variety of different foods.

not eat foods that contain fat or oil.

eat only fruit.

(1 mark)

(ii) Sue eats the best foods to give her a healthy life.

Give **ONE other** way Sue could keep her body healthy.



.....

(1 mark)



## 2 Mixing solids with water

- (a) Nasra wants to find out if the temperature of water affects the time it takes for sugar to dissolve.

Nasra dissolves one teaspoon of sugar in 100 cm<sup>3</sup> of water.

She repeats her test using water at different temperatures.



Name **TWO** variables Nasra should keep the same to make her test fair.



1. ....

2. ....

(1 mark)

- (b) Nasra records her results in a table.

Water temperature (°C)	Time taken for sugar to dissolve (seconds)
20	55
30	41
40	27

Explain how the **temperature** of the water affects the **time taken** for the sugar to dissolve.



.....

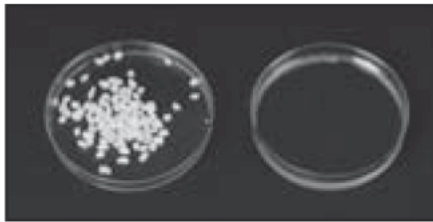
.....

(1 mark)



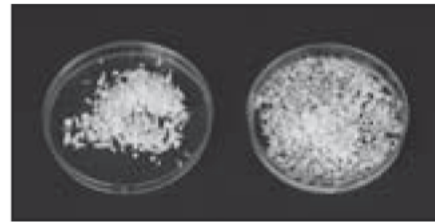
(c) Then Nasra adds **different** solids to water.

The photographs show the solids before and after adding water.



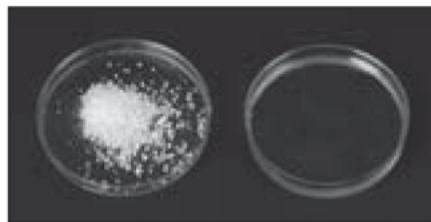
Bath  
crystals

Bath  
crystals in  
water



Coconut

Coconut  
in water



Citric acid  
crystals

Citric acid  
crystals  
in water

Complete the table by writing **yes** or **no** in each row to show if the solids dissolved. Use the photographs to help you.



Name of solid	Did the solid dissolve? Yes or no?
bath crystals	
coconut	
citric acid crystals	

(2 marks)



### 3 Computer games

- (a) Robert wants to find out if children who play computer games have faster reaction times than those who do not play computer games.

A computer flashes pictures on a screen.

When the children see a picture, they press a computer key as fast as they can.

The computer measures their reaction times.

The tables below show the reaction times of different children.



Children who play computer games	Reaction time (seconds)
Robert	0.32
Tara	0.33
Mike	0.35
Rebecca	0.34
Amina	0.36

Children who do NOT play computer games	Reaction time (seconds)
Raj	0.36
Graham	0.38
Anna	0.38
Alex	0.39
Cameron	0.37

How many children were tested in this investigation?



.....

(1 mark)

- (b) What unit of time was used to record the reaction times?



.....

(1 mark)





(c) Look at the results tables.

Describe the difference in reaction times between the children who play computer games and the children who do not.



.....

.....

(1 mark)

(d) The computer is better than a stopwatch for measuring the reaction times in this investigation.

Why is it better to use a computer than a stopwatch for measuring the reaction times?



.....

.....

(1 mark)

(e) Robert predicts:



The more you play computer games, the quicker your reaction time will be.

If Robert could only test **THREE** children, which children should he test to see if his prediction is true? Tick **THREE**.



Child	Time spent playing computer games (hours per week)	Should Robert test this child?
Damien	4	
Amy	10	
Milly	4	
Tandi	10	
Stuart	4	
Hassan	1	

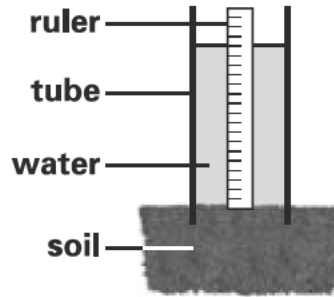
(1 mark)



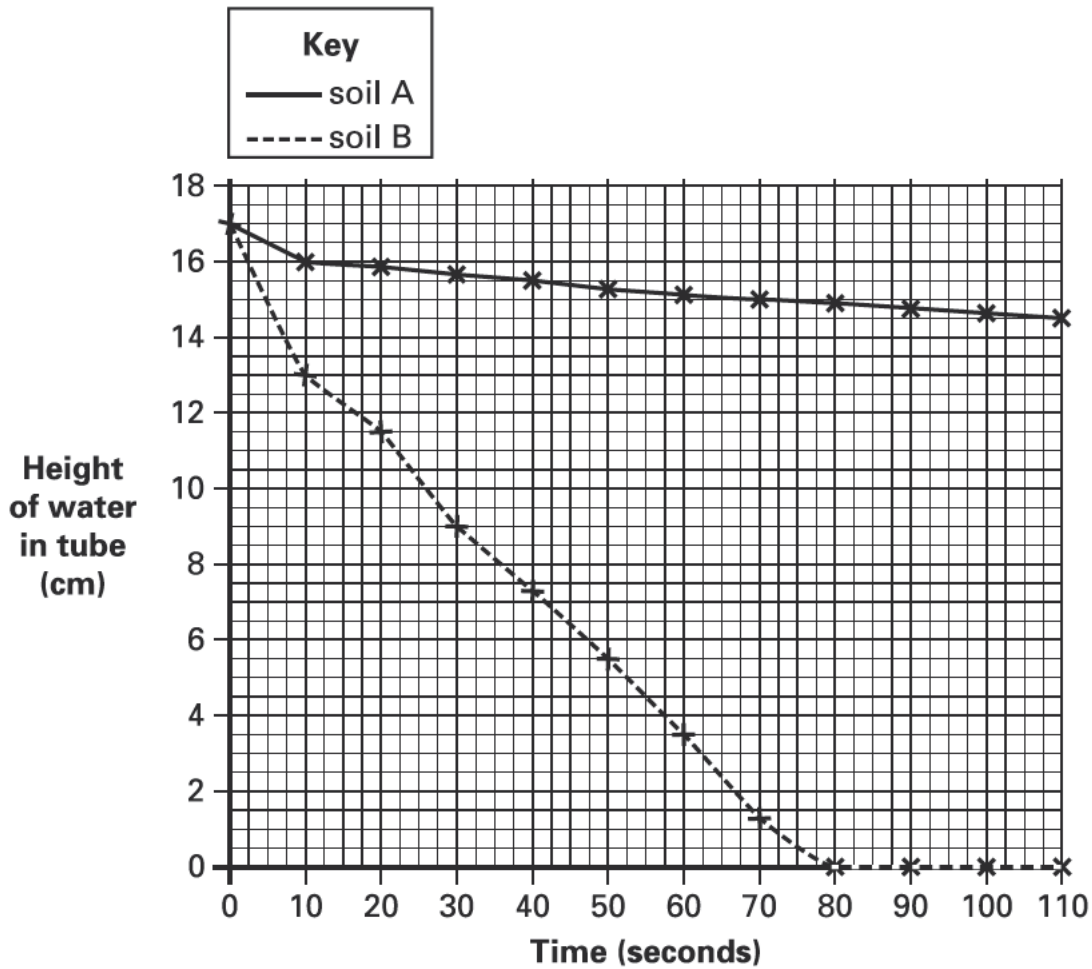
# 4 Soils

(a) Class 6 want to find out if different soils absorb water differently.

They push a plastic tube into some soil.  
 They pour water into the tube.  
 The height of the water is 17 cm  
 on the ruler.



The children measure the height of the water in the tube every 10 seconds. They repeat the test with a different type of soil. The children draw a graph of their results.



What is the height of the water in the tube for soil B after 30 seconds?

 .....

(1 mark)



(b) The children use the results to help write conclusions.

Tick **ONE** box to show which conclusion is correct.



Soil A is impermeable.

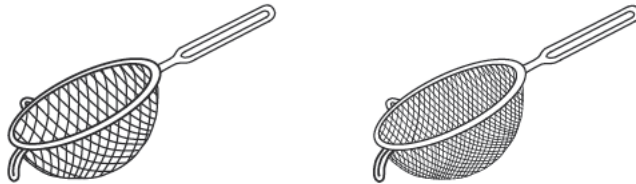
Soil B is impermeable.

Soil A is more absorbent than soil B.

Soil B is more absorbent than soil A.

(1 mark)

(c) The children separate the particles in each soil using this equipment:



Name the equipment used to separate the soil particles.

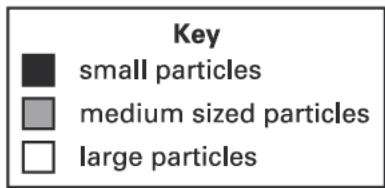


.....

(1 mark)

(d) The particle sizes in the soils are different.

Look at the results in the pie charts.



Write **true** or **false** next to each of the following statements. Use the pie charts to help you.

**True or false?**



Soil A has more small particles than soil B. ....

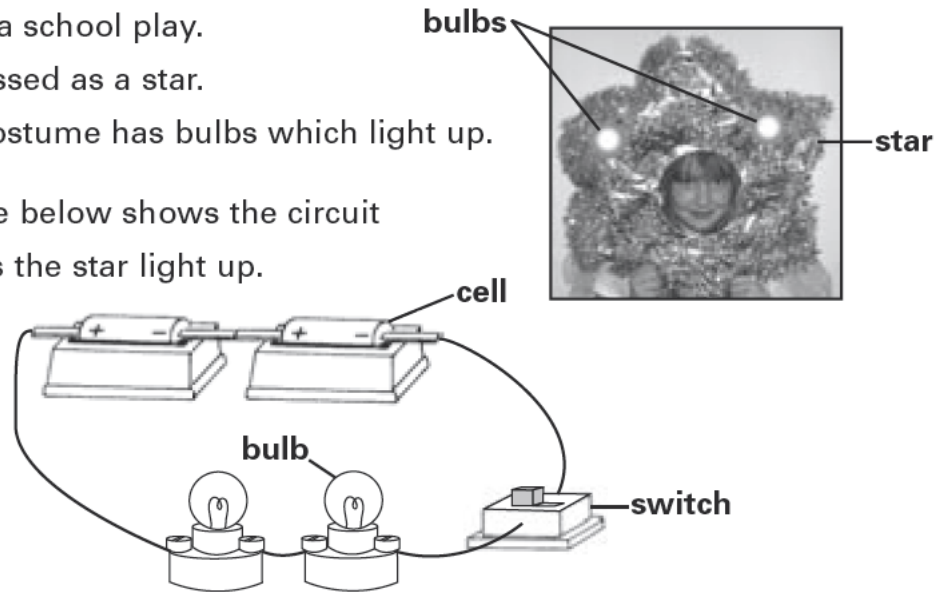
Soil B has more large particles than soil A. ....

(1 mark)



## 5 School play

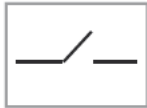
- (a) Polly is in a school play.  
She is dressed as a star.  
The star costume has bulbs which light up.  
The picture below shows the circuit that makes the star light up.



Draw a circuit diagram of the star's circuit in the space below.

Use these symbols in your circuit diagram.

You can use each symbol more than once if you need to.



(2 marks)

- (b) Polly wants the star to shine more brightly.  
She has some ideas about how she can do this.

Write **yes** or **no** next to each idea to show if Polly will see the star shine more brightly.

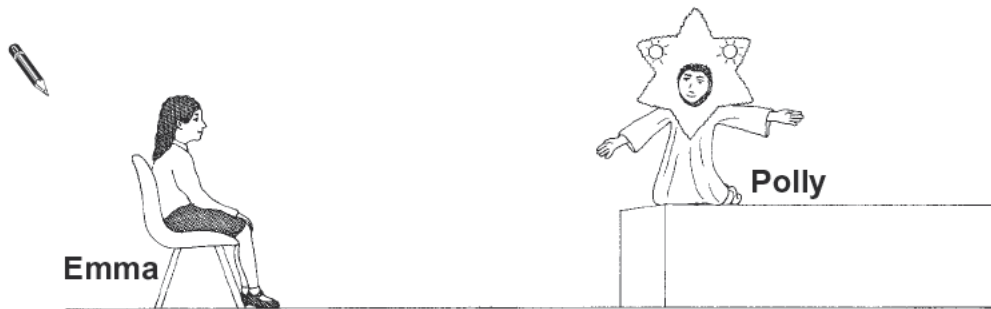
Idea	Will the star shine more brightly? Yes or no?
add another bulb	.....
add another cell	.....
use longer wires	.....

(1 mark)



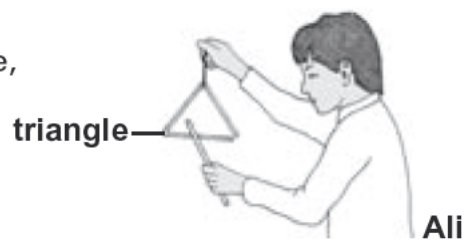
(c) Emma is in the front row at the play.

Draw **ONE** arrow on the diagram below to show the direction light travels for Emma to see the lights on the star.



(1 mark)

(d) Each time Polly appears on stage, Ali hits a triangle.



(i) What happens to the triangle for it to make a noise when it is hit?

 .....

(1 mark)

(ii) What does the sound travel through to reach Emma's ears?

 .....

(1 mark)

(e) There are lots of people watching the play. Some people are close to the stage. Some people are further away.

Describe how the **distance** the people are from the triangle affects the **volume** of the sound they hear.

 .....

.....

(1 mark)



## 6 Mini garden

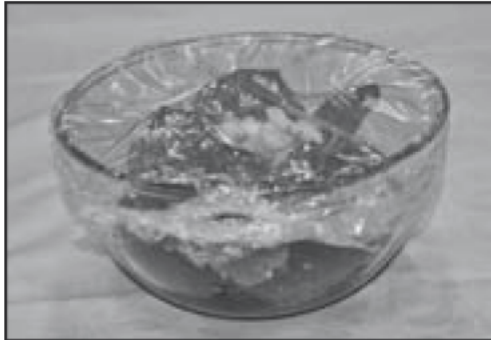
- (a) Marcus and Davina are finding out about the water cycle. They make the mini garden below to observe how water can change.



1. Put a layer of soil in the bottom of a clear bowl.



2. Add a small plant and water it well.



3. Cover the bowl with plastic wrap. This is a mini garden.



4. Put the mini garden on a windowsill.

The plant needs water to grow.

Name the part of the plant that takes in water from the soil.



.....

(1 mark)

- (b) In the mini garden, water changes to water vapour.

What is the scientific name for the process in which water changes into water vapour?



.....

(1 mark)



- (c) A plant can live in a mini garden for a long time without being watered again. The bowl must be well sealed.

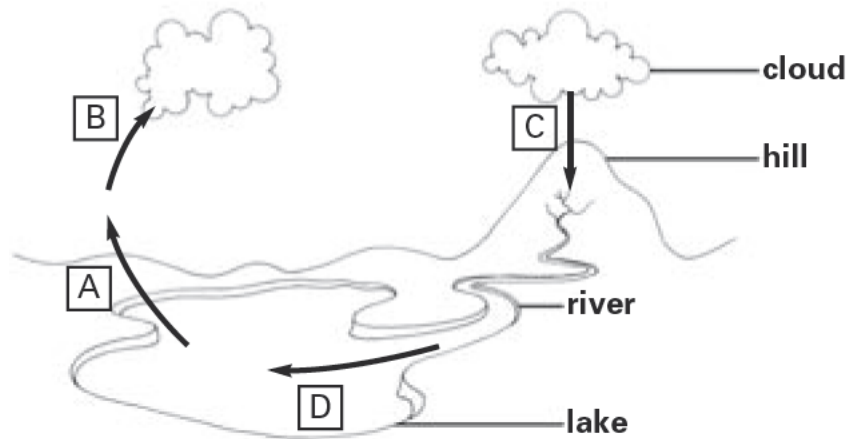
Explain why the mini garden does not need to be watered again when the bowl is well sealed.



.....  
.....

(1 mark)

- (d) Marcus and Davina can observe all the changes in the water cycle in their mini garden.  
This is a diagram of the water cycle.



Draw **FOUR** lines to match each letter, A, B, C and D to the correct description of what is happening in the water cycle.



A

Rain falls.

B

Water changes into water vapour.

C

Water vapour changes into water.

D

Water flows into lakes or seas.

(2 marks)



## 7 Heating rods

- (a) Class 6 are investigating how long it takes heat to travel along rods made from different materials.

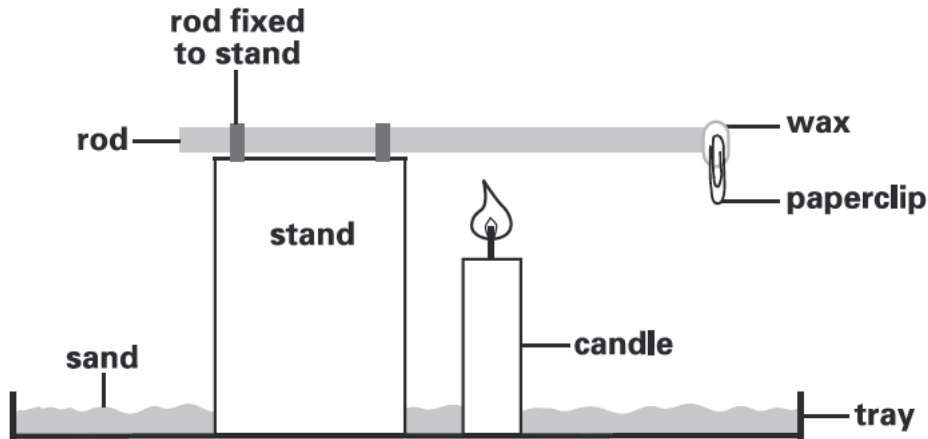
What scientific name is given to materials that allow heat to travel along them?



.....

(1 mark)

- (b) Class 6 push a paperclip into some wax. Then they attach the wax to a rod.



The candle heats up the rod.  
The heat travels along the rod to the wax.  
When the wax melts, the paperclip falls off.  
Class 6 measure the time it takes for the paperclip to fall off.

What force causes the paperclip to fall into the tray?



.....

(1 mark)





(c) Class 6 record their results in a table.

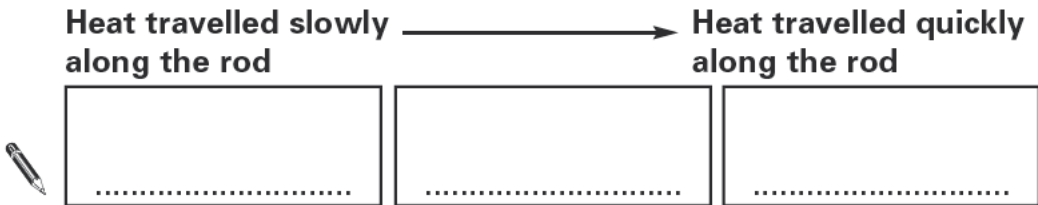
Fill in the missing heading on the table of results.

.....	Time taken for the paperclip to drop (seconds)
copper	16
glass	280
steel	26

(1 mark)

(d) The heat travelled along the rods at different speeds.

Put the materials in order to show how quickly heat travelled along them. Write **copper, glass** or **steel** in each box.



(1 mark)

(e) How could Class 6 make sure their results are reliable?

.....

(1 mark)

(f) Look at the table again.

Write **true** or **false** next to each statement about Class 6's investigation.

**True or false?**

The heat travelled quicker along the metal rods than along the glass rod. ....

The one variable Class 6 changed was the time it took for the paperclip to fall off. ....

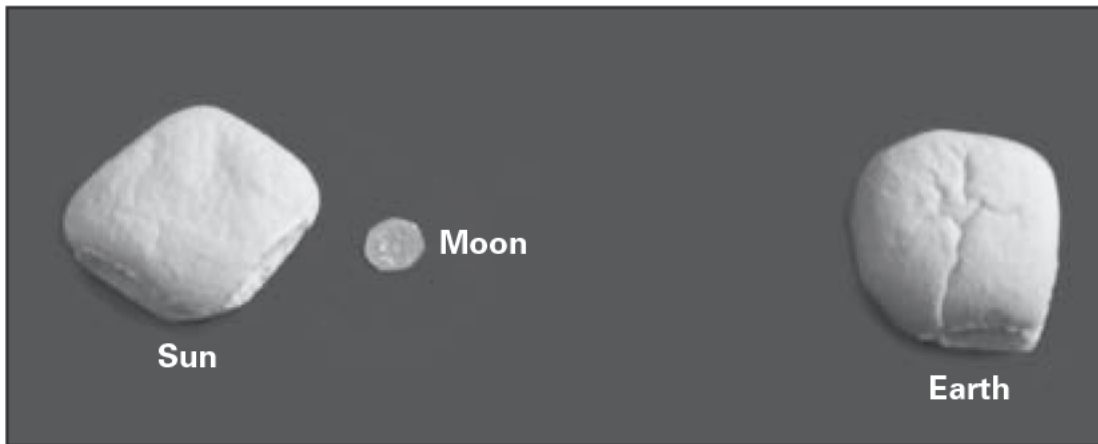
The one variable Class 6 measured was the temperature of each rod. ....

(1 mark)



## 8 The Sun

- (a) George makes a model of the Sun, Earth and Moon. He uses two bread rolls and a 50p coin.



Tick **THREE** boxes to show some changes that would make George's model more accurate.



The Sun should be bigger.

The Moon should be the same size as the Earth.

The Sun should be a sphere.

The Moon should be an oval.

The Sun should orbit the Earth.

The Moon should be closer to the Earth.

(2 marks)

- (b) The Sun appears to move across the sky each day.

What movement in space makes the Sun appear to move across the sky each day?



.....

.....

(1 mark)



**END OF TEST**

**Please check your answers.**

**Do not write on this page.**





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QCDA/11/5241 (Mark schemes pack)



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