Sc

KEY STAGE
2

LEVELS
3–5

2012

Science sampling test

Test A

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

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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.

PLEASE DO NOT WRITE ON THIS PAGE

1 Birds in their environments

(a) Many water birds have webbed feet.

Why are webbed feet useful to water birds?

..... (1 mark)

(b) Birds have different shaped beaks.
The shape of the bird's beak is suited to the food the bird eats.

Draw **THREE** lines to match each beak to the food the bird eats.

Beak			
Food	animals buried deep in mud	small seeds and berries	meat torn from prey

(1 mark)

(c) There is a law in England to stop people taking eggs from the nests of wild birds.

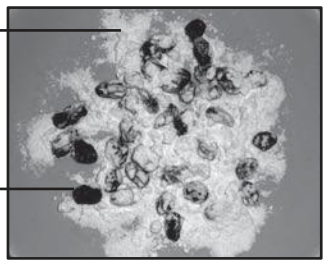
It is important for **wild birds** that people stop taking their eggs.
Tick **ONE** box to show why.

because there would be no food for foxes	☐	because birds' eggs break easily	☐
so people do not hurt themselves taking eggs	☐	so there are enough birds to reproduce	☐

(1 mark)

2 In the kitchen

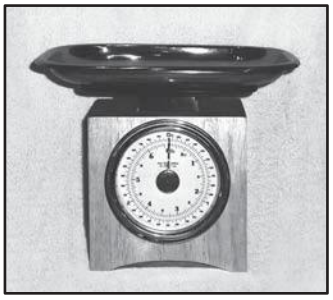
(a) Sophie and her dad are cooking in the kitchen. Sophie spills some flour onto some raisins.



Tick **ONE** box to show the equipment Sophie could use to separate the flour from the raisins quickly.

Wooden spoon ☐

Sieve ☐



Weighing scales ☐

Filter ☐

(1 mark)

(b) Sophie thinks of some things you can do in the kitchen.
The activities cause the materials to change.

Complete the table by writing **solid**, **liquid** or **gas** in each box to show how the materials change. One box has been done for you.

Activity	Before	After
Baking a cake	liquid	
Melting butter		
Making ice cubes		

(1 mark)

(c) Write **yes** or **no** in each row of the table to show if the activity causes a **reversible** change.

Activity	Does the activity cause a reversible change? Yes or no?
Baking a cake	
Frying eggs	
Dissolving sugar	
Burning candles on a birthday cake	
Making ice cubes	

(2 marks)

(d) Sophie's dad heats water in a saucepan.
The water does **not** boil.
The level of the water in the pan goes down as the water is heated.

Name the scientific process that causes the level of the water to go down as it is heated.

..... (1 mark)

(e) There is a window near the pan of hot water.
Sophie notices condensation is forming on the inside of the window.

Why does condensation form on the window? Tick **ONE** box.

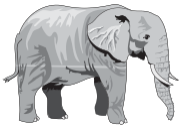
Condensation forms because the window is...

smooth. ☐ transparent. ☐ cold. ☐ hard. ☐

(1 mark)

3 Animal heart rates

(a) Some children found out about the heart rate of some fully grown animals.

Fully grown animal (drawings not to scale)	Average mass of animal (kg)	Average heart rate (beats per minute)
elephant 	3000	35
human 	68	70
cat 	7	130
rabbit 	4	205
squirrel 	0.5	400

Use the table to answer the next three questions.

(i) Which fully grown animal has the fastest average heart rate?

.....

(ii) What is the average mass of a fully grown cat?

..... kg

(iii) What is the average heart rate of the fully grown animal whose mass is 4 kg?

..... beats per minute (2 marks)

(b) Describe the relationship between the **mass** of the animal and **heart rate** shown in this table.

.....

..... (1 mark)

(c) This dog has a mass of 30 kg.

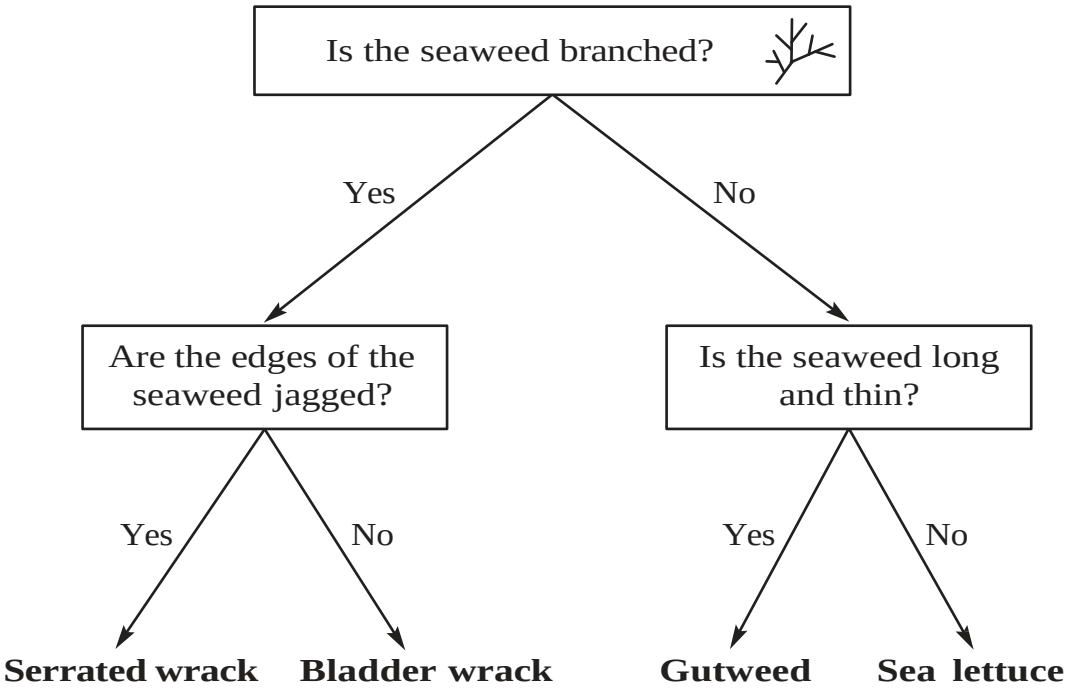
Predict the heart rate of this dog.
Use the table to help you.

..... beats per minute (1 mark)

4 Seaweed and trees

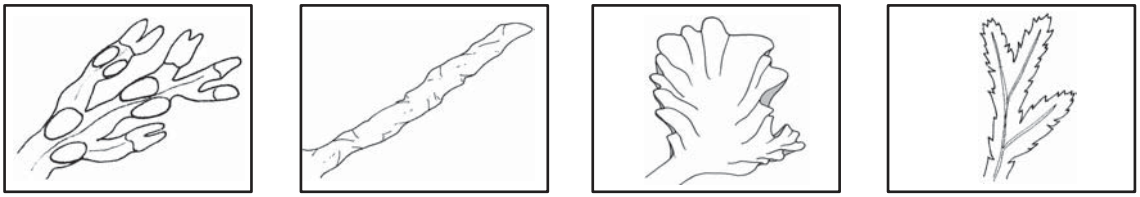
(a) Maria found different types of seaweed on the beach.

Her teacher has a key to identify the seaweeds.



Use the key to identify the different seaweeds below.

Seaweed A has been done for you.



Seaweed A is Bladder wrack

Seaweed B is .....

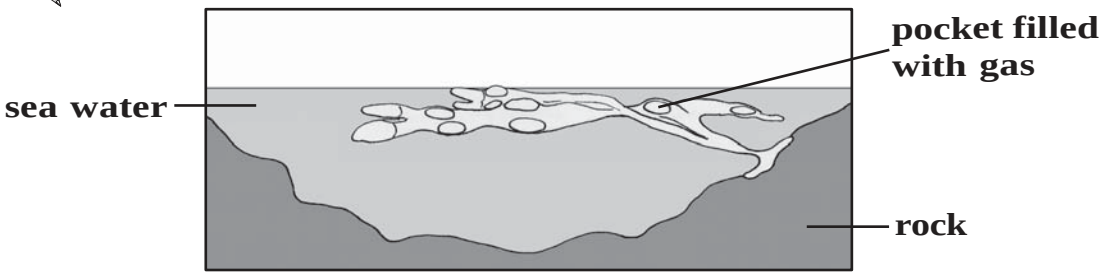
Seaweed C is .....

Seaweed D is .....

(1 mark)

(b) Bladder wrack seaweed has pockets filled with gas. The pockets help it float near the surface of the water to get more sunlight.

Draw **ONE** arrow on the diagram to show the force from the water that makes the seaweed float near the surface of the water.



(1 mark)

(c) Trees also have features that help their leaves to get as much sunlight as possible.

Tick **ONE** feature of a tree and explain how this feature helps the leaves to get as much sunlight as possible.

trunk ☐ branches ☐

How the feature helps the leaves to get sunlight: .....

.....

(1 mark)

(d) Seaweeds do not have roots. Trees do have roots.

Tick **THREE** boxes to show the functions of tree roots.

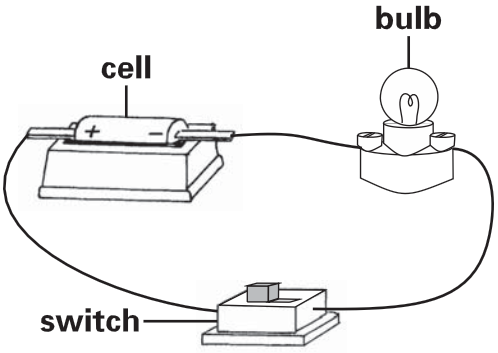
to make seeds	☐	to absorb water	☐
to anchor the plant in the ground	☐	to take up minerals	☐
to carry new material for growth to the leaves	☐	to protect the plant from predators	☐

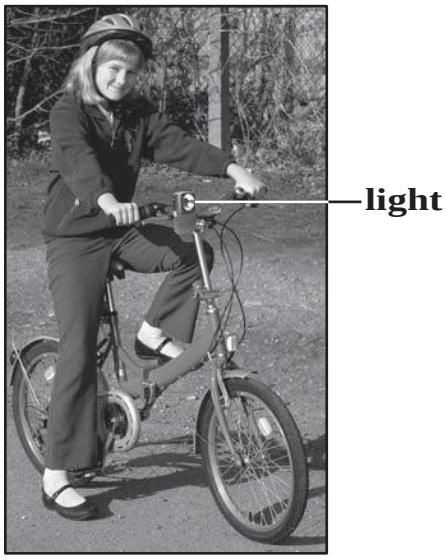
(1 mark)

5 Road safety

(a) Julia has a bike with a light.

The picture below shows the circuit in Julia's light.





(i) Draw a circuit diagram to show the circuit in Julia's light. Use symbols in your drawing.

(2 marks)

(ii) What should Julia add to her circuit to make the light brighter?

Julia should add ..... (1 mark)

(b) It is important for people riding bikes to be seen in the dark. The pictures below show what two jackets look like when Julia shines a torch on each of them.

Jacket A

Jacket B

Julia can see jacket **B** better than jacket **A**.

Explain what happens to the light from the torch for Julia to see jacket **B** better than jacket **A**.

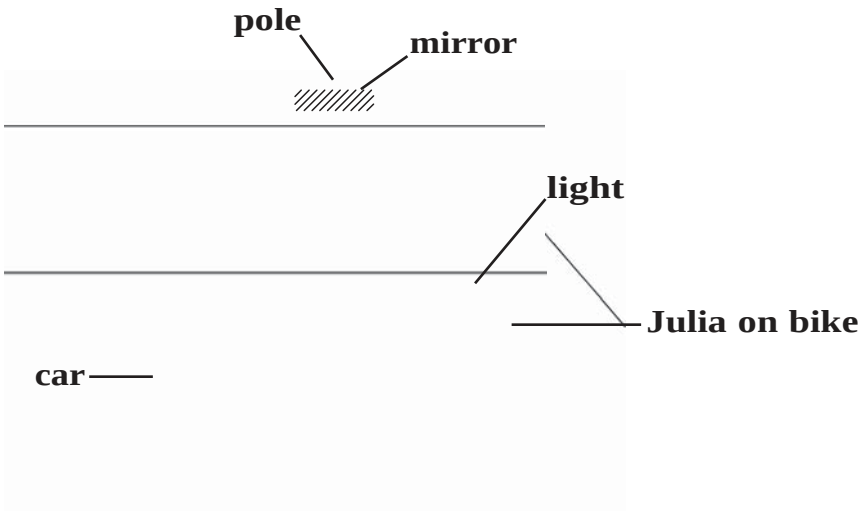
.....

.....

(1 mark)

(c) Julia's house is near a bend in the road. There is a mirror on a pole so car drivers can see people coming round the bend.

Draw **TWO** arrows on the diagram below to show the direction light travels for the car driver to see the light on Julia's bike.

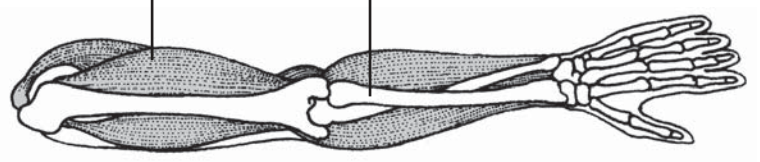


(2 marks)

6 Arms

(a) Label the diagram to show what causes the arm bones to move in a human body.

..... **bone**



(1 mark)

(b) Describe **ONE** way that humans can keep their bones strong.

.....

(1 mark)

(c) Aziz is comparing the size of straight arms and bent arms.
He measures around the top of his friend's arm when it is straight and when it is bent.

He repeats his investigation with other friends.
Aziz makes sure his investigation is fair.

Write **true** or **false** next to each statement to show if it would make Aziz's investigation fair.

To make his investigation fair, Aziz must...

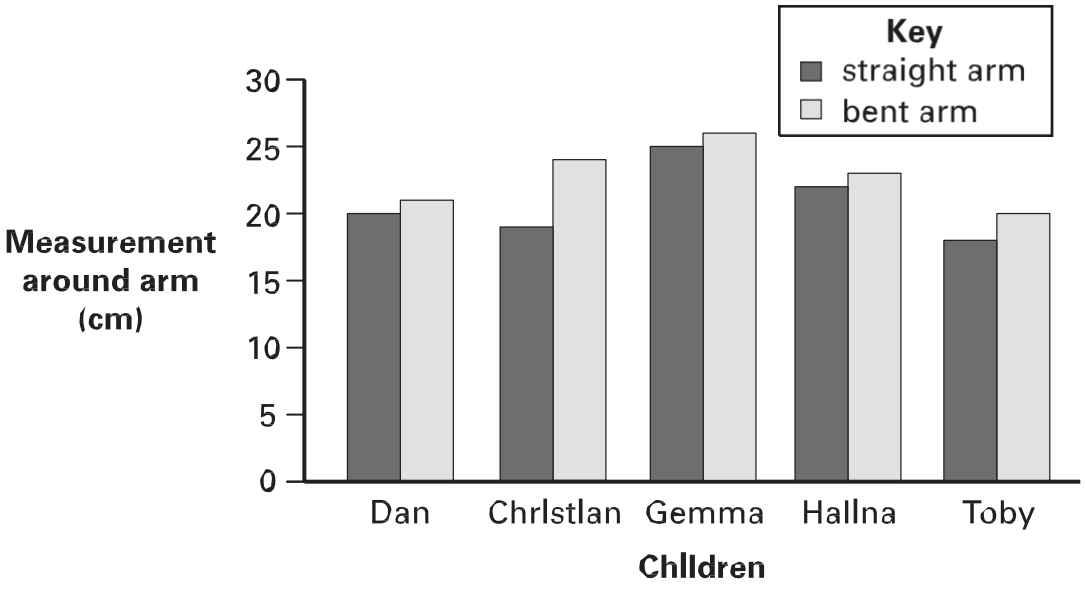
True or **false**?

make sure everyone rolls up their sleeves. .....

measure the arms of lots of children. .....

measure around the arms in the same place. ..... (2 marks)

(d) Here are Aziz's results:



Look at the graph.

Describe how the arm **measurements** are different for straight arms and bent arms. Complete the sentence below.

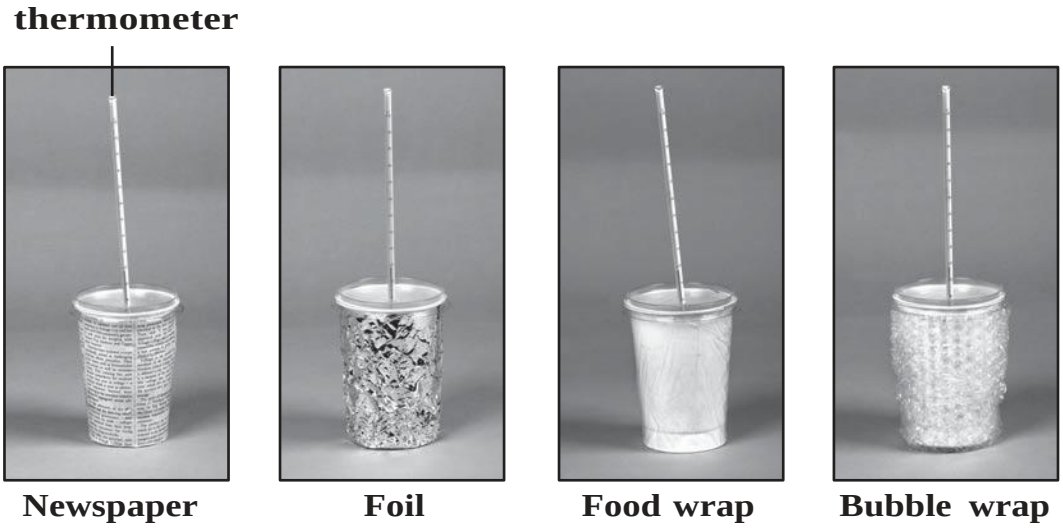
When the children's arms are bent .....

..... (1 mark)

7 Drinking chocolate

(a) Class 6J want to find out which material is best at keeping drinking chocolate hot.

The class have four identical plastic cups.
They wrap each one in a different material.
They put the same amount of chocolate drink in each cup and put lids on.



Tick **ONE** box to show what property the material should have if it is best at keeping the drink hot.

The material should be...

strong.	☐	a conductor.	☐
hard.	☐	an insulator.	☐

(1 mark)

(b) The class measure the temperature of the drinking chocolate in each cup every five minutes.

They record their results in a table.

One result looks incorrect.

Material around the cup	Temperature of drinking chocolate after... (°C)				
	0 minutes	5 minutes	10 minutes	15 minutes	20 minutes
Newspaper	70	65	53	40	27
Foil	70	67	58	54	45
Food wrap	70	63	25	45	30
Bubble wrap	70	69	65	58	50

Which result in the table should they check again?
Write the number.

..... (1 mark)

(c) Look carefully at the results table.

Complete the sentence below to show which material was best at keeping the drinking chocolate hot and explain why.

..... was the best material for keeping (1 mark)

the drinking chocolate hot because at the end of the test .....

.....

..... (1 mark)

8 Germinating seeds

(a) Sunita wants to find out if some types of seed germinate more quickly than others.

Sunita plants her seeds in seed trays.

Name the **ONE** variable Sunita is changing in her investigation.

..... (1 mark)

(b) Sunita needs to make sure her investigation is fair.

Name **TWO** variables Sunita should keep the same to make her investigation fair.

1 .....

2 ..... (1 mark)

(c) When a seed germinates, a root starts to grow before a shoot.

Sunita measures which type of seed germinates first by recording when she first sees the **shoot**.

Explain why Sunita records when the **shoot** first appears and not when the **root** first appears.

.....

.....

(1 mark)

(d) Sunita planted five seeds of each type of seed in the trays.

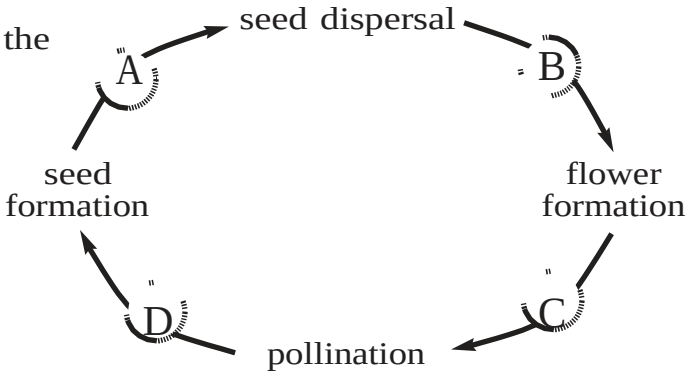
Explain why it is a good idea to plant five seeds of each type rather than just one.

.....

.....

(1 mark)

(e) This diagram shows the life cycle of a plant.



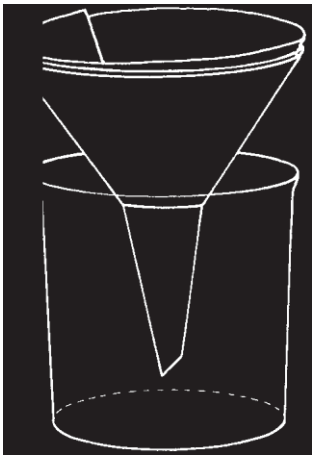
Tick **ONE** box to show where germination happens in the life cycle of a plant.

A ☐ B ☐ C ☐ D ☐

(1 mark)

9 Filters

(a) Some mixtures can be separated with a filter.



Filter

The table below shows some different mixtures.

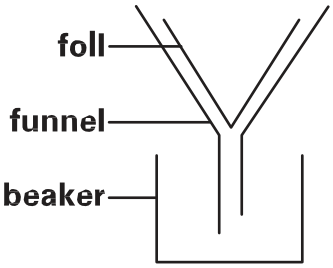
Complete the table to show if a filter can be used to separate each mixture. Write **yes** or **no**.

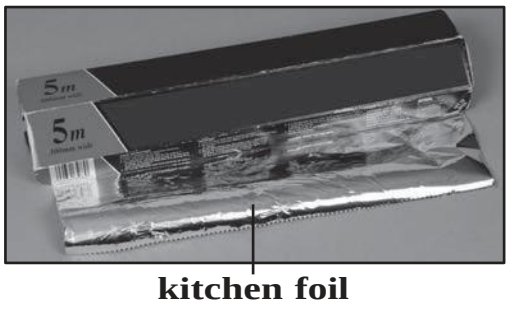
One mixture has been done for you.

Mixture	Can the mixture be separated by a filter? Yes or no?
Sand and stones	no
Soil and water	
Sand and soil	
Salt and water	

(1 mark)

(b) Jemal has a mixture of chalk powder, sugar and water.
He tries to filter the mixture using kitchen foil.





The foil does **not** separate the mixture. The foil does not break.

Explain why the foil does **not** separate the mixture of chalk, sugar and water.

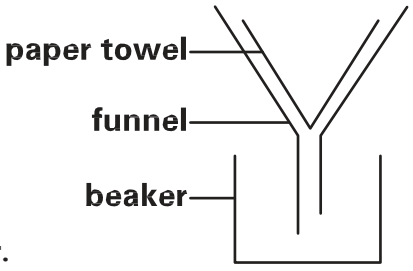
.....

..... (1 mark)

(c) Jemal makes a new filter using a paper towel.

He uses the paper towel filter to separate more of the chalk, sugar and water mixture.

The chalk stays on the paper towel.
The water and sugar go into the beaker.



Describe how Jemal could separate the sugar from the water.

.....

..... (1 mark)

END OF TEST

PLEASE CHECK YOUR ANSWERS

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STA/12/5592 (Pupil pack)
STA/12/5591 (Mark schemes pack)