

Science SAT

Paper B

2005
45 min
40 marks

1. The heart

- (a) Denise uses a stethoscope.
She listens to Joe's heartbeat before Joe exercises.

As soon as Joe stops exercising, Denise listens again. Joe's heartbeat is louder.



Describe one other change in Joe's heartbeat straight after exercise compared with before exercise.



.....


1 mark

- (b) Denise and Joe collect information from four adults. The table shows what they find out.

Adult	Exercises regularly	Eats a balanced diet	Smokes regularly	Cleans teeth regularly
A	X	X	✓	X
B	✓	✓	X	X
C	✓	✓	X	✓
D	✓	X	✓	✓

Which **TWO** adults are most likely to have healthy hearts?

Write **A, B, C, or D**.

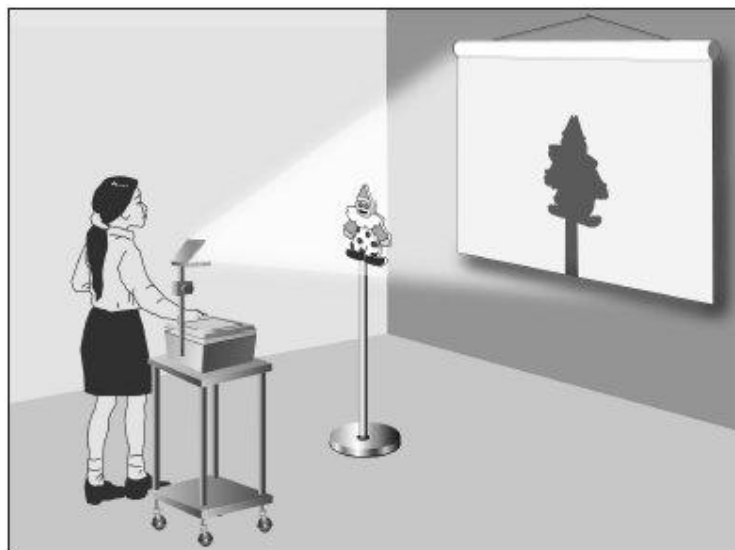


and

1 mark

2. Shadows

- (a) Lucy makes a shadow of a puppet on a screen. She investigates how changing the distance of the light from the puppet affects the size of the shadow.



What equipment should she use to measure the distance of the light from the puppet?



1 mark

(b) What unit of measurement should she use to measure the distance of the light from the puppet?

Tick **ONE** box.



g

°C

cm

km

N

1 mark

(c) What factor should she change as she carries out her test?

Tick **ONE** box.



where the children sit

colour of the screen

brightness of the light

position of the light

position of the screen

the size of the puppet

1 mark

(d) What factor should she measure to collect her results?

Tick **ONE** box.



The height of the...

light

shadow

table

puppet

screen

reflection

1 mark

(e) What factors must she keep the same as she carries out her test?

Tick **THREE** boxes.

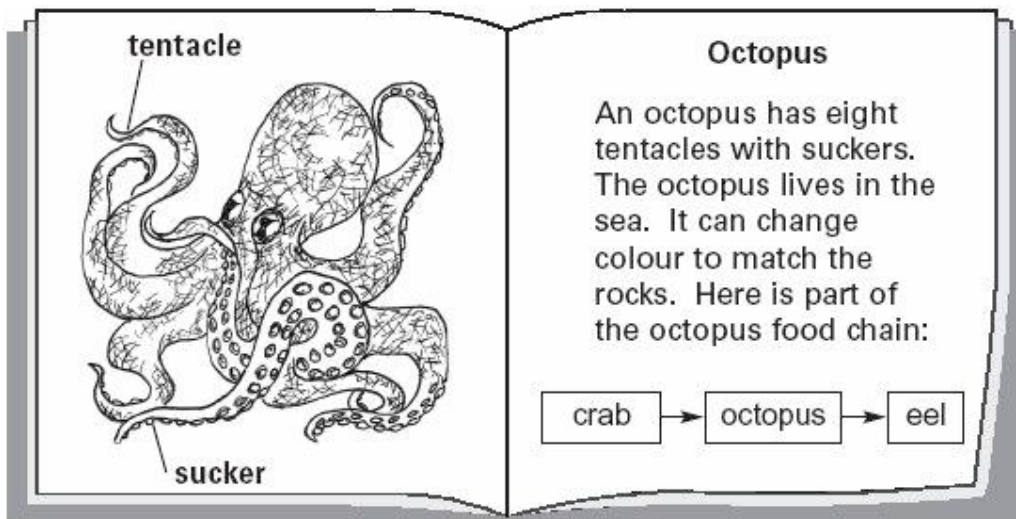


- | | | | |
|------------------------|--------------------------|-----------------------|--------------------------|
| where the children sit | <input type="checkbox"/> | colour of the screen | <input type="checkbox"/> |
| position of the puppet | <input type="checkbox"/> | position of the light | <input type="checkbox"/> |
| position of the screen | <input type="checkbox"/> | size of the puppet | <input type="checkbox"/> |

2 marks

3. Animals

(a) Some children are reading a book about an octopus.



Some animals have sharp claws to catch hold of their prey.

Which feature of the octopus helps it to catch hold of its prey?
Use the book to help you.



.....

1 mark

(b) How does changing colour to match the rocks help the octopus to **protect** itself?

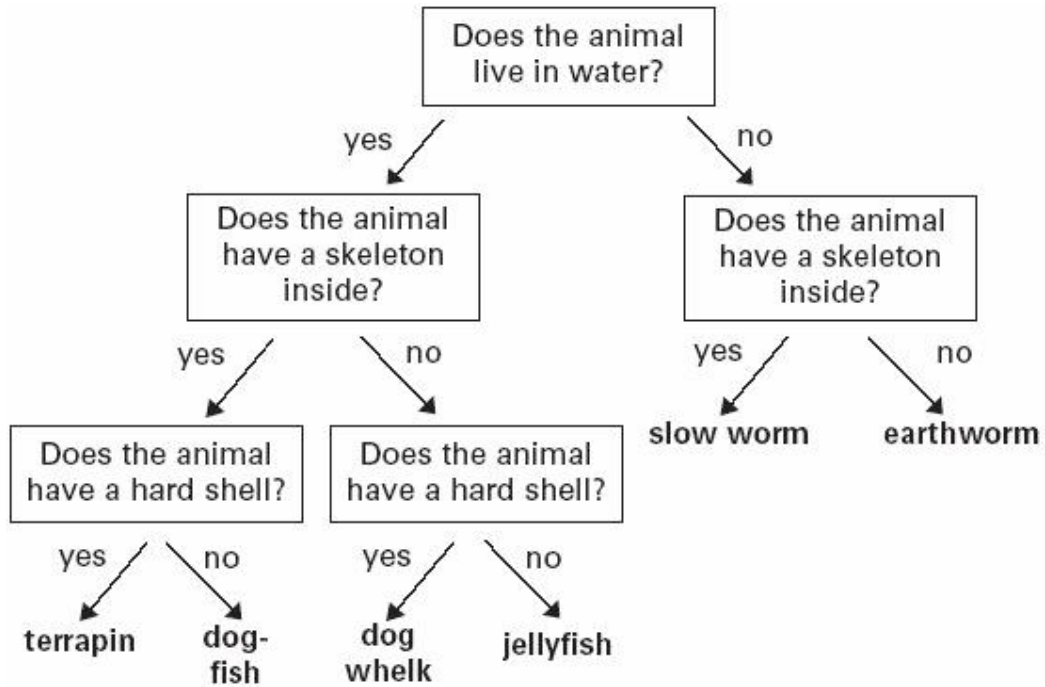


.....

.....

1 mark

(c) The key below can be used to identify some animals.



Use the information in the key to help you circle the animals in the box below that **do not** have a skeleton inside their bodies.

Circle all the correct answers.



terrapiin	dogfish	dog whelk
jellyfish	slow worm	earthworm

2 marks

(d) Use the key to write **three** facts about a terrapiin.



1.
2.
3.

2 marks

4. Solids, liquids and gases

(a) Kenny writes 5 statements about materials.

Kenny's statements

A) Cotton wool is a solid. It feels soft on my skin.
B) Salt is a solid. I can pour it.
C) I can see that my water bottle is half full.
D) The wooden table feels hard.
E) I can smell the meat cooking.

How has Kenny collected this information?

Tick **ONE** box.



by fair testing

by observing

by measuring

by modelling

1 mark

(b) Some of Kenny's friends describe their ideas about solids, liquids and gases.

  Only liquids can be poured.

Sally

Which of Kenny's statements can be used to argue against Sally's idea?

Tick **ONE** box.



A

B

C

D

E

1 mark

(c)



Which of Kenny's statements can be used to support Jo's idea?

Tick **ONE** box.



A B C D E

1 mark

(d)



Look at Paul's idea and Kenny's statements.

(i) Do you agree with Paul's idea?

Tick **ONE** box.



Agree Do not agree

(ii) Explain your reasoning.



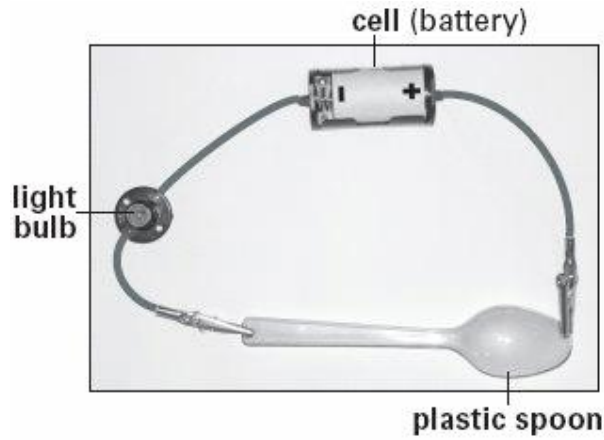
.....
.....
.....


1 mark

5. Electricity

- (a) Shana builds the three circuits below. All the equipment works. The bulbs in the circuits are **not** lit up.

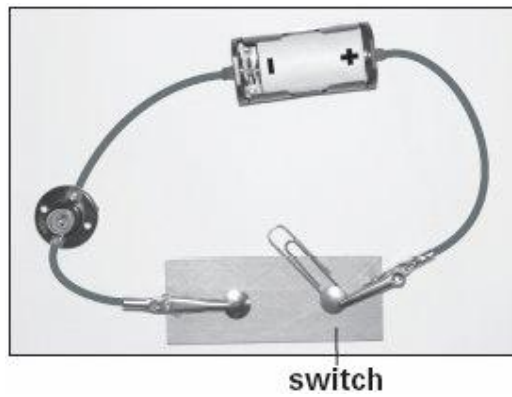
Complete each sentence to explain why the bulb has not lit in each circuit.




 The bulb has **not** lit because the plastic spoon

.....

1 mark




 The bulb has **not** lit because

.....

1 mark

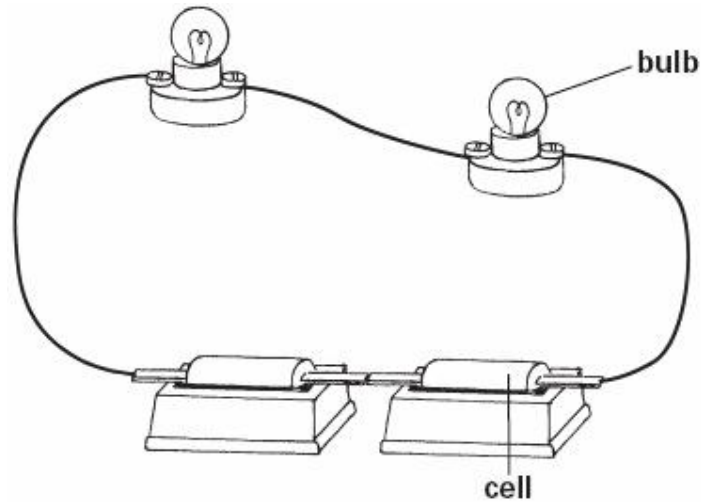


 The bulb has **not** lit because

.....

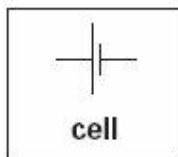
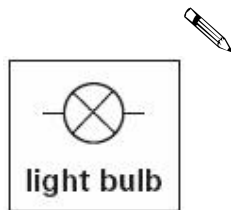
1 mark

(b) Andy builds the circuit below. The bulbs **do** light up.



Draw a circuit diagram for Andy's circuit in the space below.

Use these symbols in your circuit diagram:



1 mark

- (c) Andy wants to change his circuit so that the **two** bulbs are brighter. He can use any other equipment.

Suggest **TWO** ways Andy can make his **two** bulbs brighter.



1.

1 mark

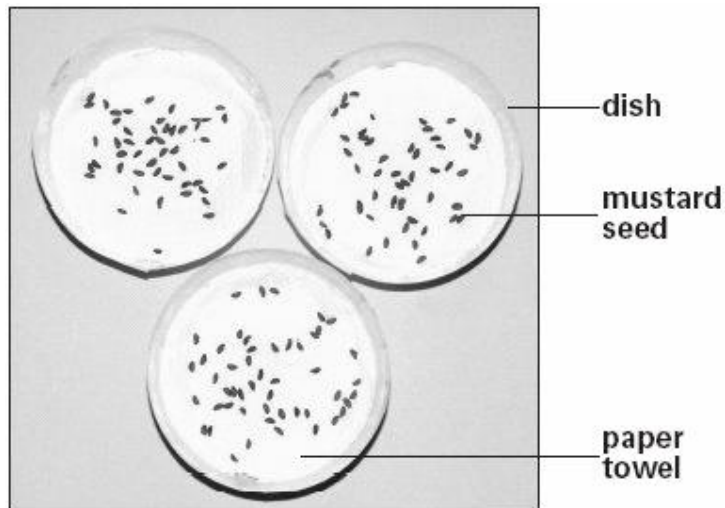
2.

1 mark

6. Mustard seeds

- (a) Evan investigates how temperature affects the germination of mustard seeds.

Evan has three dishes. He puts some paper towel and 40 mustard seeds in each dish.



He puts one dish in a fridge, one dish in a dark shed and the last dish in a cupboard. He waters the seeds regularly.

Describe **TWO** things Evan should keep the same to make sure his test is fair.



1.

1 mark

2.

1 mark

(b) Evan counts the number of germinated seeds in the dishes each day.

Place	Temperature of place	Number of germinated seeds		
		Day 1	Day 2	Day 3
fridge	cold	0	0	0
dark shed	cool	0	12	24
cupboard	warm	0	25	39

How many germinated seeds did Evan count in the dark shed on day 2?



..... seeds

1 mark

(c) Evan concludes: 'My results show that the cupboard was the best place for mustard seeds to germinate.'

Explain how the evidence in the table supports Evan's conclusion.



.....
.....

1 mark

(d) Use the table of results above to answer this question.

Tick **ONE** box after **each** sentence to show if, in Evan's investigation, it is **true**, **false** or you **can't tell**.



Evan's investigation shows that the temperature affected...

True **False** **Can't tell**

the length of the stem.

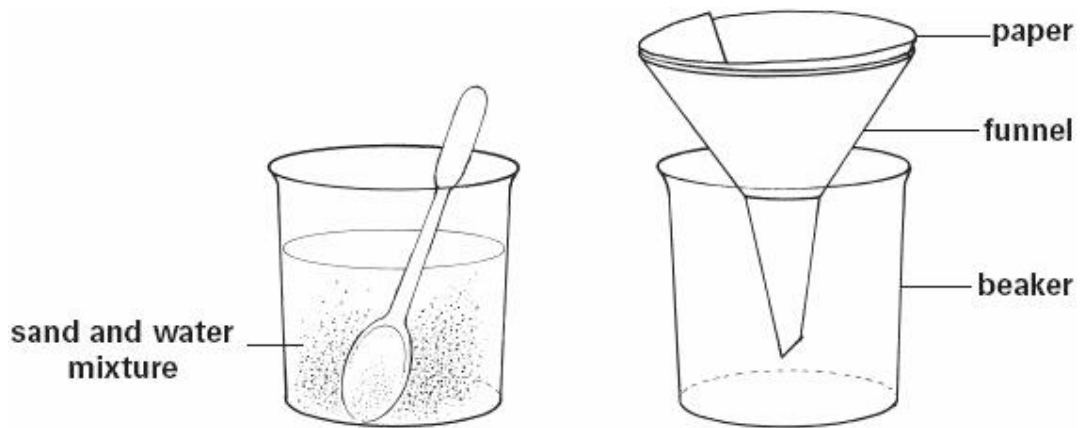
the germination of the seeds.

the colour of the seeds.

1 mark

7. Separating materials

- (a) Hannah mixes sand and water together. The mixture can be separated using the equipment below.



What name is given to this method of separating?



.....

1 mark

- (b) Explain why sand can be separated from water using this method.



.....

.....

1 mark

- (c) Hannah wants to separate some different mixtures.



sugar and water





flour and rice



steel nails and
brass screws

Complete the table below to show how Hannah could separate each mixture quickly.

Mixture	Method of separating	How is the mixture separated?
sugar and waterevaporation.....	The water evaporates..... The sugar is left in the dish.....
flour and rice		The flour The rice
steel nails and brass screws		The steel nails The brass screws

4 marks

8. The Earth and light

(a) Kate and Ashur are finding out about the Earth, Sun and Moon.

They decide to investigate how shadows change at different times of the day. Kate measures the length of Ashur's shadow.

They repeat their test at two other times of the day.



Draw **THREE** lines to match each time of day to the correct length of shadow.



Time of day

Length of shadow

11 am

280cm

12 noon

110cm

5pm

70cm

(b) Tick **ONE** box to show why shadows change length during the day.



The Sun orbits the Earth.

The Earth orbits the Sun.

The Sun goes up in the day and down at night.

The Earth spins on its axis.

1 mark

(c) The Moon does not give out light of its own. It reflects light from the Sun.

Tick **ONE** box to show which sentence below is evidence that the Moon does not give out its own light.



The moon is a sphere but appears to change shape during the month.

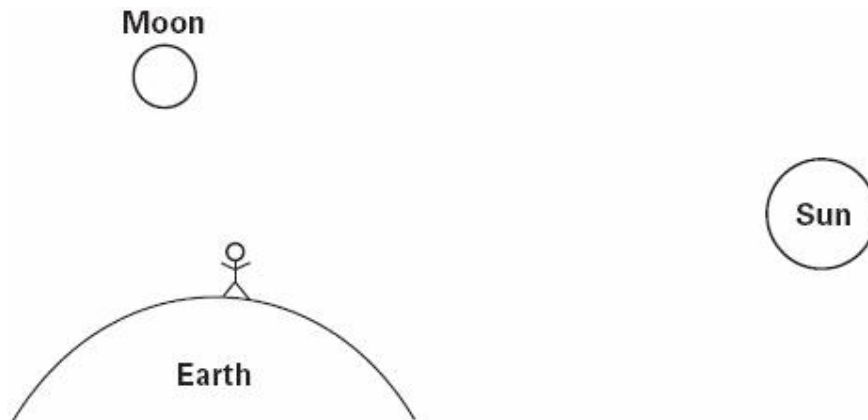
The Moon is nearer to the Earth than the Sun.

The Moon cannot be seen on cloudy days.

The position of the Moon in the sky changes.

1 mark

(d) Draw **TWO** arrows on the diagram below to show the direction the light travels so that a person on the Earth can see the Moon.



2 marks