TEST B

First Name

Last Name

School
INSTRUCTIONS

Read this carefully.

You have 45 minutes for this test.

Answers

This shows where you will need to put your answer.

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

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

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

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

<table>
<thead>
<tr>
<th>Adult</th>
<th>Exercises regularly</th>
<th>Eats a balanced diet</th>
<th>Smokes regularly</th>
<th>Cleans teeth regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>B</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>C</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>D</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Which TWO adults are most likely to have healthy hearts?

Write A, B, C, or D.

................................................................................................................... and .................................................................
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?

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

Tick ONE box.

\[ \text{g} \quad \text{o}^\circ \text{C} \quad \text{cm} \quad \text{km} \quad \text{N} \]
(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

2c 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

2d 1 mark

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

Tick **THREE** boxes.

- where the children sit
- colour of the screen
- position of the puppet
- position of the light
- position of the screen
- size of the puppet

2ei 1 mark
2eii 1 mark
(a) Some children are reading a book about an octopus.

Octopus
An octopus has eight tentacles with suckers. The octopus lives in the sea. It can change colour to match the rocks. Here is part of the octopus food chain:

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.

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

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

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

Does the animal live in water?

- yes
  - Does the animal have a skeleton inside?
    - yes
      - Does the animal have a hard shell?
        - yes: terrapin
        - no: dogfish
    - no: slow worm

- no
  - Does the animal have a skeleton inside?
    - yes: jellyfish
    - no: earthworm

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.

- terrapin
- dogfish
- dog whelk
- jellyfish
- slow worm
- earthworm

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

1. .......................................................... ..........................................................

2. .......................................................... ..........................................................

3. .......................................................... ..........................................................
(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 [ ]

(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 [ ]
(c) Jo

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

Tick ONE box.

A  B  C  D  E

(d) Paul

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.

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

1. The plastic spoon ..............
   ...
   ...
   ...

The bulb has **not** lit because

2. .................................................
   .................................................
   .................................................

The bulb has **not** lit because

3. .................................................
   .................................................
   .................................................

5ai 1 mark
5aii 1 mark
5aiii 1 mark
(b) Andy builds the circuit below. The bulbs do light up.

![Circuit Diagram]

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

Use these symbols in your circuit diagram:

```
light bulb
```

```
cell
```

(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. ...........................................................................................................

2. ...........................................................................................................
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. ............................................................................................................

2. ............................................................................................................
(b) Evan counts the number of germinated seeds in the dishes each day.

<table>
<thead>
<tr>
<th>Place</th>
<th>Temperature of place</th>
<th>Number of germinated seeds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>day 1</td>
</tr>
<tr>
<td>fridge</td>
<td>cold</td>
<td>0</td>
</tr>
<tr>
<td>dark shed</td>
<td>cool</td>
<td>0</td>
</tr>
<tr>
<td>cupboard</td>
<td>warm</td>
<td>0</td>
</tr>
</tbody>
</table>

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

..................................................... seeds

(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.

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

(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...

<table>
<thead>
<tr>
<th></th>
<th>True</th>
<th>False</th>
<th>Can’t tell</th>
</tr>
</thead>
<tbody>
<tr>
<td>the length of the stem.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the germination of the seeds.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the colour of the seeds.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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?

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

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

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

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

<table>
<thead>
<tr>
<th>Mixture</th>
<th>Method of separating</th>
<th>How is the mixture separated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>sugar and water</td>
<td>evaporation</td>
<td>The water evaporates.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sugar is left in the dish.</td>
</tr>
<tr>
<td>flour and rice</td>
<td></td>
<td>The flour is..........................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The rice is..........................</td>
</tr>
<tr>
<td>steel nails and brass screws</td>
<td></td>
<td>The steel nails is..................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The brass screws is..................</td>
</tr>
</tbody>
</table>
(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.

<table>
<thead>
<tr>
<th>Time of day</th>
<th>Length of shadow</th>
</tr>
</thead>
<tbody>
<tr>
<td>11am</td>
<td>280cm</td>
</tr>
<tr>
<td>12 noon</td>
<td>110cm</td>
</tr>
<tr>
<td>5pm</td>
<td>70cm</td>
</tr>
</tbody>
</table>
(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.

(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.

(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.