

# Science

## Test A

**2004**  
40 min  
40 marks

### 1. Food and health

(a) Damon has a balanced diet. It helps him to keep healthy.

Which of the following **best** describes a **balanced** diet?



Tick **ONE** box.

eating mostly fruit  
and vegetables

eating foods from  
different food groups

taking vitamin pills

not eating sweets

1 mark

(b) Damon has some ideas about his balanced diet.

Write **true** or **false** next to each idea below.



A balanced diet will help my bones grow strong.

.....



A balanced diet gives me all the nutrients I need.

.....

A balanced diet means I do not need to exercise to stay healthy.

.....

1 mark

## 2. Guitar

(a) Julia is listening to Kumi playing his guitar.



He plucks a string.

What happens to the guitar string when it makes a sound?



.....

1 mark

(b) Julia walks away from Kumi and leaves the room.

What happens to the loudness of the sound Julia hears as she goes further away from Kumi?



.....  
.....

1 mark

(c) Julia shuts the door. She can still hear Kumi playing his guitar in the next room.

One material the sound travels through is air.

Name **ONE other** material the sound must travel through for Julia to hear it.



.....

1 mark

### 3. Hardness of rocks

(a) Jamila did a scratch test on four different types of rock to see which was the hardest.



She used four different objects to scratch each rock.

This table shows her results:

Rock	Was scratched by ...			
	fingernail	coin	matchstick	plastic knife
marble	<i>x</i>	✓	<i>x</i>	<i>x</i>
sandstone	<i>x</i>	✓	<i>x</i>	✓
granite	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>
talc	✓	✓	✓	✓

Which rock could Jamila's fingernail scratch?



.....

1 mark

(b) Jamila worked out that granite was the hardest rock she tested.

What evidence in the table did Jamila use to find out that granite was the hardest rock she tested?



.....  
 .....

1 mark

(c) Use the information in the table.

Write the name of each rock in the boxes below, to show the order of the rocks from softest to hardest.

One has been done for you.



1 mark

(d) As Jamila was doing her test, she realised it was hard to keep her test fair.



Tick **ONE** box to show why it was hard for Jamila to keep her test fair.

The rocks were different sizes.

The shapes of the objects were different.

Some of the objects were harder than others.

It was difficult to scratch each rock with the same force.

1 mark

(e) Jamila carries out some more tests on her rocks. She uses the table below to record the new information she learns from her tests.

	Permeable	Not permeable
Feels rough	sandstone	<b>granite</b>
Does not feel rough	talc	marble

Use the information from the table to write **TWO** new things Jamila learnt about **granite**.



1. ....

2. ....

1 mark

#### 4. Sorting animals

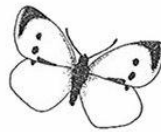
(a) Some children went to their local zoo. They saw these animals:



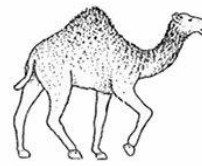
ostrich



cow



butterfly



camel



sparrowhawk



Tick **TWO** boxes to show which **two** things the cow and camel have in common.

They both have horns.

They both have fur or hair.

They both have a hump.

They both have four legs.

1 mark

(b) Mandy and Halim sort all the animals using the following table.

Write the names of the **five** animals above into the correct boxes in the table.

One has been done for you.

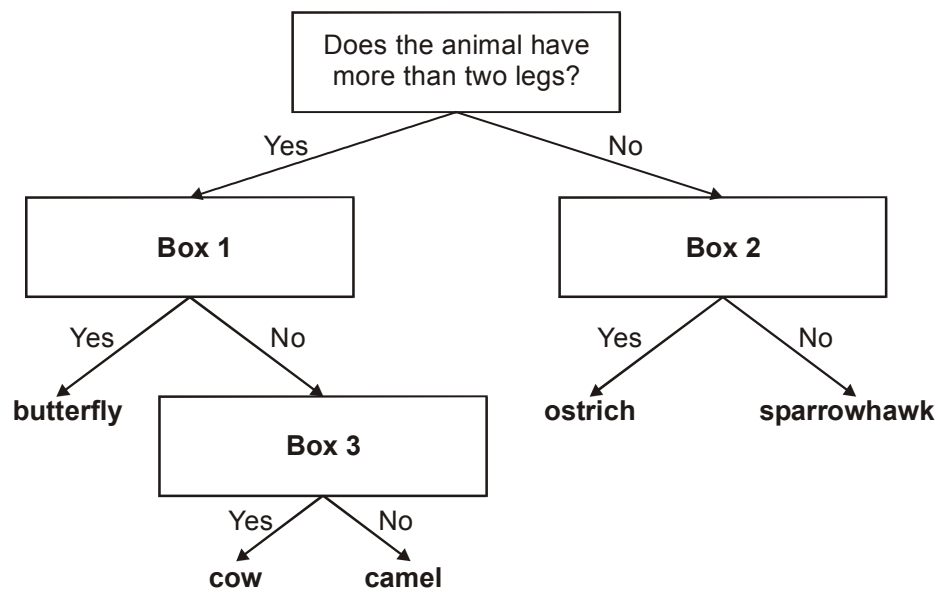
You can write more than one animal in each box.



	Has feathers	Does not have feathers
Can fly		
Cannot fly	ostrich	

2 marks

(c) Mandy and Halim sort the animals using the key below.



Three questions are missing from their key.

Circle **1**, **2** or **3** next to each question below to show which box in the key the question goes in.



Question	The question goes in box ...		
Does it have a long neck?	1	2	3
Does it have horns?	1	2	3
Does it have antennae?	1	2	3

1 mark

(d) It is important for scientists to classify animals into groups.

Tick **ONE** box to show the best reason for classifying animals.



to compare the many types of animal

to find out which animals eat them

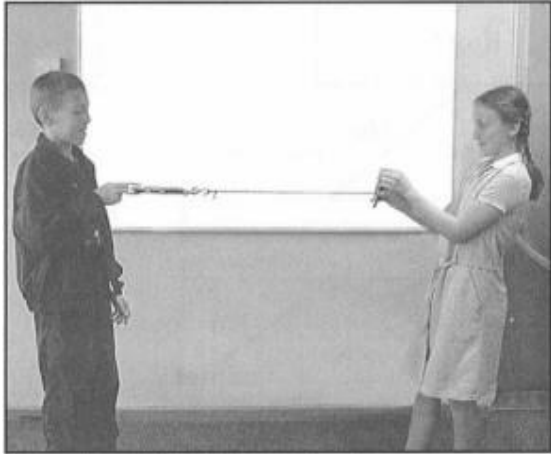
to find out which animals live in trees

to help find animals in the wild

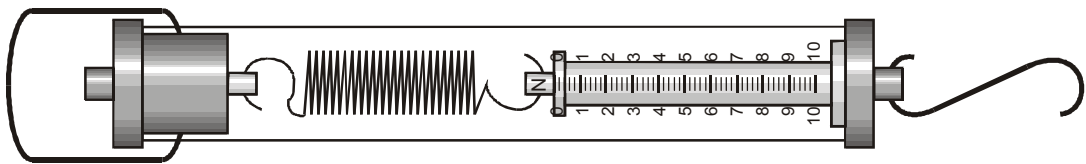
1 mark

**5. Threads**

- (a) Sam and Anna tested the breaking strength of six different kinds of thread. They attached a thread to a forcemeter and Anna pulled.




Sam recorded the size of the force on the forcemeter when the thread broke.



**The forcemeter they used.**


Their teacher said this was not a safe way to investigate breaking threads.

What is a safety risk in their investigation?

 .....

1 mark

- (b) Why was it difficult for them to collect exact results?

 .....  
.....

1 mark



- (c) All the threads broke at a reading of 10 N.  
 Sam's conclusion was: 'All the threads are the same strength'.  
 Anna said: 'I think all our readings are 10 N because we used the wrong forcemeter'.

Look at the forcemeter they used.

Why did all the results being 10 N make Anna think they had used the wrong forcemeter?



.....

.....

1 mark

- (d) Complete the table to show what **must be the same**, what **must be different** and what **makes no difference** in this investigation.

Tick **ONE** box for each statement.

The first **one** has been done for you.

Statements	must be the same.	must be different.	make no difference.
The kinds of thread they use ...		✓	
The colours of the threads ...			
The persons doing the pulling ...			
If the strengths of the threads are the same, the forces required to break each one ...			
If the strengths of the threads are different, the forces required to break each one ...			

2 marks

**6. Toffee**

(a) Adrian and his dad are cooking toffee. The pictures below show how they make the toffee.

**1. Put a metal tray into a freezer for an hour.**



**2. Stir sugar into some cold water.**



**3 Heat the mixture until it turns golden brown.**



**4 Pour the mixture into the cold tray from the freezer**



What happens to sugar when it is put into cold water and stirred?



.....

1 mark

(b) What happens to some of the **water** when the mixture is heated?



.....

1 mark

(c) The mixture becomes **very** hot.

Tick **ONE** box to show what Adrian should measure to find out how hot the mixture is.



weight

temperature

volume

time

1 mark

(d) Adrian carefully stirs the hot mixture with a wooden spoon.

The handle of the wooden spoon stays cool.

Tick **ONE** box to explain why the handle of the wooden spoon stays cool.



Wood cannot get hot.

Wood is a poor conductor of heat.

Wood is a hard material.

Wood is a poor insulator of heat.

1 mark

(e) Adrian takes the tray out of the freezer. He pours the runny mixture into the metal tray. He leaves the tray on a table for 10 minutes.

The mixture becomes solid.

Why does the runny mixture become solid?



.....

1 mark

7. **Growing up**

(a) Adam has collected the pictures below. They show different stages in the life of his grandmother.

Write a number from **1** to **6** in each box to put the life stages in order from youngest (**1**) to oldest (**6**).



1 mark

(b) **Growth** is a life process of all living things.

Name **TWO** other **life processes** of all living things.



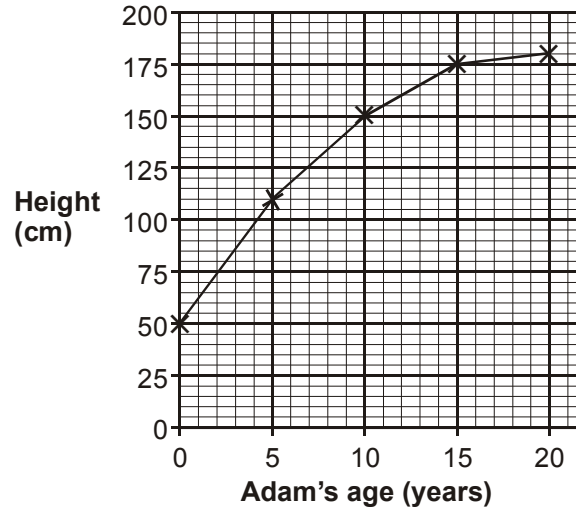
1. ....

1 mark


2. ....

1 mark

(c) The graph below shows how Adam has grown in height.




How tall was Adam on his fifth birthday?

 .....

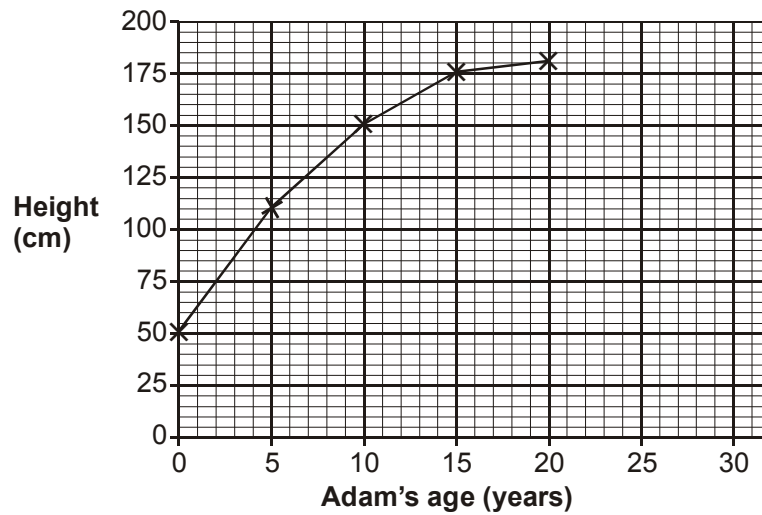
1 mark

(d) Tick **ONE** box to show when Adam grew most quickly in height.

 0–5 years       5–10 years   
10–15 years       15–20 years

1 mark

- (e) Continue the line on the graph below to predict Adam's height between 20 and 30 years old.



1 mark

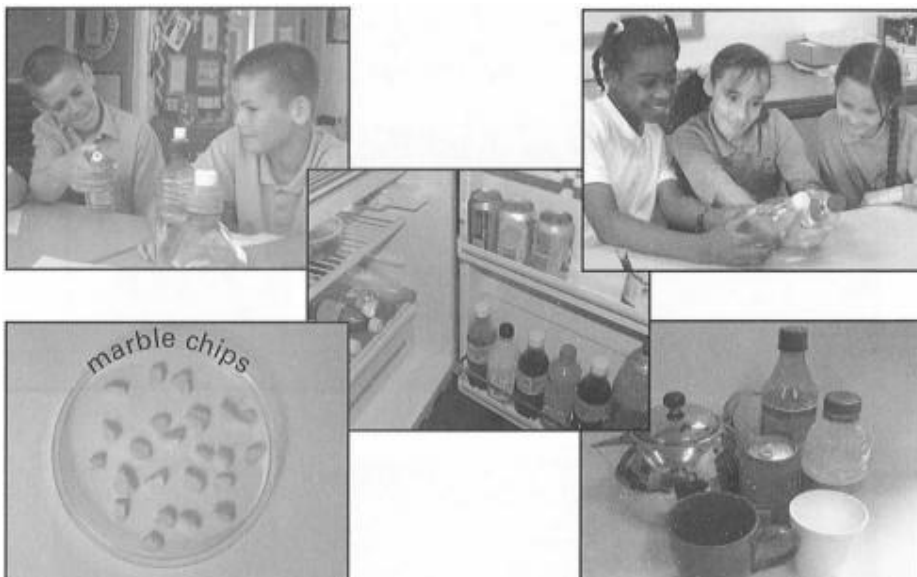
## 8. Drinks and teeth

Dentists say that some drinks are harmful because they dissolve teeth.

You are asked to plan your own science investigation.

Instead of teeth, you have some tooth-sized marble chips which react in a similar way to teeth.

You can use different drinks, containers for the marble chips and any equipment you need.



Write in the box a short draft of **one** question **YOU** could plan to investigate about drinks and teeth.



**Use your draft to help you answer the questions below.**

(a) Now answer the following questions about **YOUR** investigation.

What **ONE** factor should you plan to change as you carry out your investigation?



.....  
.....

1 mark

(b) (i) Which factor will you observe or measure to collect your results?



.....  
.....

1 mark

(ii) What would you use to measure the factor you have planned to examine?



.....  
.....

1 mark

(c) Write **ONE** factor you should keep the same to make your test fair.

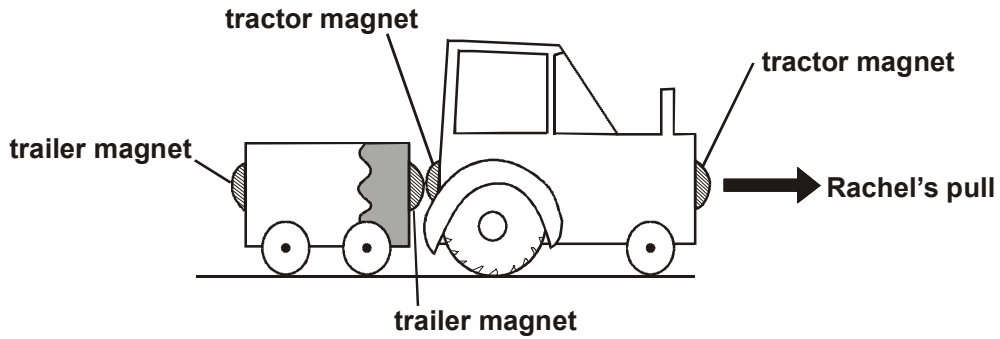


.....  
.....

1 mark


**9. Tractor**

(a) Rachel has a toy tractor and trailer. Both have magnets at each end.



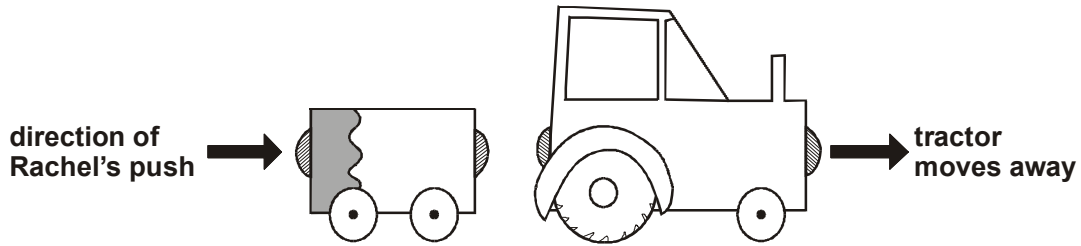
When Rachel pulls the tractor, the trailer comes with it.

Explain why the magnets cause the trailer to move forward when Rachel pulls on the tractor.


 .....

1 mark

(b) Rachel turns her trailer around. She pushes the trailer towards the tractor. The tractor moves away without touching the trailer.



Explain why the magnets cause the tractor to move away when Rachel pushes the trailer towards it.

 .....  
.....

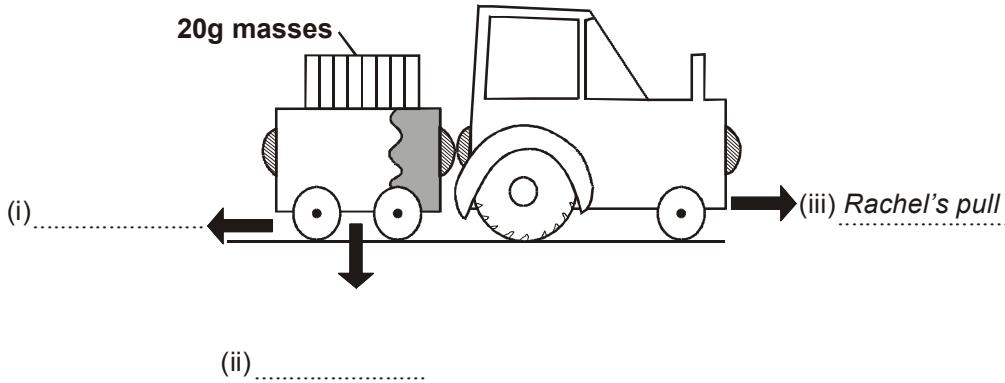
1 mark



- (c) Rachel puts some 20g masses in the trailer. She turns the trailer back around, so the tractor pulls the trailer again.

Label the arrows on the picture below to say what **forces** they show.

One force has been labelled for you.



2 marks

- (d) Rachel can put masses weighing 160g in the trailer before it separates from the tractor. She does this experiment on thick carpet.

Rachel repeats her experiment on a new surface. This time, the trailer holds 240g before it separates from the tractor.

Tick **ONE** box to predict the new surface Rachel tested.



- |             |                          |             |                          |
|-------------|--------------------------|-------------|--------------------------|
| grass       | <input type="checkbox"/> | floorboards | <input type="checkbox"/> |
| gravel path | <input type="checkbox"/> | fluffy rug  | <input type="checkbox"/> |

1 mark