Key Stage 3 2006

SCIENCE

Modified Large Print

Tier 3-6 Paper 2
Second Part

Please read this page and page 2. Do not look at the rest of the test paper until your teacher tells you to start.

Write your name and the name of your school in the spaces below.

First name _____

Last name _____

School _____

Total Marks ☐

Note to markers:
This paper should be marked using the MODIFIED LARGE PRINT mark scheme amendments – MLP.

302900-664

REMEMBER

The whole test is one hour long, plus your additional time allowance.

Your teacher will provide you with the extra equipment you need.

This test starts with easier questions.

Try to answer all of the questions.

If you are asked to plan an investigation, there will be space for you to write down your thoughts and ideas.

Do not use any rough paper.

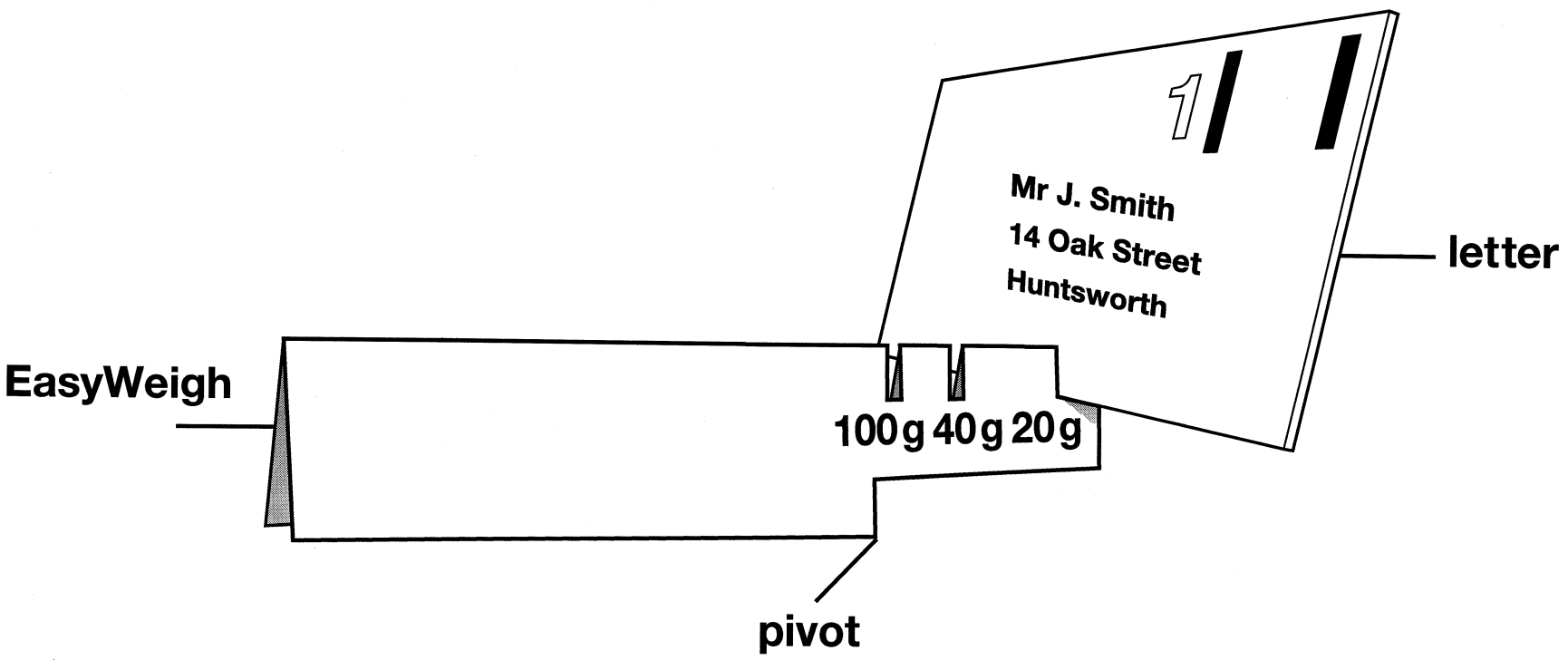
Check your work carefully.

Ask your teacher if you are not sure what to do.

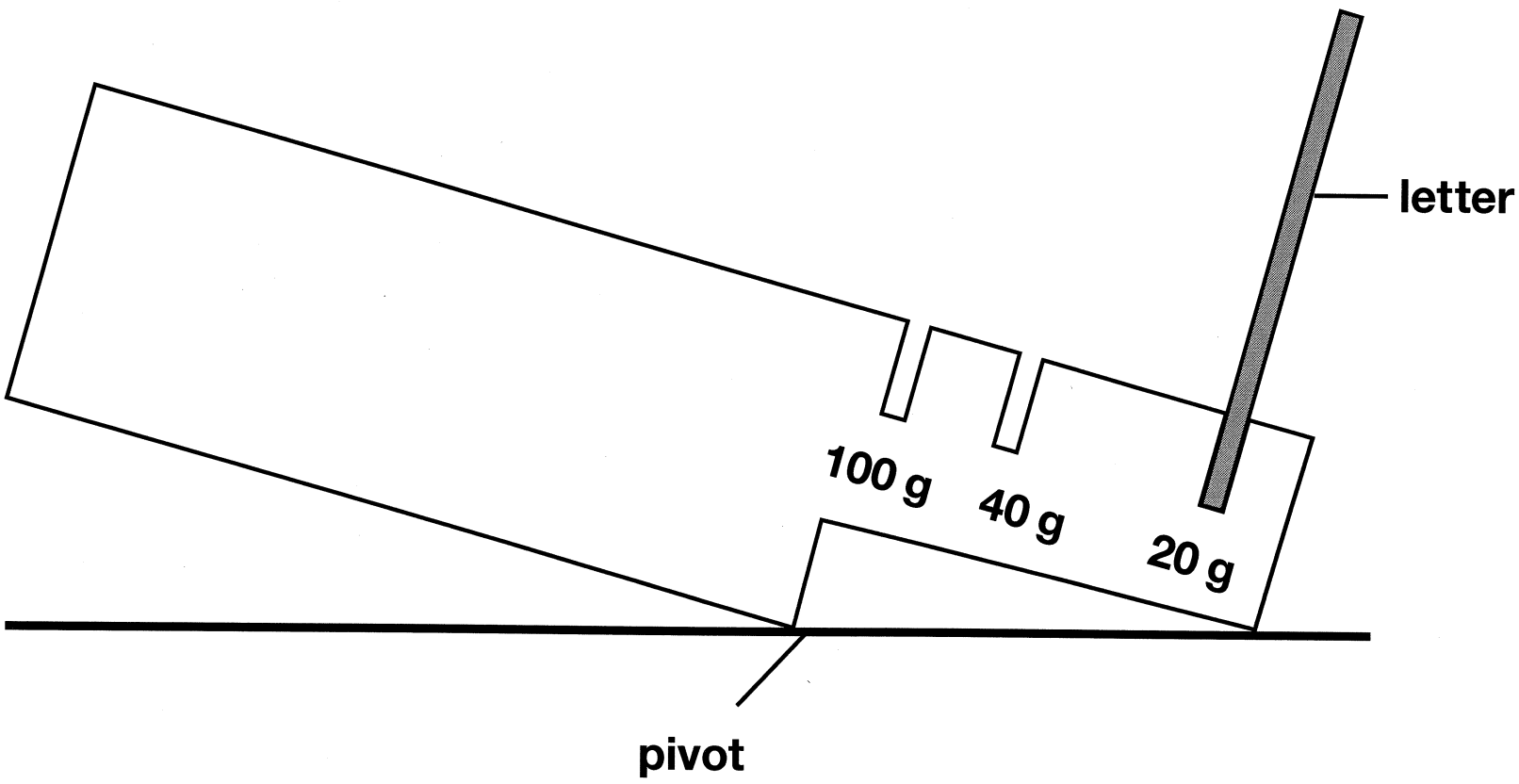
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9. The drawing below shows a cardboard scale called an EasyWeigh.

It can be used to estimate the mass of letters.



(a) Clare put a letter in the 20 g slot. The scale tipped as shown below.



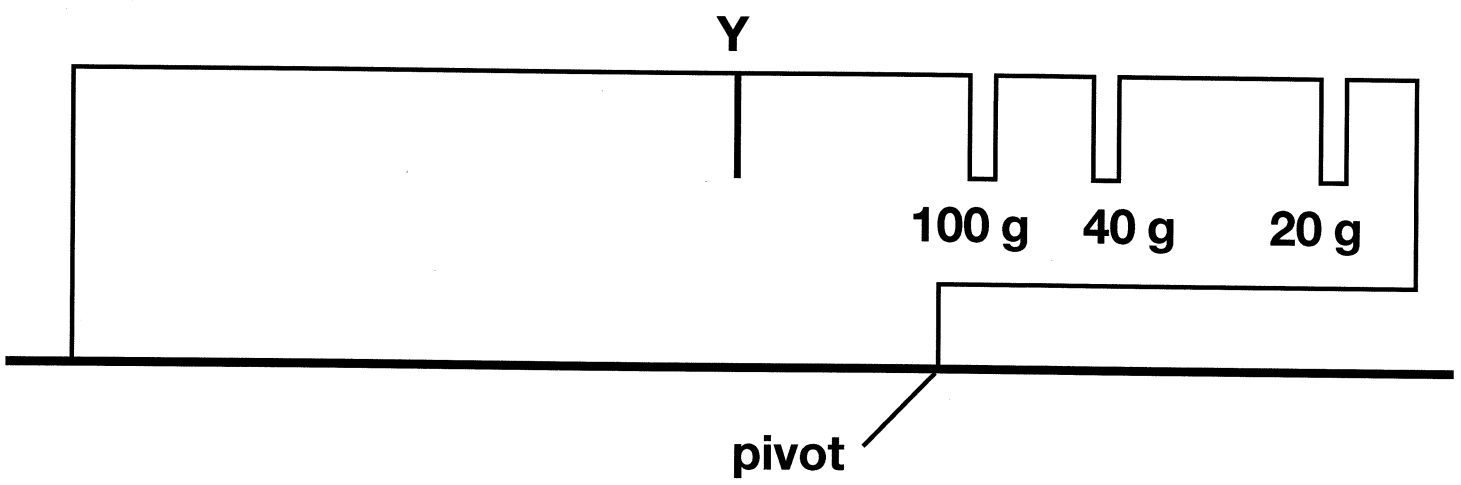
She then put the same letter in the 40 g slot.
The scale did not tip.

(i) What do these results tell you about the mass of Clare's letter? [1 mark]

(ii) What could Clare do to this cardboard scale to weigh her letter more accurately? [1 mark]

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(b) (i) Clare drew a short line to show where she thought she should cut a slot to weigh a 150 g letter.
She labelled the slot Y.



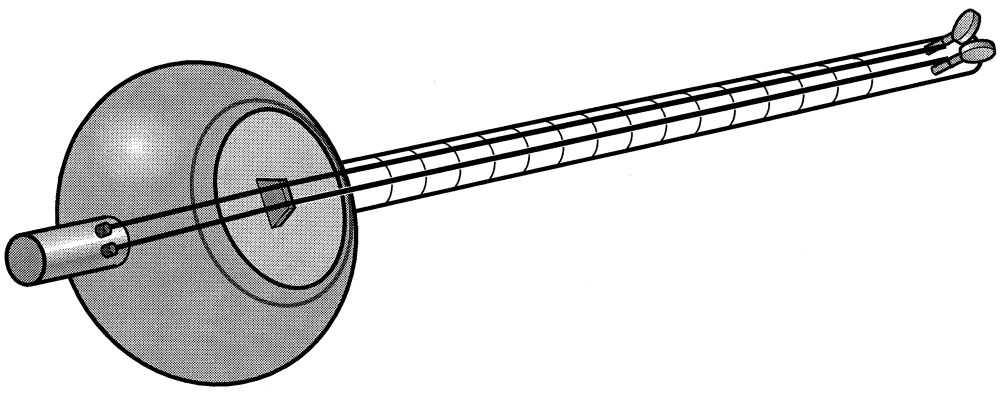
Why could Clare not use a slot at Y to weigh a 150 g letter? [1 mark]

(ii) Clare wanted to cut a slot to weigh a 70 g letter.

On the diagram above, draw a short line to show where the slot should be cut. [1 mark]

[maximum 4 marks]

10. **The dotar is a musical instrument with two strings.**



(a) **Aftal plays the dotar very quietly.**

What must he do to the strings to make a louder sound?
[1 mark]

(b) **Aftal makes the strings tighter so they vibrate more quickly.**

How does this affect the sound produced by the strings?
Tick the correct box. [1 mark]

The sound has a lower pitch. ☐

The sound is louder. ☐

The sound has a higher pitch. ☐

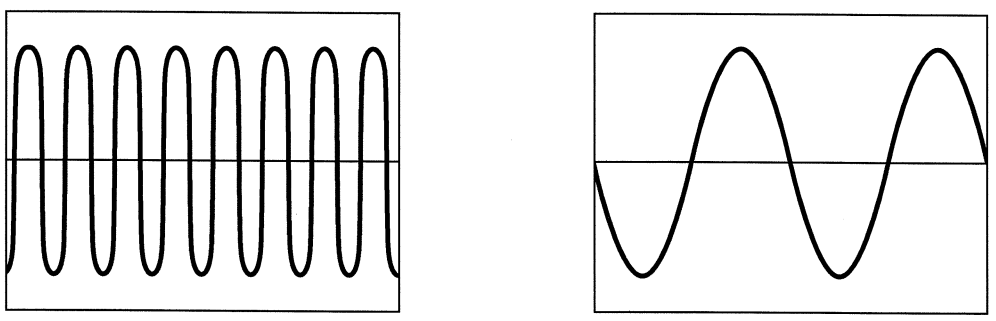
The sound is quieter. ☐

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(c) **One of the strings is thicker than the other so it vibrates more slowly.**

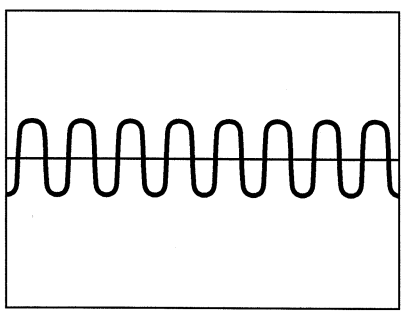
In what way is the sound made by the thicker string different from the sound made by the thinner string? [1 mark]

(d) **Aftal played the dotar near a microphone connected to an oscilloscope. The diagrams below show the patterns made by four sounds.**

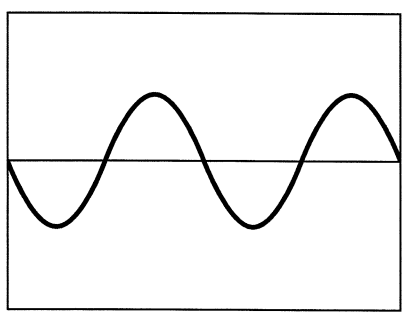


A

B



C



D

(i) **How does the sound shown in trace A differ from the sound in trace B? [1 mark]**

(ii) **How does the sound shown in trace A differ from the sound in trace C? [1 mark]**

[maximum 5 marks]

11. **Russell investigated the relationship between mass and weight. He weighed five different masses using a force meter.**

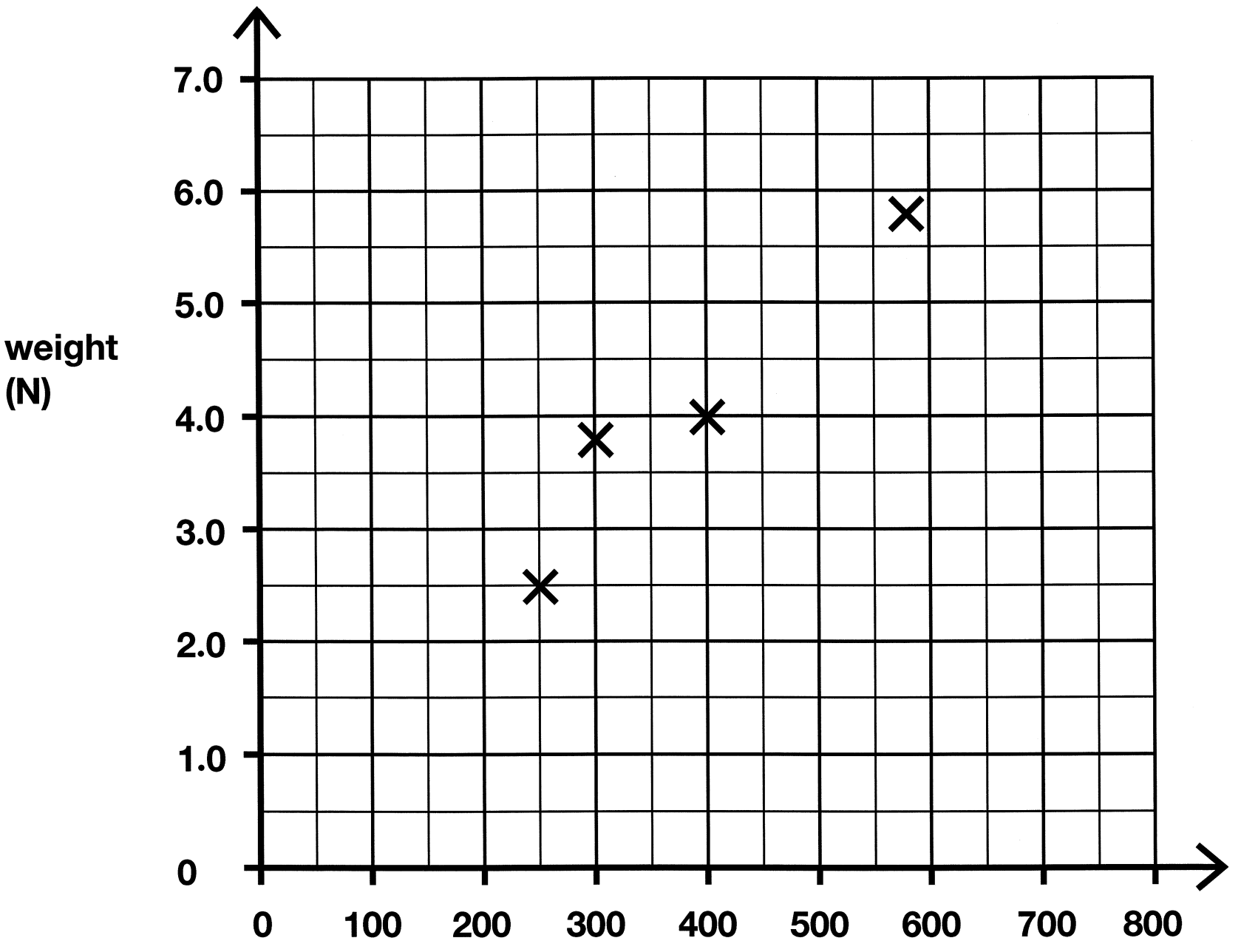
His results are shown in the table.

mass (g)	weight (N)
150	1.5
250	2.5
300	3.8
400	4.0
580	5.8

(a) **He plotted four of his results on a grid as shown opposite.**

(i) **Plot the point for the 150 g mass on the graph. [1 mark]**

(ii) **Draw a line of best fit. [1 mark]**



(b) One of the points Russell plotted does not fit the pattern.

Circle this point on the graph. [1 mark]

(c) Use your graph to predict:

(i) the mass of an object weighing 6.5 N; [1 mark]

_____ g

(ii) the weight of an object of mass 50 g. [1 mark]

_____ N

THIS QUESTION CONTINUES ON THE NEXT PAGE

(d) **Give one reason why it is more useful to present the results as a line graph rather than a table. [1 mark]**

_____

_____

_____

[maximum 6 marks]

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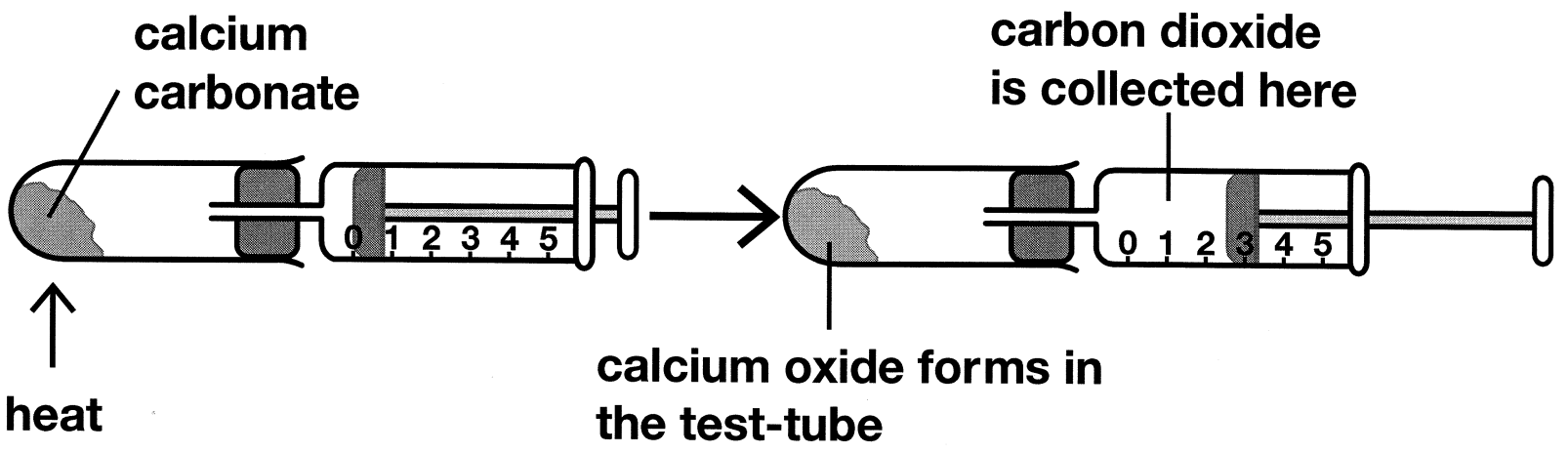
TURN OVER FOR THE NEXT QUESTION

12. A science teacher showed her class three experiments, A, B and C.

The experiments and the word equations for the reactions that took place are shown below.

All the experiments were done in a fume cupboard.

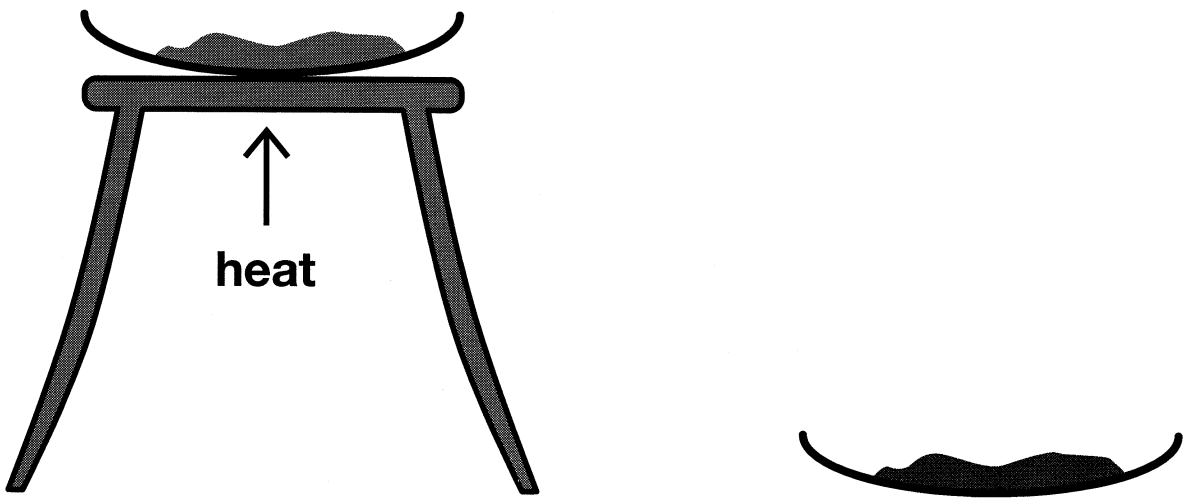
experiment A – calcium carbonate is heated



word equation

calcium carbonate → calcium oxide + carbon dioxide

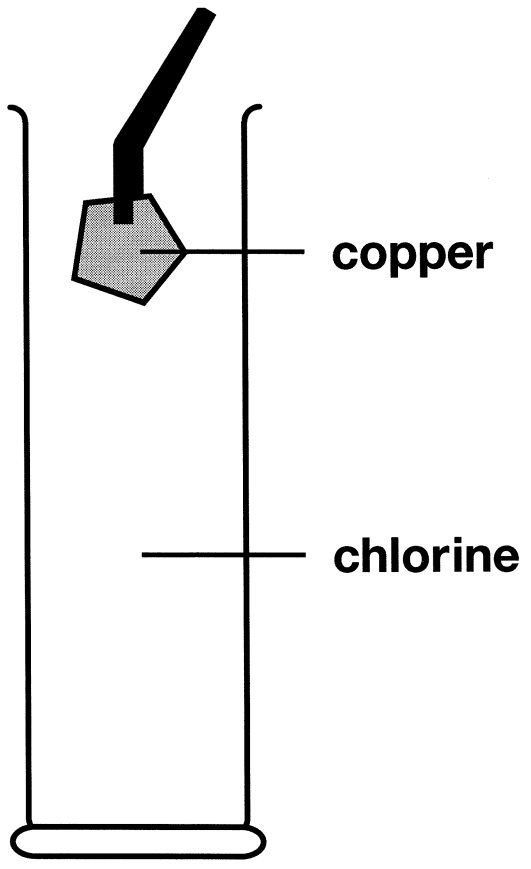
experiment B – iron filings and sulphur are heated together

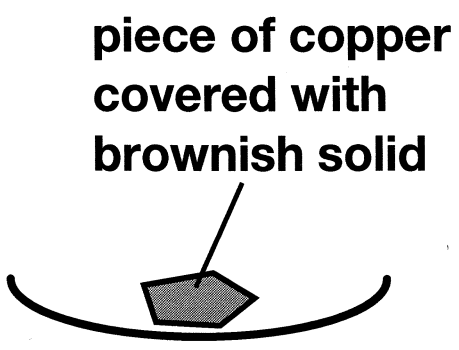


word equation

iron + sulphur → iron sulphide

experiment C – hot copper is added to chlorine





word equation

copper + chlorine → _____

(a) From the substances in experiments A, B and C, opposite and above, give the name of:

(i) one metallic element; [1 mark]

_____

(ii) one non-metallic element; [1 mark]

_____

(iii) two compounds. [1 mark]

_____ **and** _____

THIS QUESTION CONTINUES ON THE NEXT PAGE

(b) In experiment B, the iron filings weighed 2.0 g at the beginning of the experiment and the iron sulphide produced weighed 2.8 g.

Explain this increase in mass. [1 mark]

(c) Complete the word equation for the chemical reaction in experiment C. [1 mark]

copper + chlorine → _____

[maximum 5 marks]

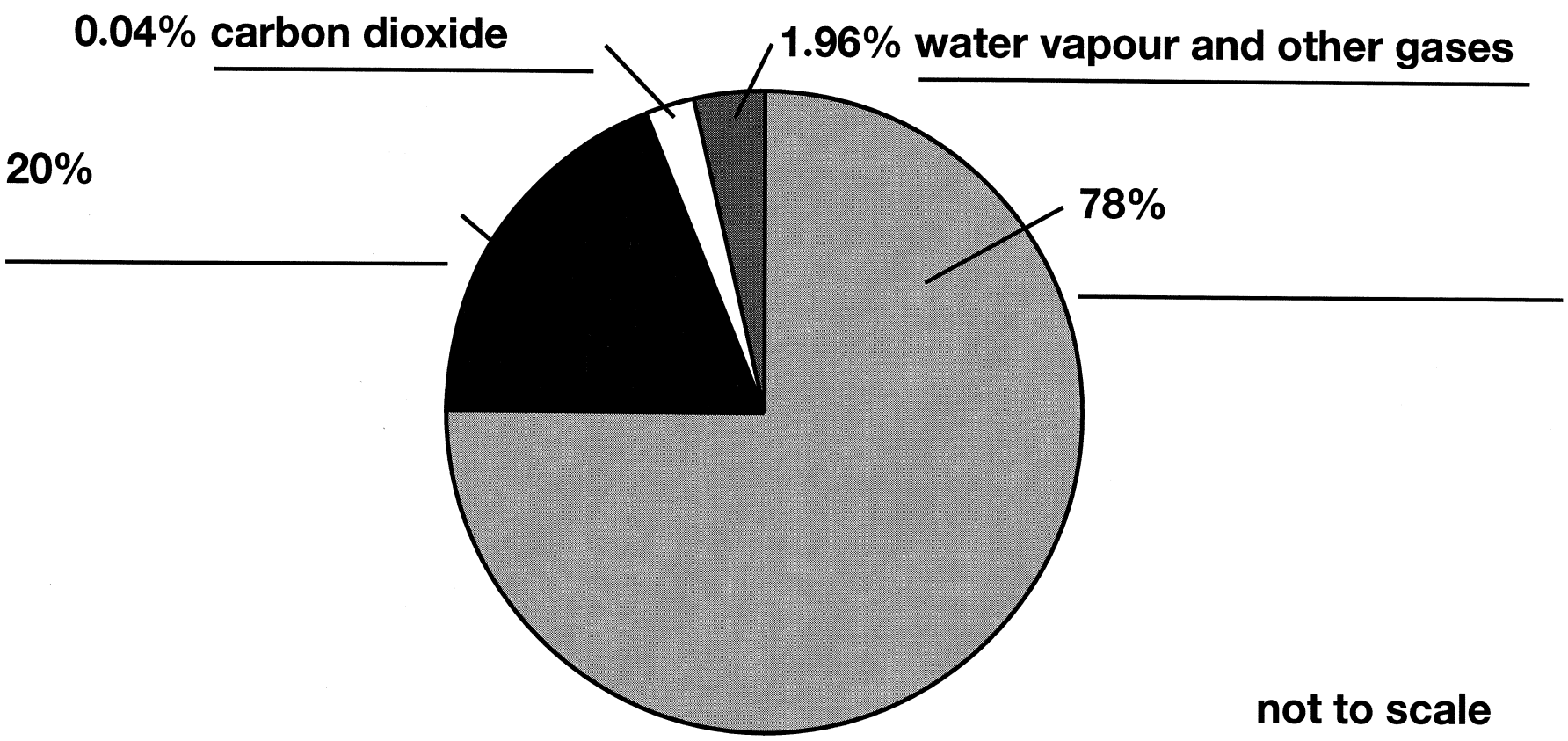
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TURN OVER FOR THE NEXT QUESTION

13. (a) Air is a mixture of gases. The pie chart represents the percentages of different gases in air.

On the line by each section of the pie chart, write the name of the correct gas. [2 marks]

Two have been done for you.



(b) On a cold day, droplets of water form on a cold window.

Explain how these droplets form. [2 marks]

(c) The word equation below represents a process taking place in the cells of the human body.

glucose + oxygen ⟶ carbon dioxide + water

(i) What process does this word equation represent?
[1 mark]

_____

(ii) As a result of this process, the proportions of oxygen and carbon dioxide in air breathed in and air breathed out change.

Which one of the statements below is true?
Tick the correct box. [1 mark]

Air breathed out has less carbon dioxide and more oxygen than air breathed in. ☐

Air breathed out has less carbon dioxide and less oxygen than air breathed in. ☐

Air breathed out has more carbon dioxide and less oxygen than air breathed in. ☐

Air breathed out has more carbon dioxide and more oxygen than air breathed in. ☐

[maximum 6 marks]

14. Joe bought a potted plant. He kept it well watered but some of the leaves turned yellow.

Joe thought that the plant did not have enough light for photosynthesis.

He moved the plant closer to the window but more leaves turned yellow.

(a) He then thought the plant did not have enough minerals.

The table below gives information about minerals.

mineral	why the mineral is needed
magnesium	to make chlorophyll
nitrogen	to make protein
phosphorus	to grow and transfer energy
potassium	to make fruit

(i) Joe's plant did not have enough of one of the minerals in the table. Use the information in the table to suggest which mineral this was. [1 mark]

_____

(ii) A plant growing in a pot is more likely to be affected by a shortage of minerals than a plant growing in a garden.

Give the reason for this. [1 mark]

_____

_____

_____

(b) Joe bought some fertiliser for his plant.
The names and formulae of four different fertilisers are shown below.

A	B	C	D
Easy Grow NH_4NO_3	Epsom Salts $MgSO_4$	Saltpetre KNO_3	Super-phosphate $Ca(H_2PO_4)_2$

(i) Give the letter of one box of fertiliser, A, B, C or D, that would provide each of the minerals in the table below. Write the letters in the table. [3 marks]

mineral	letter of fertiliser
magnesium	
nitrogen	
phosphorus	
potassium	

THIS QUESTION CONTINUES ON THE NEXT PAGE

(ii) Easy Grow is ammonium nitrate, NH_4NO_3.

How many different elements are present in ammonium nitrate? [1 mark]

_____

(iii) How many atoms are present in the formula of ammonium nitrate? [1 mark]

_____

[maximum 7 marks]

15. (a) **Alligators are carnivores.**

What does the word carnivore mean? [1 mark]

_____

(b) **Alligators lay eggs in nests made from plant material.**

The eggs have tough shells containing calcium carbonate.

(i) **How does the eggshell help the developing alligator to survive before it hatches? [1 mark]**

_____

_____

_____

(ii) **Rotting plant material in the nest is acidic.**

When the acid comes into contact with calcium carbonate in the eggshell it makes the shell weaker.

Why does the acid weaken the eggshell? [1 mark]

_____

_____

_____

THIS QUESTION CONTINUES ON THE NEXT PAGE

(iii) Suggest one reason why it is helpful to the developing alligator in the egg if the eggshell becomes weaker.
[1 mark]

(c) The table below shows the percentage of female and male alligators that hatch from the eggs when the eggs are kept at different temperatures.

temperature (°C)	% eggs hatching as females	% eggs hatching as males
26	100	0
28	100	0
30	100	0
32	86	14
34	0	100
36	0	100

(i) **Use the table to suggest how the zookeeper could make sure only females hatch from the eggs. [1 mark]**

(ii) **Between which two temperatures are 50% of the eggs likely to hatch as females?**

Tick the correct box. [1 mark]

between 26°C and 30°C ☐

between 30°C and 32°C ☐

between 32°C and 34°C ☐

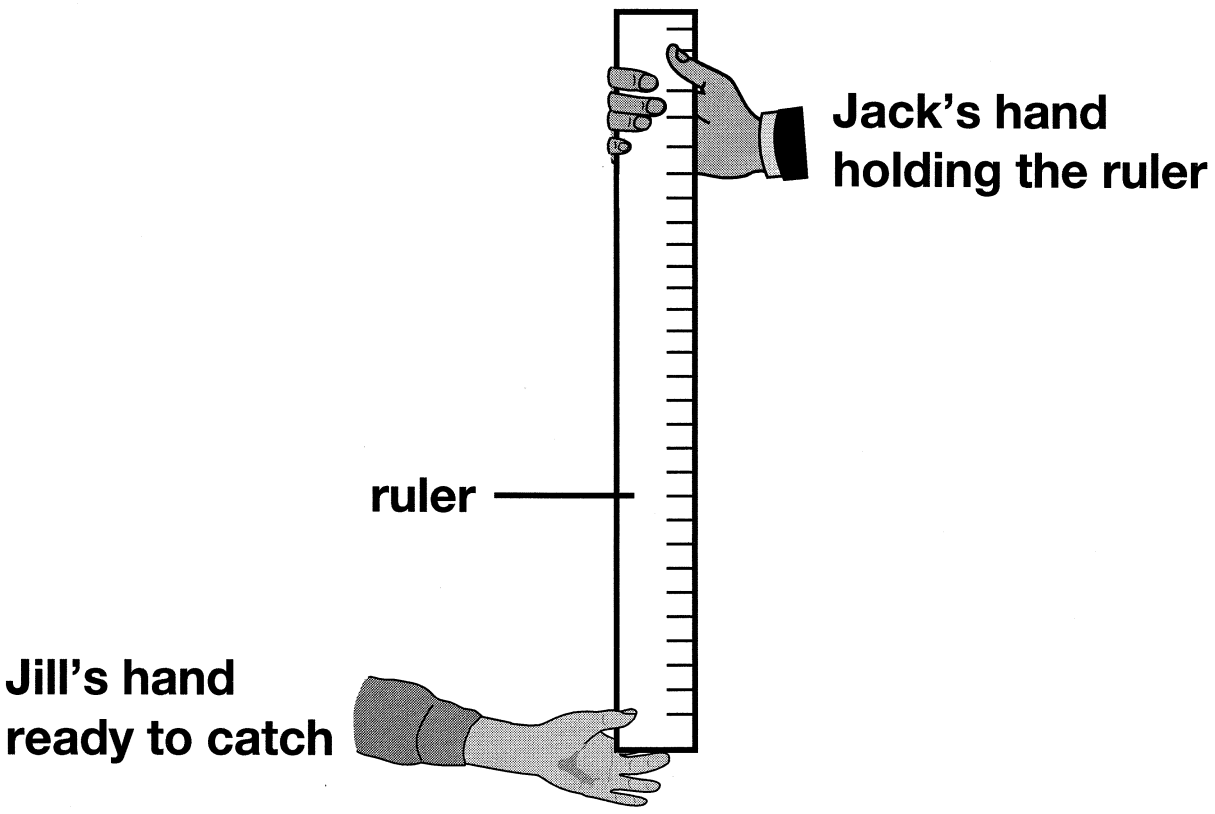
between 34°C and 36°C ☐

[maximum 6 marks]

16. **Jack compared the reaction times of ten different pupils in his class.**

He dropped a metre ruler between each pupil's finger and thumb.

As soon as they saw the ruler begin to move, they had to catch it as quickly as possible.



(a) **Jack did not measure time to compare pupils' reaction.**

What did Jack measure to compare pupils' reaction times?
[1 mark]

(b) **Why was it more accurate to use the ruler rather than a stopwatch in this investigation? [1 mark]**

_____

_____

_____

(c) **What factor did Jack change as he carried out his investigation (the independent variable)? [1 mark]**

_____

(d) **Give two factors he should have kept the same to make his test fair. [2 marks]**

1. _____

2. _____

(e) **What could he do to make his results more reliable? [1 mark]**

_____

_____

_____

[maximum 6 marks]

END OF TEST

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