Key Stage 3 2006

SCIENCE

Modified Large Print

Tier 3-6 Paper 1
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.

302900-662

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.

Table for Question 12
Tier 3-6 Paper 1 second part

alloy	mass of element in 100 g of alloy							
	lead (g)	tin (g)	copper (g)	zinc (g)	carbon (g)	iron (g)	chromium (g)	nickel (g)
bronze		4	95	1				
solder	62	38						
steel					1	99		
stainless steel						70	20	10
brass			67	33				

BLANK PAGE

9. **Every year thousands of trees are cut down in forests.**

(a) **Mammals and birds are two groups of animals that live in forests.**

Give two reasons why fewer mammals and birds can survive after trees have been cut down. [2 marks]

1. _____

_____

_____

2. _____

_____

_____

(b) **Many small plants grow in the clearings left after trees are cut down.**

Explain why small plants are able to grow well after the trees have been cut down. [2 marks]

_____

_____

_____

_____

(c) In some forests, small branches are left on the ground.

Fungi and bacteria feed on these branches and release minerals, such as nitrates, back into the soil.

Why is it important that the minerals are released back into the soil? [1 mark]

(d) A label was printed on the back of a birthday card.

> The paper for this card was made from wood taken from sustainable forests.

In sustainable forests, new trees are planted to replace trees that are cut down.

Give two reasons why it is important to replace forest trees that are cut down. [2 marks]

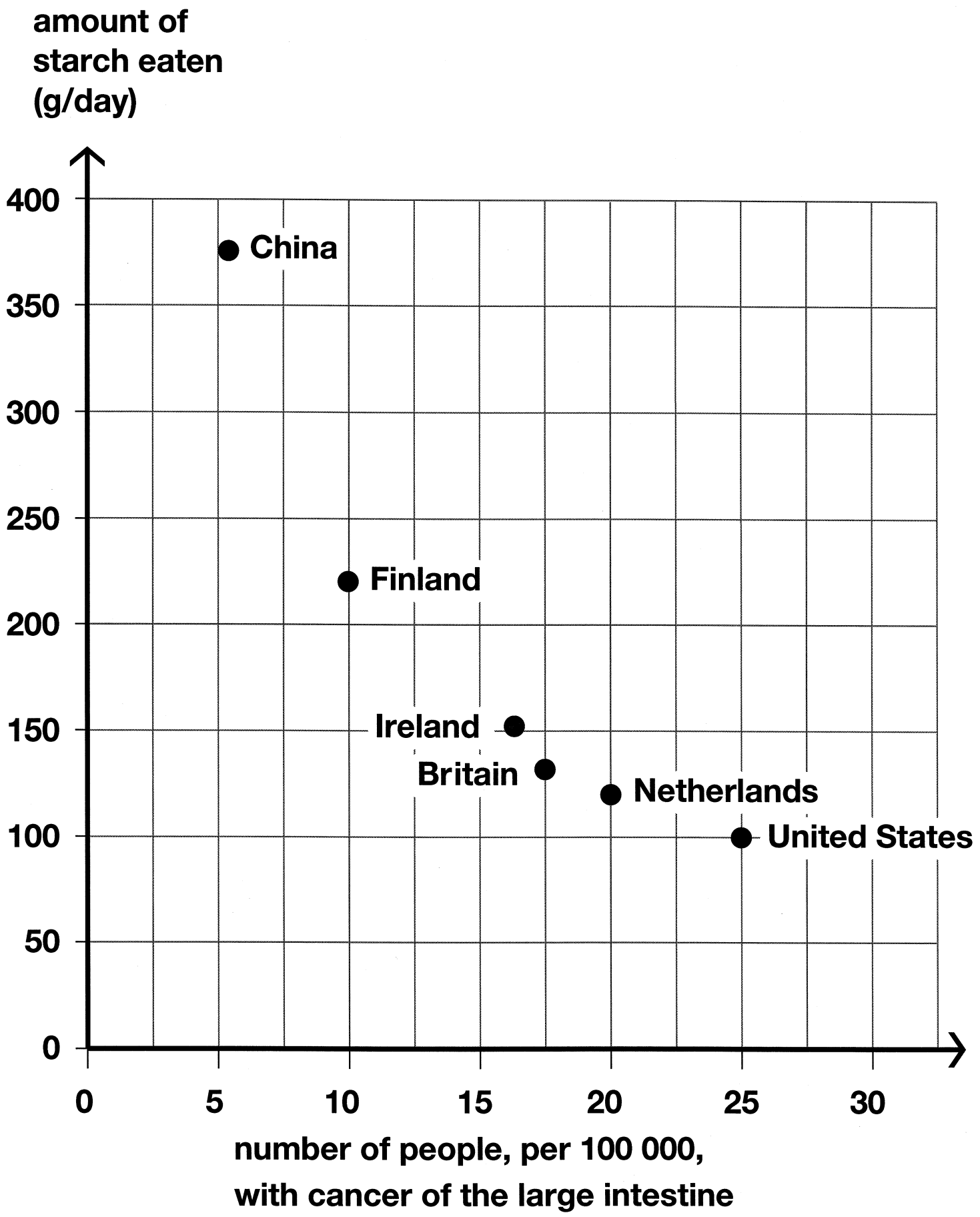
1.

2.

[maximum 7 marks]

10. **People in different countries eat different amounts of starch. A scientist compared the amount of starch people ate with the number of people with cancer of the large intestine.**

The scatter graph below shows her results.



Look at the scatter graph.

(a) (i) Which country had the greatest proportion of people with cancer of the large intestine? [1 mark]

_____

(ii) What conclusion could you come to about the effect of eating starch on getting cancer of the large intestine? [1 mark]

_____

_____

_____

_____

THIS QUESTION CONTINUES ON THE NEXT PAGE

(b) (i) **Starch is a carbohydrate.**

Which two of the following foods are good sources of starch?

Tick the two correct boxes. [2 marks]

bread ☐

cheese ☐

chicken ☐

tomatoes ☐

fish ☐

pasta ☐

(ii) **What other type of nutrient, needed as part of a balanced diet, keeps the intestine working well and prevents constipation?**

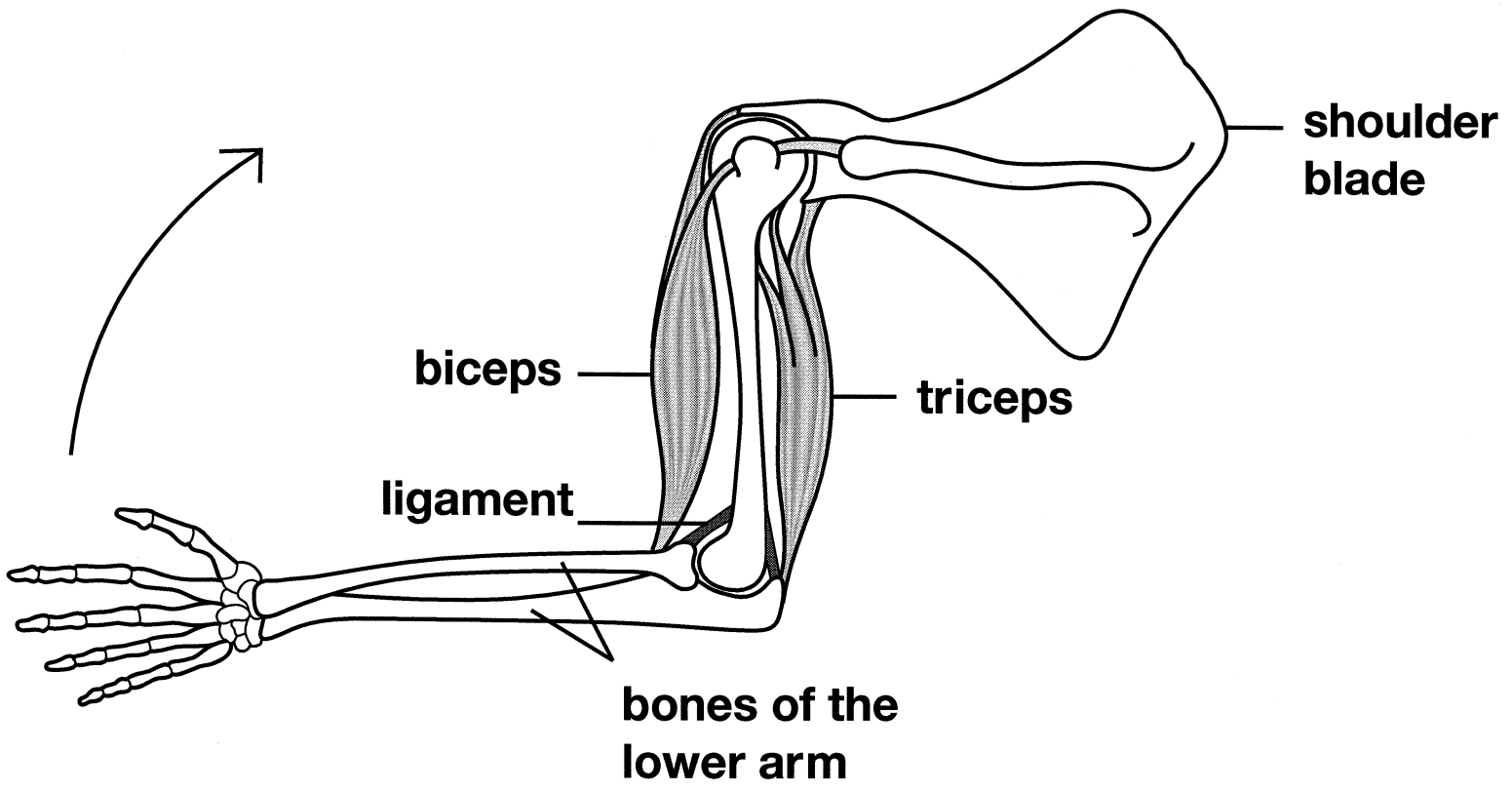
Tick the correct box. [1 mark]

fat	☐
fibre	☐
minerals	☐
protein	☐
vitamins	☐

[maximum 5 marks]

11. **The diagram below shows bones and muscles of the human arm.**

The biceps and triceps are muscles that contract to move the bones of the lower arm.



(a) **What do the biceps and triceps do to move the arm in the direction shown by the arrow?**

Tick the correct box. [1 mark]

The biceps and the triceps contract at the same time. ☐

The biceps contracts and the triceps relaxes. ☐

The biceps relaxes and the triceps contracts. ☐

The biceps and the triceps relax at the same time. ☐

(b) **Ligaments hold bones together at a joint. Ligaments can stretch.**

Why must ligaments be able to stretch? [1 mark]

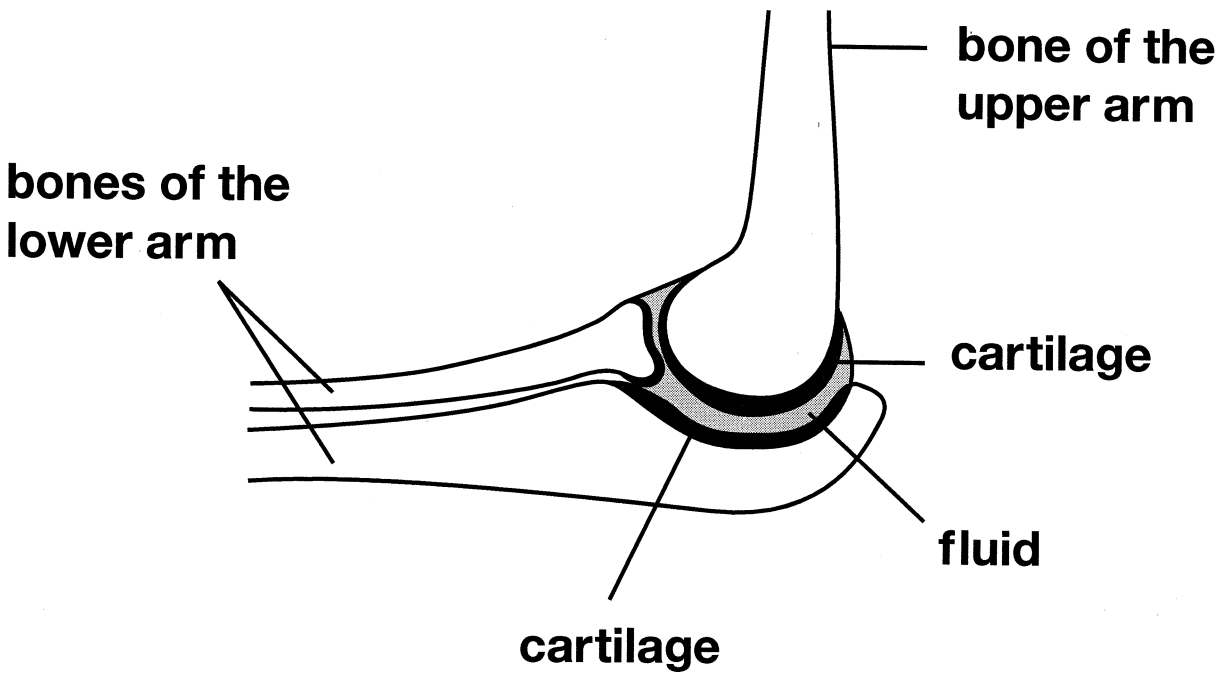
_____

_____

_____

THIS QUESTION CONTINUES ON THE NEXT PAGE

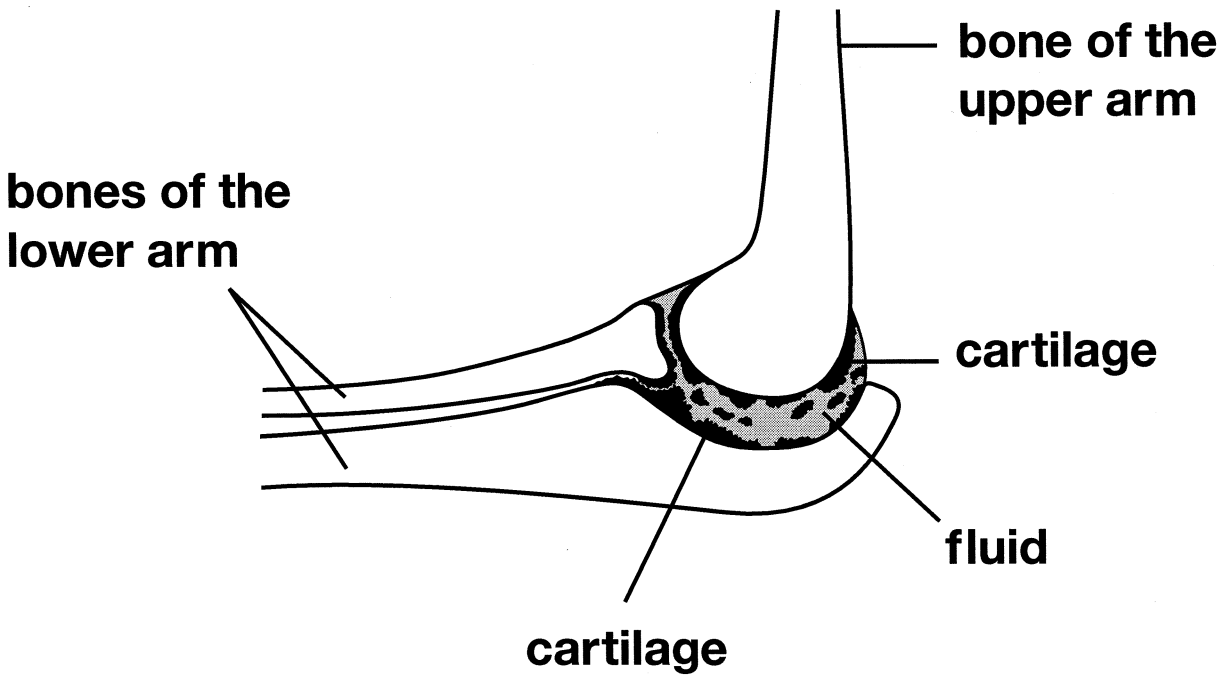
(c) The diagram below shows an elbow joint.



(i) The ends of the bones at a joint are covered by a layer of smooth material called cartilage.
There is also a fluid in the joint.

Why are cartilage and fluid needed in a joint? [1 mark]

(ii) **In the joint shown below, some of the cartilage has broken off.**



Suggest one way this damage will affect the joint.
[1 mark]

[maximum 4 marks]

12. **Your teacher will give you a loose copy of the table for this question.**
An alloy is a mixture of elements.

The table shows the mass of each element present in 100 g of five different alloys, bronze, solder, steel, stainless steel and brass.

(a) **Which alloy in the table contains an element which is a non-metal? [1 mark]**

_____

(b) **Which two alloys in the table contain only two metals? [1 mark]**

_____ **and** _____

(c) **Another alloy called nichrome contains only the elements chromium and nickel.**

100 g of nichrome contains 20 g of chromium.
How much nickel does it contain? [1 mark]

_____ **g**

(d) **Before 1992, two-pence coins were made of bronze. Steel rusts but bronze does not rust.**

(i) **Why does bronze not rust?**
Use information in the table to help you. [1 mark]

_____

_____

_____

(ii) **Rusting requires water and a gas from the air.**
Give the name of this gas. [1 mark]

_____

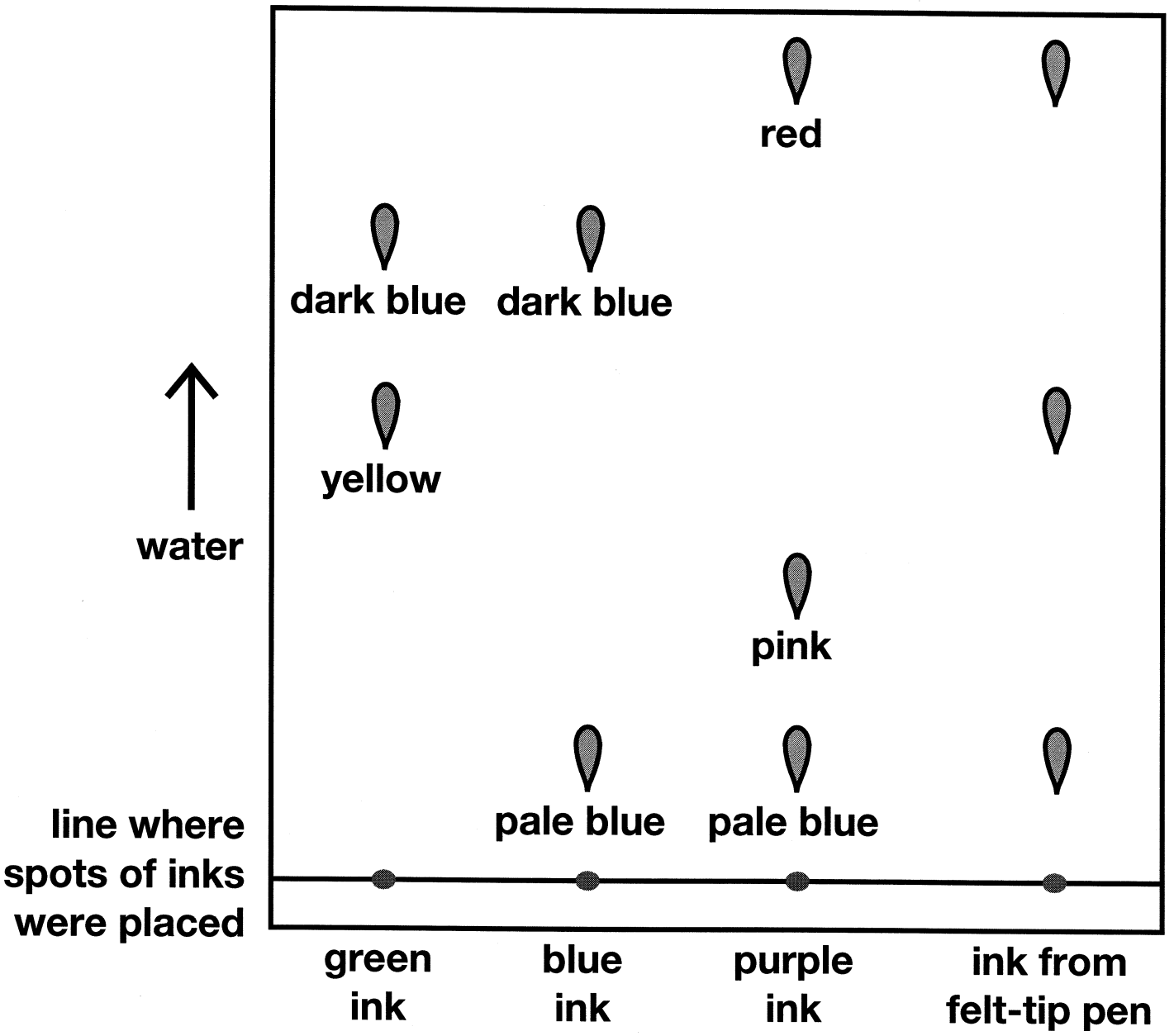
[maximum 5 marks]

13. **Susie used chromatography to identify the coloured substances in the ink from a felt-tip pen.**

She used:

- **green ink**
- **blue ink**
- **purple ink**
- **ink from her felt-tip pen**

She used water as the solvent.



Look at the diagram above.

(a) (i) Which colours were present in the ink from the felt-tip pen? [1 mark]

(ii) How many coloured substances were there in green ink? [1 mark]

_____

How can you tell?

_____

_____

_____

(iii) Susie placed the spots of ink on a line on the chromatography paper as shown in the diagram.

To draw the line, Susie had to choose from a felt-tip pen or a pencil.

Which one should she use? [1 mark]

_____

Give the reason for your answer.

_____

_____

_____

THIS QUESTION CONTINUES ON THE NEXT PAGE

(b) **Susie used water as the solvent in this experiment. When she repeated the experiment with a different set of pens, it did not work.**

She then used ethanol instead of water.

Suggest why the experiment worked with ethanol but not with water. [1 mark]

_____

_____

_____

[maximum 4 marks]

BLANK PAGE

TURN OVER FOR THE NEXT QUESTION

14. **Two pupils were given a sample of 'biological' washing powder and a sample of 'non-biological' washing powder.**

They investigated how the two powders compare in removing egg-stains from cloth.

> *Our Report*
>
> 1. We put 'biological' powder into one bowl and 'non-biological' powder into the other bowl. We added water.
>
> 2. We put some egg-stained cloth into each bowl.
>
> 3. We left the bowls for 30 minutes.
>   We dried out the cloth and saw what happened.

Look at their report.

(a) Give one way they made their investigation fair. [1 mark]

(b) Give two ways they could improve their investigation. [2 marks]

1. _____

_____

2. _____

_____

(c) What should they observe to compare the two types of washing powder? [1 mark]

_____

_____

_____

[maximum 4 marks]

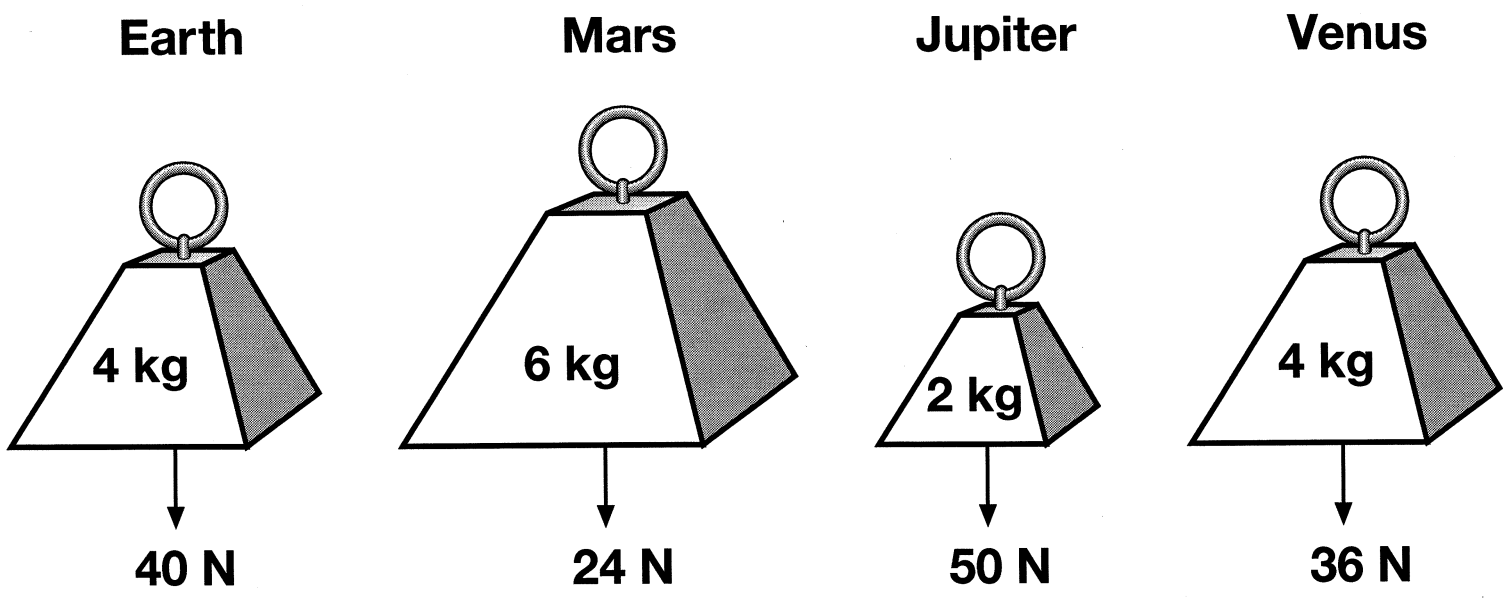
15. Each of the observations shown below has one explanation.

Draw a line from each observation to the correct explanation.
[1 mark each]

observation	explanation
A ship going out to sea goes out of sight.	The Earth spins on its axis.
We have day and night.	The Earth is a sphere.
We have summer and winter.	The Earth orbits the Sun and the Earth's axis is tilted.
One year on Earth is 365 days.	Gravity attracts objects towards the Earth.
	The Earth orbits the Sun.

[maximum 4 marks]

16. The drawings show the mass and weight of four objects on different planets.



(a) On which of the four planets is the object with the largest mass? [1 mark]

(b) How can you tell, from the drawings, that gravity is greater on Earth than on Venus? [1 mark]

(c) Gravity is less on the Moon than on the Earth.

Complete the sentences below to compare the weight and mass of an astronaut on the Moon and on the Earth. [2 marks]

The weight of an astronaut on the Moon is _____

the weight of the astronaut on the Earth.

The mass of an astronaut on the Moon is _____

the mass of the astronaut on the Earth.

(d) The table below gives information about five planets.

planet	distance from the Sun (million km)	time for planet to orbit the Sun (Earth-years)
Venus	110	0.6
Earth	150	1.0
Mars	230	
Jupiter	780	12.0
Saturn	1400	30.0

Look at the information in the table.

(i) How does the time for a planet to orbit the Sun change with its distance from the Sun? [1 mark]

_____

_____

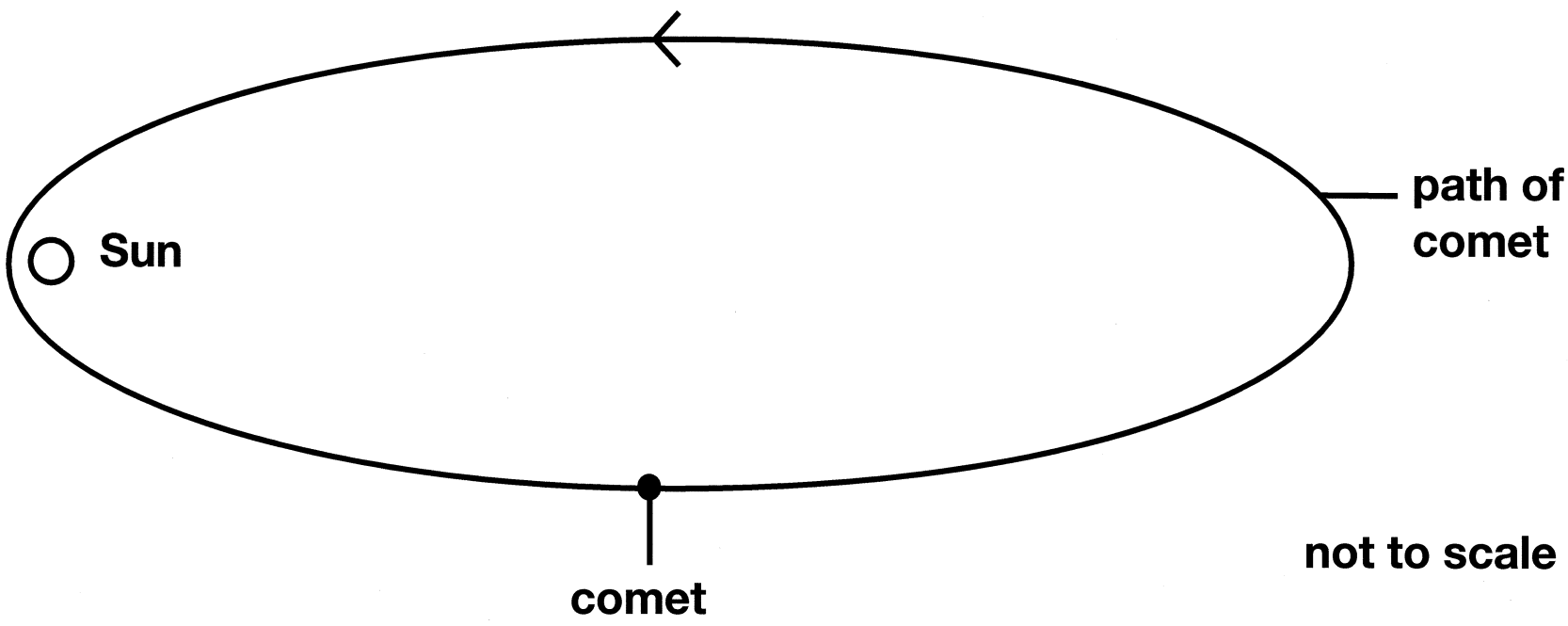
_____

(ii) Use information in the the table to estimate the time for Mars to orbit the Sun. [1 mark]

_____ Earth-years

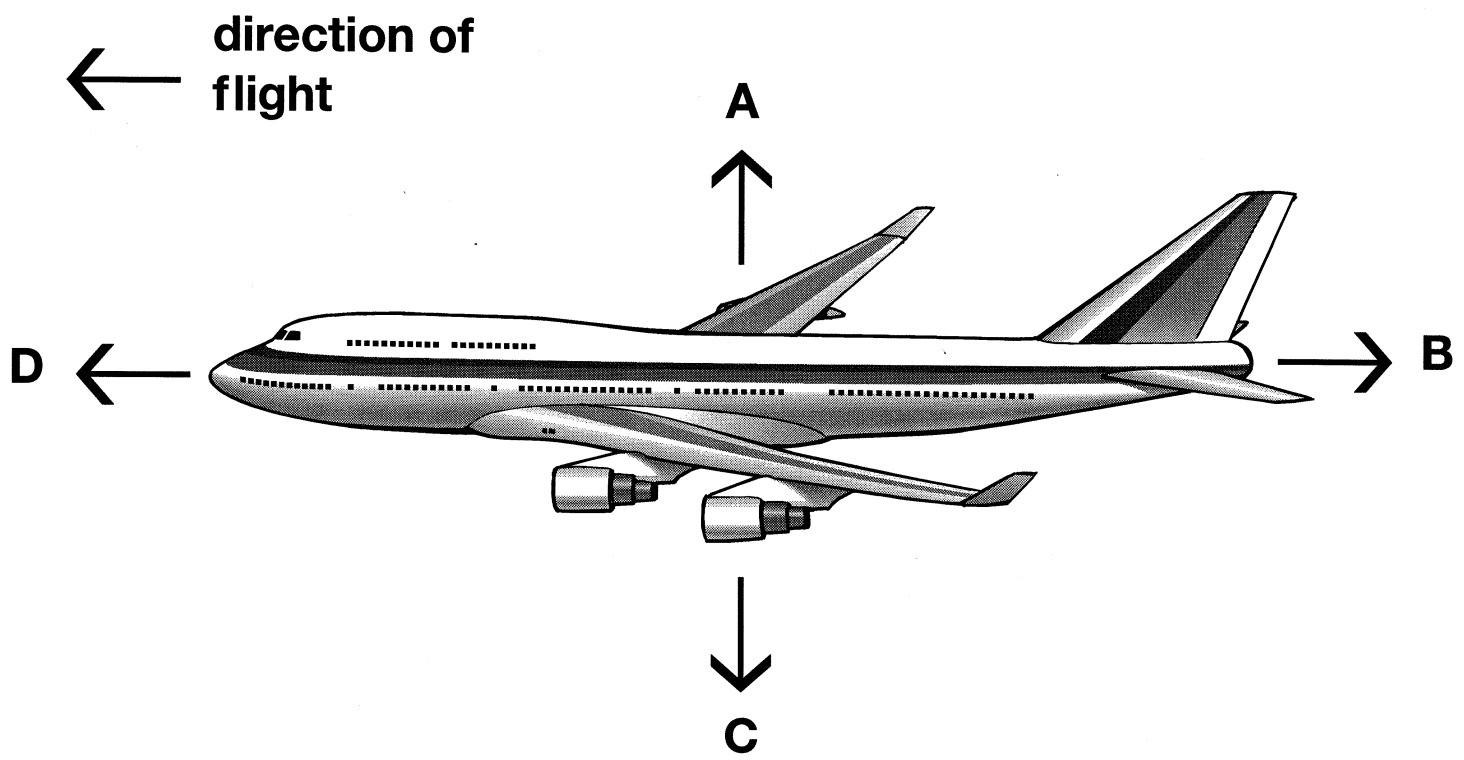
(e) The diagram below shows the path of a comet around the Sun.

On the path of the comet below, place a letter X to show the position where the comet is travelling the fastest. [1 mark]



[maximum 7 marks]

17. **The diagram shows four forces acting on a plane in flight.**



(a) **Which arrow represents air resistance? Give the letter. [1 mark]**

_____

(b) (i) **When the plane is flying at a constant height, which two forces must be balanced? [1 mark] Give the letters.**

_____ **and** _____

(ii) **When the plane is flying at a constant speed in the direction shown, which two forces must be balanced? [1 mark] Give the letters.**

_____ **and** _____

(c) (i) **Just before take-off, the plane is speeding up along the ground.**

Which statement is true?
Tick the correct box. [1 mark]

Force B is zero. ☐

Force B is greater than force D. ☐

Force D is equal to force B. ☐

Force D is greater than force B. ☐

(ii) **Which statement is true about the plane just as it leaves the ground?**

Tick the correct box. [1 mark]

Force C is zero. ☐

Force C is greater than force A. ☐

Force A is equal to force C. ☐

Force A is greater than force C. ☐

[maximum 5 marks]

END OF TEST

© Qualifications and Curriculum Authority 2006
QCA, 83 Piccadilly, London W1J 8QA

302900-662/s