FOR OFFICIAL USE

F

	KU	PS
Total Mark		

3700/401

NATIONAL QUALIFICATIONS 2008

TUESDAY, 27 MAY
9.00 AM – 10.00 AM

SCIENCE
STANDARD GRADE
Foundation Level

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Date of birth
Day Month Year

Scottish candidate number

Number of seat

1 Answer as many questions as you can.

2 Read the whole of each question carefully before you answer it.

3 Write your answers in the spaces provided. Showing working may help in some questions.

4 Before leaving the examination room you must give this book to the invigilator. If you do not, you may lose all the marks for this paper.

DO NOT WRITE IN THIS MARGIN

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1. Part of the index of a book is shown below.

(*a*) Duncan wants to find out about energy costs and loft insulation.

Which **two** pages should he look up?

Pages ..... and **1**

(*b*) Maha looked up pages 26 and 30.

What was she trying to find out about?

..... **1**

2. The box below shows some materials.

petrol	oxygen	milk	wood	concrete	nitrogen

Put each of these materials in the correct column of the table below.

Solids	*Liquids*	*Gases*

2

DO NOT WRITE IN THIS MARGIN

Marks | KU | PS

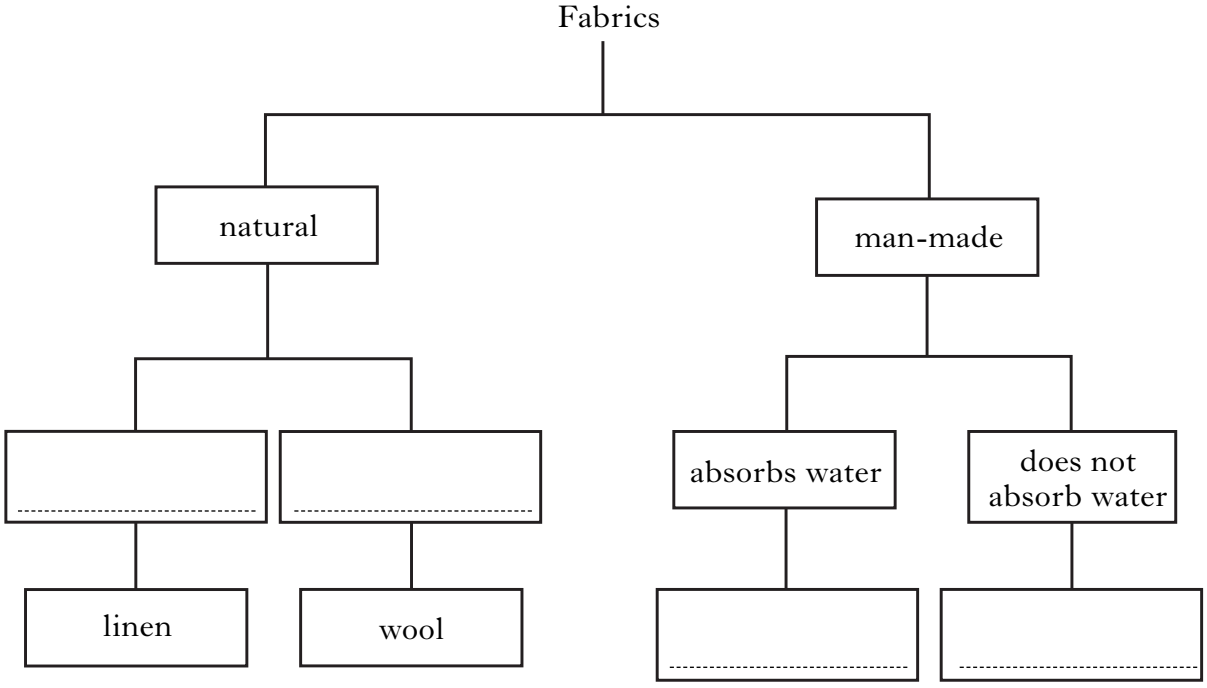
3. Linen and wool are natural fabrics.

Nylon and rayon are man-made fabrics.

Linen is smooth while wool is fluffy.

Nylon does not absorb water but rayon does.

Use this information to complete the key below.



2

4. The grid shows some appliances that use electrical energy in the home.

Which appliance is the most expensive to use for one hour?

Tick (✓) the box.

Television	
Lightbulb	
Oven	
Computer	

1

[Turn over

DO NOT WRITE IN THIS MARGIN

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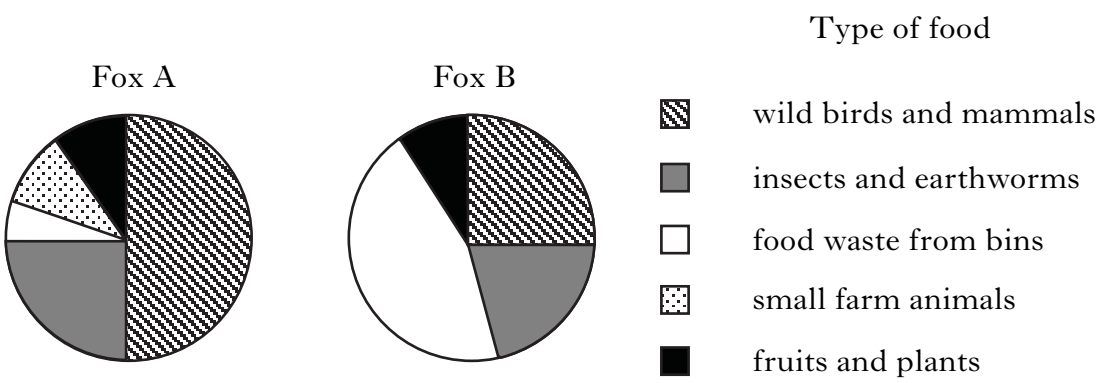
5. Scientists investigated the type of food eaten by two foxes, A and B. One fox lives in a town and the other lives in the countryside.

The pie charts below show the results.



Use this information to answer the questions.

(*a*) What percentage of the food eaten by **fox A** is wild birds and mammals?

.....% **1**

(*b*) **Fox B** eats 800 g of food in one day.

How many grams of wild birds and mammals does it eat?

Space for working

..... g **1**

(*c*) Which fox is more likely to be the one living in the town?

Fox .....

Give a reason for your answer.

.....

..... **1**

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6. (*a*) **Warmth** is one basic human need.

Name **two** other basic human needs.

..... and **2**

(*b*) What is normal body temperature?

Answer ..... °C **1**

(*c*) (Circle) the correct word in each box in the sentence below.

If the air temperature is **lower** than your body temperature,

your body will [lose / gain] heat and you may start to [sweat / shiver] . **2**

7. Fossil fuels are our main source of energy.

(*a*) Which fossil fuel is used to make petrol?

..... **1**

(*b*) Why should we try to conserve fossil fuels?

..... **1**

(*c*) Which gas is needed to burn fossil fuels?

..... **1**

[Turn over

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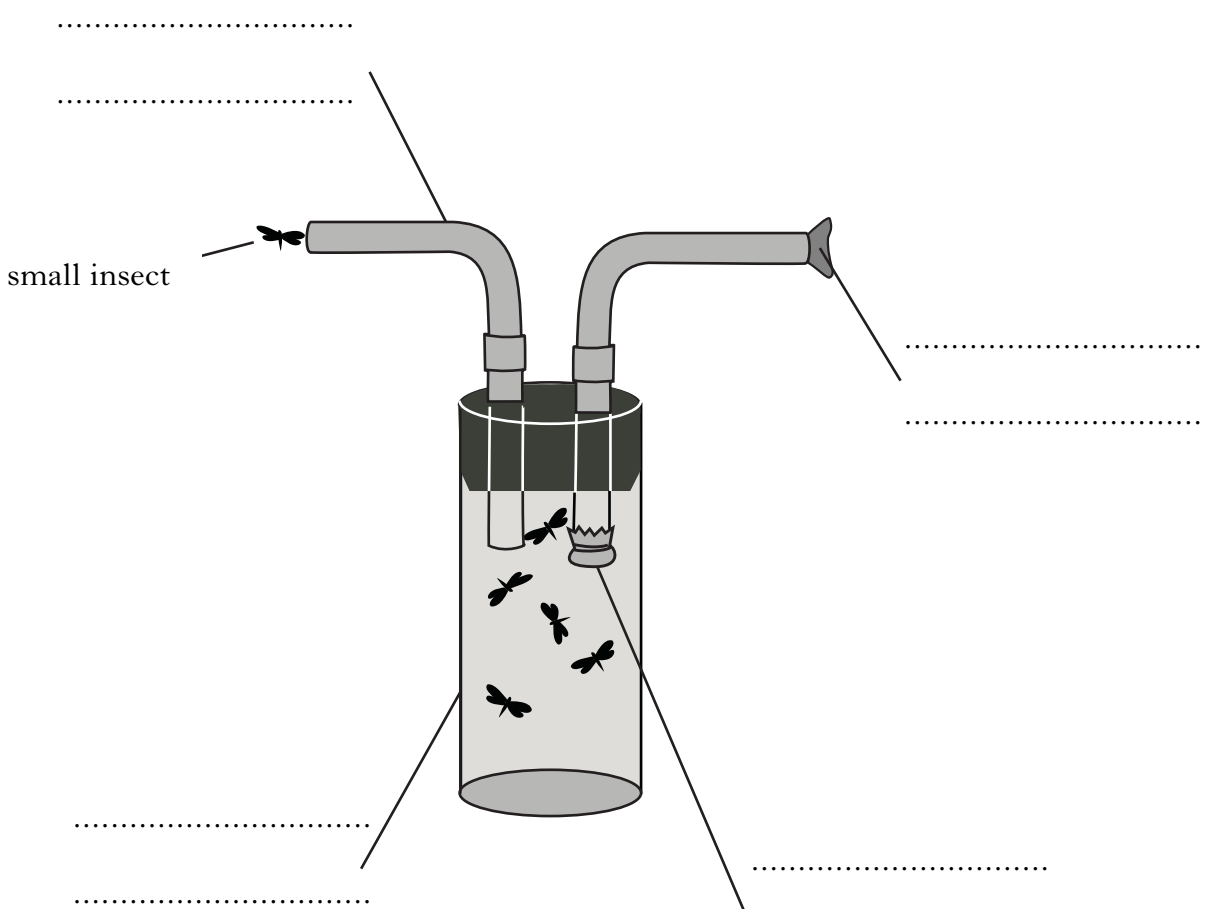
8. Read the information below and use it to label the diagram.

Scientists can capture small insects using a pooter. The end of the **capture tube** is placed very close to the small insect. The insect is sucked into the **collection jar** when the scientist draws in air through the **mouth piece**. The **fine mesh** stops the insect from being drawn into the scientist's mouth.



2

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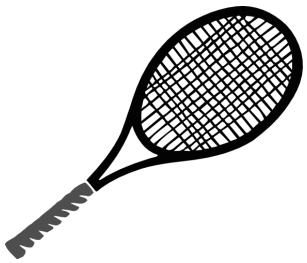
9. Use the information in the passage to answer the questions.



The design of tennis racquets has changed over the last hundred years. Early tennis racquets had a solid wooden frame and strings made from animal gut. By the 1930s most racquets were made from layers of wood glued together instead of solid wood. Although this made the racquets a little lighter, they lacked strength.

In the 1960s, metal racquets were introduced. These were stronger and lighter than wooden racquets. At first, the metal used was steel. When racquets with larger heads were introduced, aluminium was used because it is a lighter metal.

Today, tennis players use racquets with stiffer frames to give more control of the ball. The racquets can be made from graphite which is a mixture of carbon fibre and plastic resin. Graphite frames are even stronger and lighter than aluminium frames.

(*a*) Describe **fully** the early tennis racquets.

.....

.....

..... **1**

(*b*) What advantages do metal racquets have over wooden racquets?

.....

..... **1**

(*c*) What is graphite?

.....

..... **1**

[Turn over

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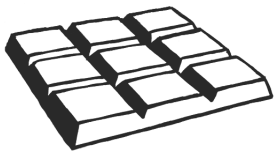
10. (*a*) A bar of chocolate contains 540 kilojoules of energy.

There are 9 squares in the bar.

How many kilojoules of energy are in **one** square of chocolate?

Space for working



..... kilojoules **1**

(*b*) A packet of crisps contains 470 kilojoules of energy.

Calculate the number of kilojoules of energy in **three** packets of crisps.

Space for working

..... kilojoules **1**

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11. A racing driver's overalls are flame-proofed for safety reasons.

(*a*) What does **flame-proofed** mean?

.....

..... **1**

(*b*) Explain why the overalls should be dry-cleaned and not washed.

.....

..... **1**

[Turn over

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12. The table shows the energy used to heat a building during the months July to November. It also shows the average outdoor temperature during these months.

Month	*Energy used* (kWh)	*Average outdoor temperature* (°C)
July	450	18
August	500	17
September	700	14
October	850	12
November	1000	10

(*a*) Calculate the **total** energy used in the months when the average outdoor temperature was **less than 15 °C**.

Space for working

Answer ..... kWh **2**

(*b*) Complete the **conclusion** below by circling the correct answer in the box.

As the average outdoor temperature falls, the energy used

stays the same
decreases
increases

. **1**

(*c*) Predict the energy used in May when the average outdoor temperature was 15 °C.

..... kWh **1**

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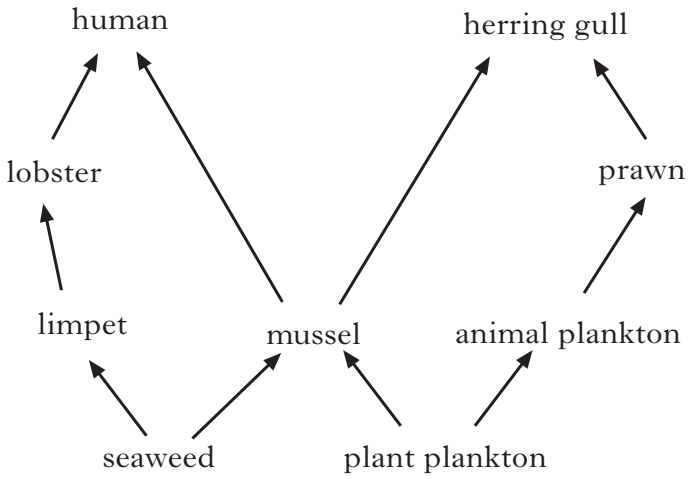
13. A food web is shown below.



(*a*) Where does seaweed get its energy from?

..... **1**

(*b*) **From the food web**, give a food chain showing four organisms.

..... → ..... → ..... → **1**

(*c*) A prawn is both a predator and a prey.

Name **one** other organism from the food web that is **both** a predator and a prey.

..... **1**

[Turn over

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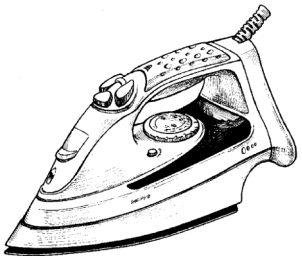
14. An iron is fitted with a thermostat which keeps the iron at a steady temperature.

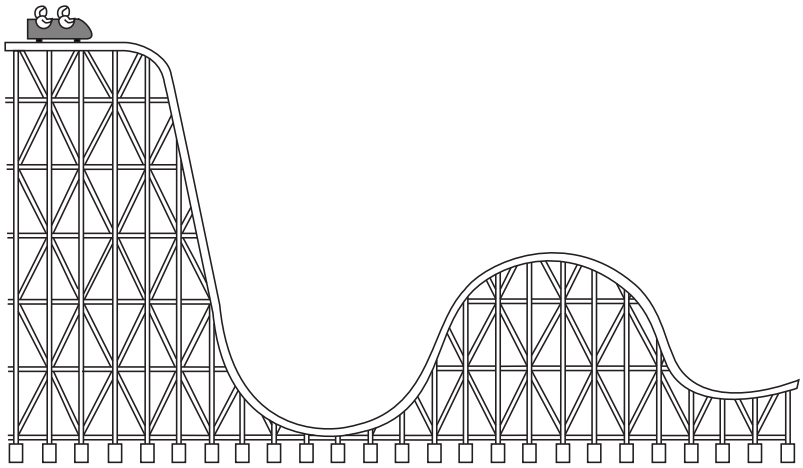


Circle the **two** appliances shown below which are also fitted with a thermostat.

fridge	food mixer
toaster	oven

1

15. A rollercoaster must be very strong for safety.



(*a*) What **shape** makes the rollercoaster very strong?

..... **1**

(*b*) Parts of the rollercoaster train are made from a mixture of metals. What name is given to a mixture of metals?

..... **1**

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16. The electrical insulation on the wires in a plug is colour coded.

The colours used are brown, blue and yellow/green.

(*a*) What colour of insulation is used for the live wire?

..... **1**

(*b*) There are safety devices in a plug.

(i) Which wire is a safety device?

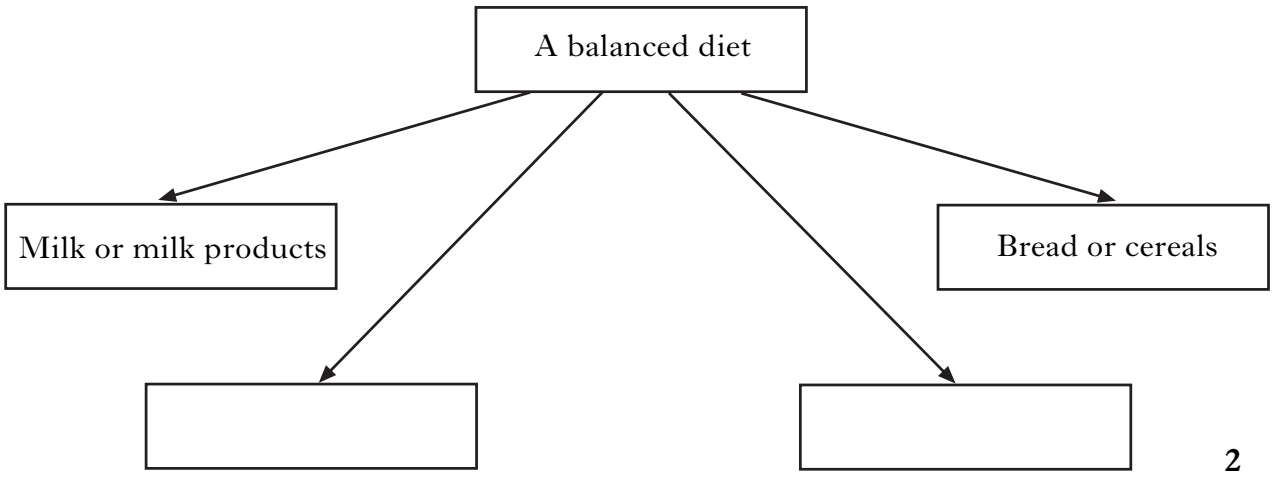
..... **1**

(ii) Name another safety device found in a plug.

..... **1**

17. (*a*) The diagram shows two of the four food groups that make up a balanced diet.

Complete the diagram by adding the other **two** food groups.



2

(*b*) Eating too much fat increases the risk of heart disease.

Give **one** other factor which increases the risk of heart disease.

..... **1**

[Turn over

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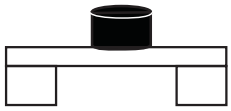
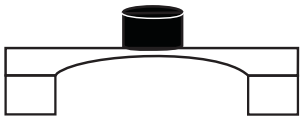
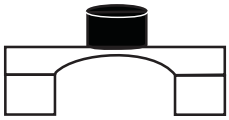
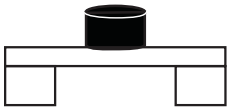
18. Janet investigated the strength of model bridges.

She added weights to each bridge until the bridge collapsed.

1  Length of bridge 15 cm Material used paper	2  Length of bridge 20 cm Material used card
3  Length of bridge 15 cm Material used card	4  Length of bridge 15 cm Material used card

(*a*) Janet wanted to find out how the length of a bridge affects its strength.

Which **two** boxes show the experiments she should compare for a fair test?

Box numbers ..... and **1**

(*b*) Janet compared the experiments in boxes 1 and 4.

What was she trying to find out?

..... **1**

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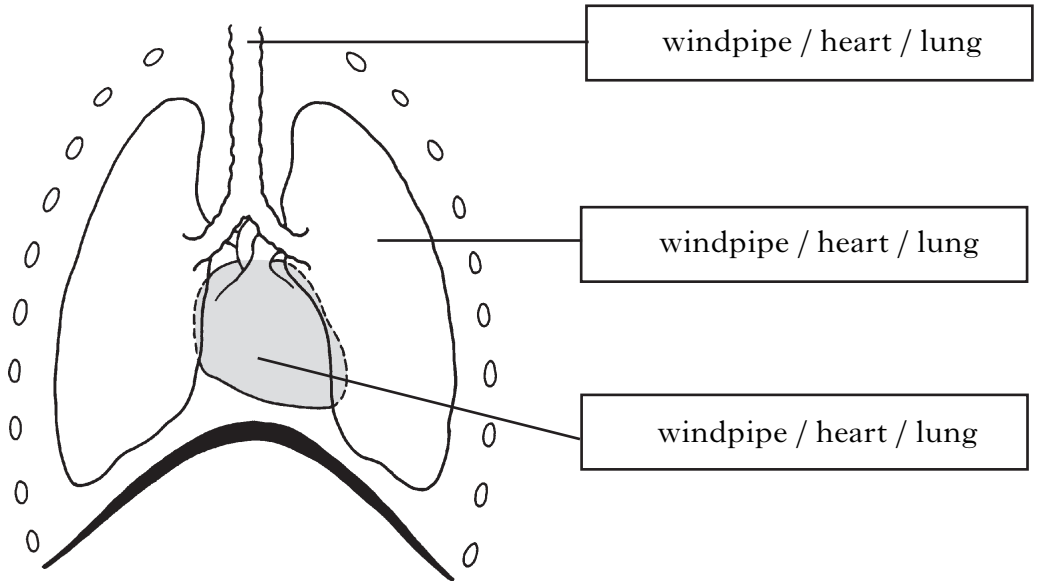
19. (*a*) The diagram shows parts of the body.

Complete the labels by (circling) the correct word in each box.



2

(*b*) Which of the following statements describes the function of the heart?

A Allows oxygen into the blood

B Maintains the temperature of the blood

C Pumps blood around the body

D Cleans the blood

Underline the correct answer. **1**

[Turn over

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20. There are four different blood groups called group A, group O, group B and group AB. For Japanese people, the most common blood group is A, with 38% having this type of blood. 30% of Japanese people have blood group O and 22% have blood group B. The remaining 10% have blood group AB.

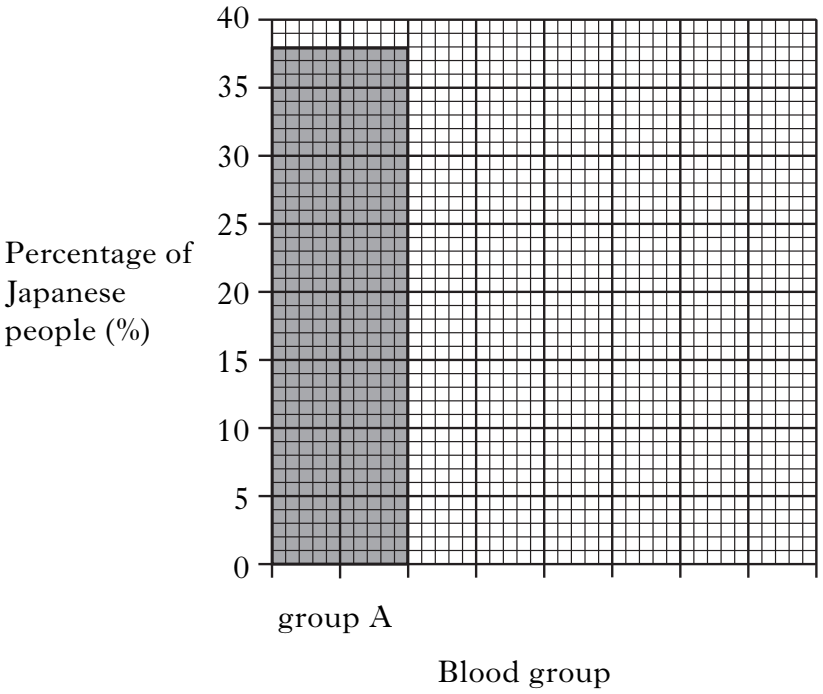
(*a*) Use this information to complete the table below.

Blood group	*Percentage of Japanese people* (%)

2

(*b*) Use this information to complete the bar graph.

(Another copy of this graph, if required, may be found on page 20.)



2

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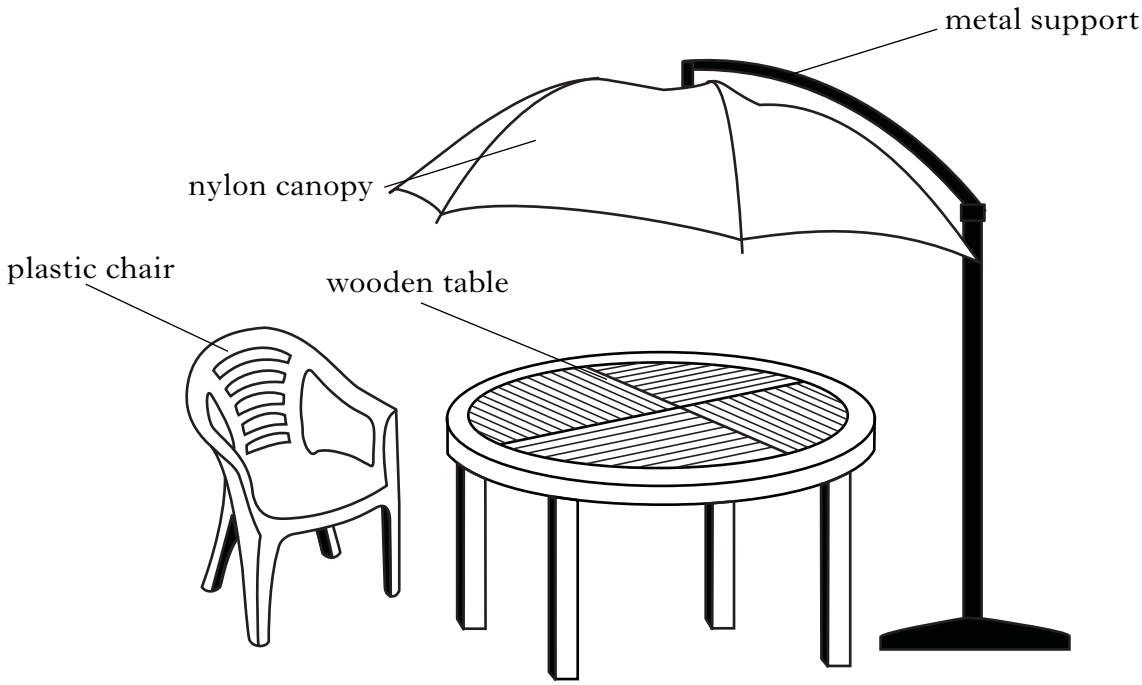
21. The Smith family have some garden furniture.

The materials used to make the furniture are shown in the diagram.



(*a*) Which material could be damaged by corrosion?

..... **1**

(*b*) Which material could be protected by pesticide treatment?

..... **1**

[Turn over

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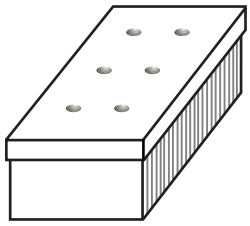
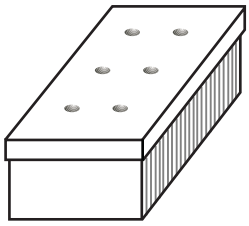
22. In an investigation, different organisms were put into three boxes with air holes. The boxes were left for five days.



Box 1

Day 1
3 grass roots
3 centipedes

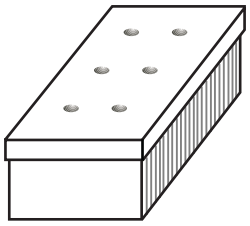
Day 5
3 grass roots
3 dead centipedes



Box 2

Day 1
3 millipedes
3 centipedes

Day 5
0 millipedes
3 centipedes



Box 3

Day 1
3 grass roots
3 millipedes

Day 5
0 grass roots
3 millipedes

Use this information to answer the questions below.

(*a*) What do millipedes eat?

..... **1**

(*b*) Explain why there were no millipedes in **Box 2** after five days.

.....

..... **1**

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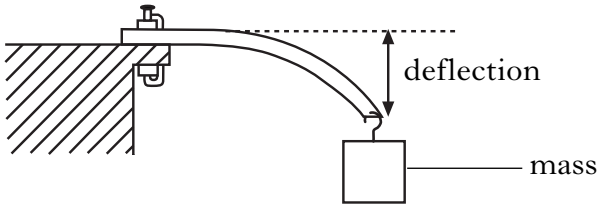
23. Scott was investigating the flexibility of steel. He clamped a steel strip to a bench. He hung different masses from the end of the steel strip and measured its deflection.

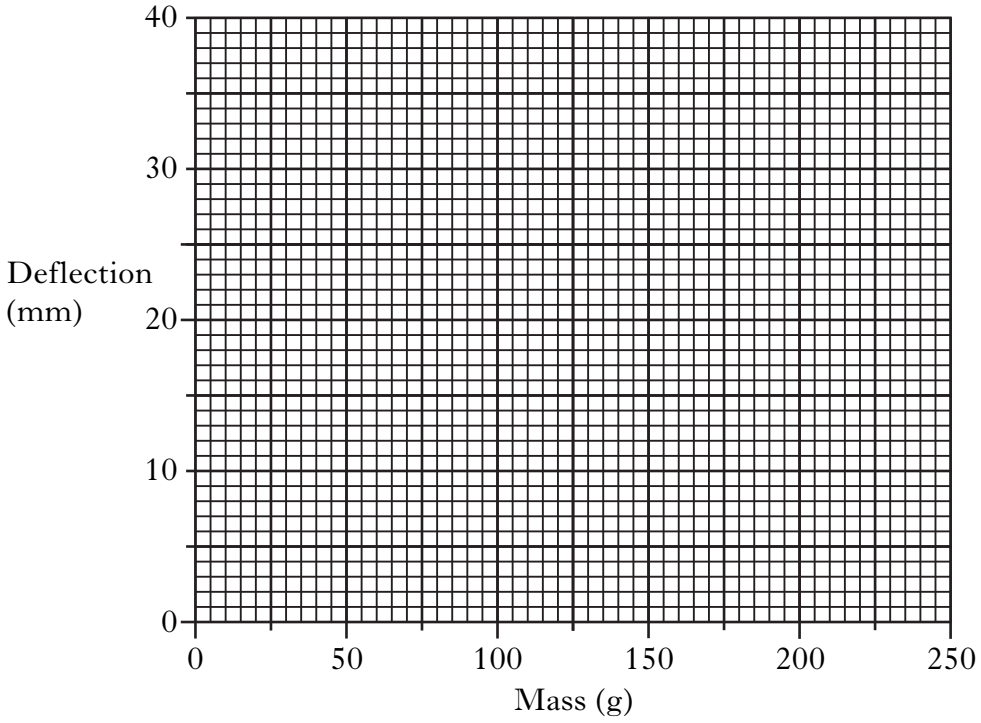


His results are shown in the table.

Mass (g)	0	50	100	150	200	250
Deflection (mm)	0	7	13	19	26	32

(*a*) Use these results to draw a **line** graph.

(Another copy of the graph, if required, may be found on page 20.)



2

(*b*) Draw **one** conclusion from these results.

.....

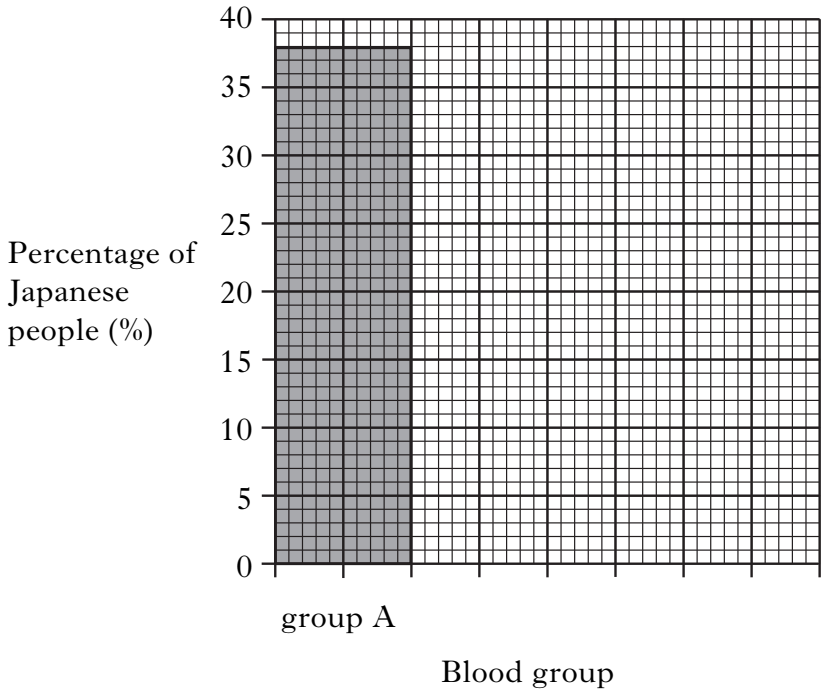
..... **1**

(*c*) Predict the deflection if a 75 g mass is hung on the end of the steel strip.

..... mm **1**

[*END OF QUESTION PAPER*]

ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 20(*b*)



ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 23(*a*)