FOR OFFICIAL USE

F

	KU	PS
Total Mark		

3700/27/01

NATIONAL QUALIFICATIONS 2012

MONDAY, 30 APRIL
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*) Which page should Calvin look up to find out about a geological survey?

page **1**

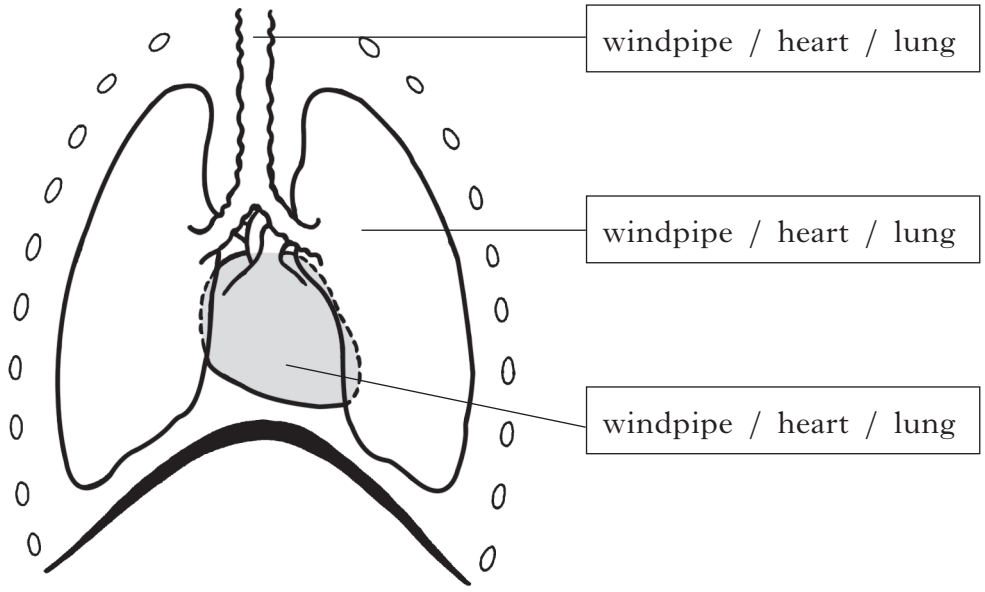
(*b*) Zoe looked up pages 18 and 30.

What was she trying to find out about?

..... **1**

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

(Circle) the correct word in each box to label the diagram.



2

(*b*) Some substances can damage your lungs if you breathe them in.

Name **one** of these harmful substances.

..... **1**

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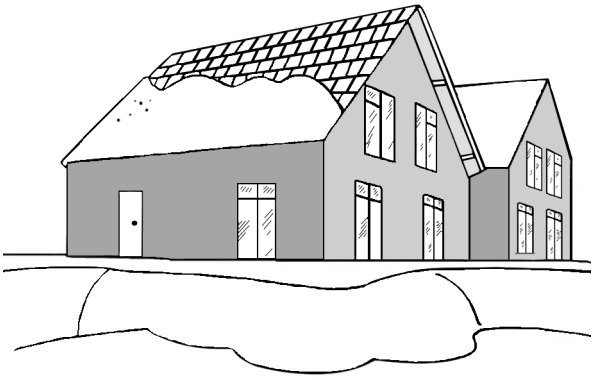
Marks | KU | PS

3. Mr Smith is trying to reduce his energy bills.



(*a*) Give **one** way in which Mr Smith can **insulate** his home to reduce heat loss.

..... **1**

(*b*) His neighbour's house is already fully insulated.

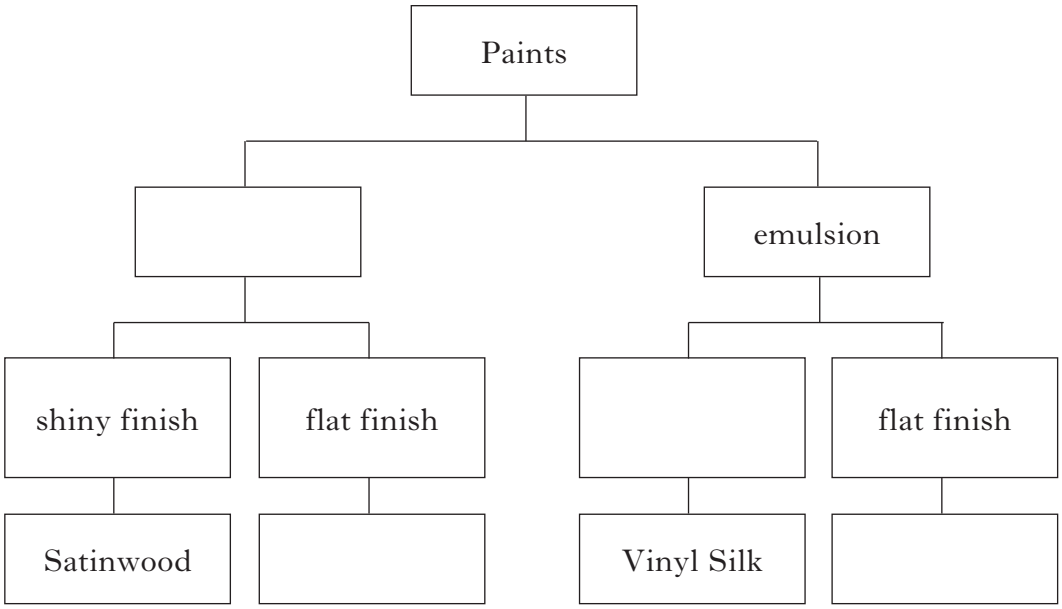
Give **one** other way that his neighbour can reduce his energy bills.

..... **1**

4. **<u>Paints</u>**

Satinwood and Eggshell are gloss paints.
Vinyl Silk and Vinyl Matt are emulsion paints.
Satinwood and Vinyl Silk give a shiny finish.
Eggshell and Vinyl Matt give a flat finish.

Use this information to complete the following key.



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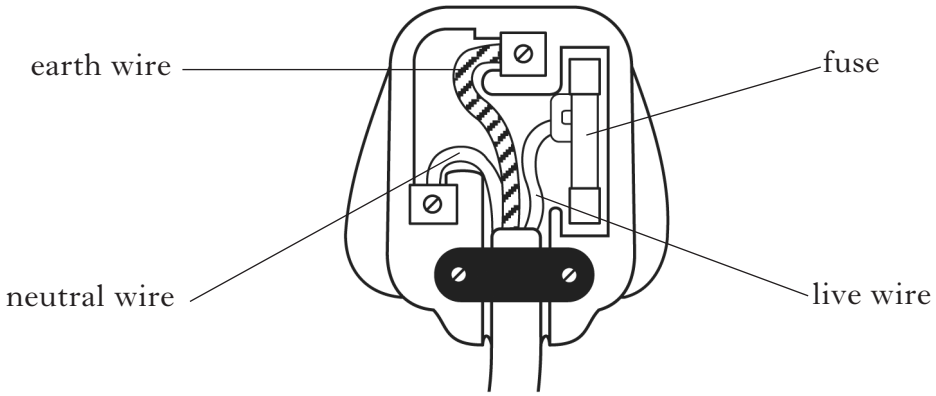
5. The diagram below shows an electrical plug.



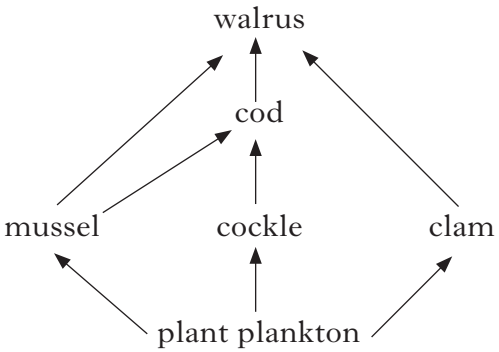
(*a*) Name the wire which has brown insulation.

..... **1**

(*b*) Which **two** parts of the plug are safety devices?

..... and **1**

6. (*a*) A marine food web is shown below.



(i) Where does the plant plankton get its energy from?

..... **1**

(ii) **From the food web above**, give a food chain containing four organisms.

..... → ..... → ..... → **1**

(*b*) **Temperature** is an environmental factor which affects where animals and plants live.

Give **one** other environmental factor which affects where animals and plants live.

..... **1**

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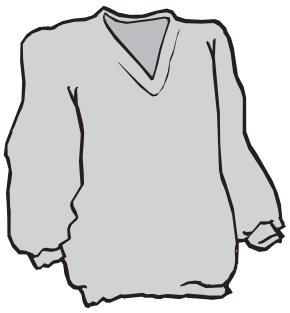
7. A school is selecting a suitable jumper for its school uniform.

Jumper A
100% wool



Jumper B
90% wool
10% polyester

Jumper C
80% wool
20% polyester

Which jumper is the most hard-wearing?

Jumper **1**

8. The grid shows some parts of the human body.

1 windpipe	2 heart	3 blood
4 lungs	5 stomach	6 brain

(*a*) Which part is a muscular pump?

Box number **1**

(*b*) Which part carries oxygen around the body?

Box number **1**

[Turn over

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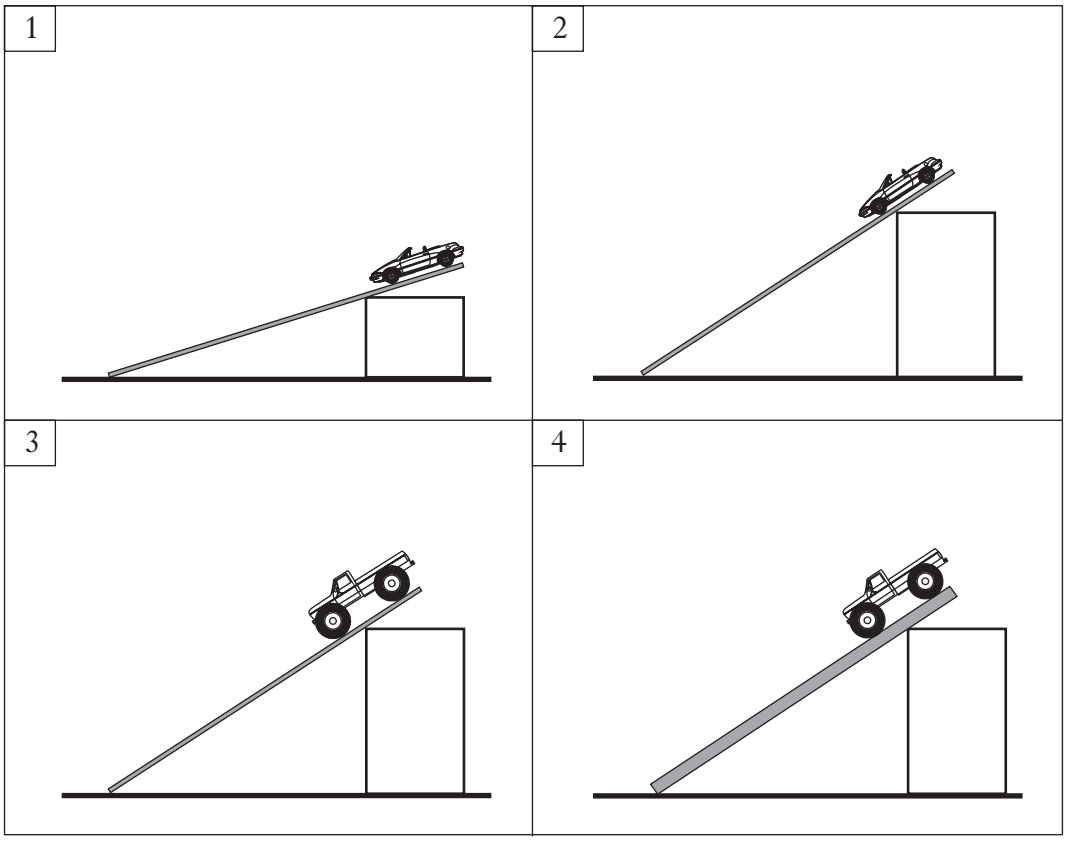
9. Angela and Janine investigated the time taken for a toy car to travel down a slope.



(*a*) They wanted to find out if the height of the slope affected the time taken.

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

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

(*b*) What should they be trying to find out if they compared the experiments in boxes **2** and **3**?

..... **1**

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10. Glass is one type of household waste.

(*a*) Name **one** other **type** of household waste.

..... **1**

(*b*) Glass can be recycled.

(i) What does recycled mean?

..... **1**

(ii) Name **one** other type of material that can be recycled.

..... **1**

11. Name a substance that can pollute

(*a*) air.

..... **1**

(*b*) water.

..... **1**

[Turn over

DO NOT WRITE IN THIS MARGIN

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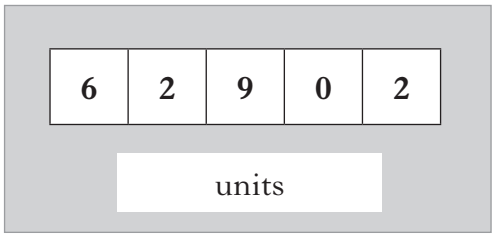
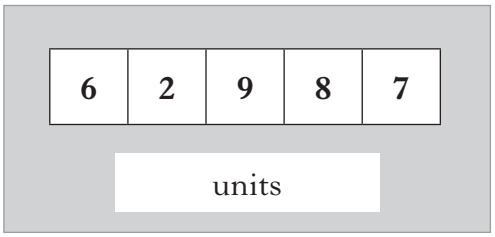
12. (*a*) George wanted to find out how much electricity he was using in one week.

He read the electricity meter at the start of the week.

At the end of the week he read the meter again.



first meter reading



second meter reading

(i) Calculate the number of units of electricity used.

Space for working

Answer ..... units **1**

(ii) One unit of electricity costs 11p.

Calculate the cost of the electricity used that week.

Space for working

Answer..... **1**

Marks | KU | PS

12. (continued)

(*b*) George compared the cost of electricity from different suppliers. Northpower charges 17p per unit of electricity. 14p is the cost per unit from Southpower. The cost per unit from Westpower is 12p while from Eastpower it is only 10p.

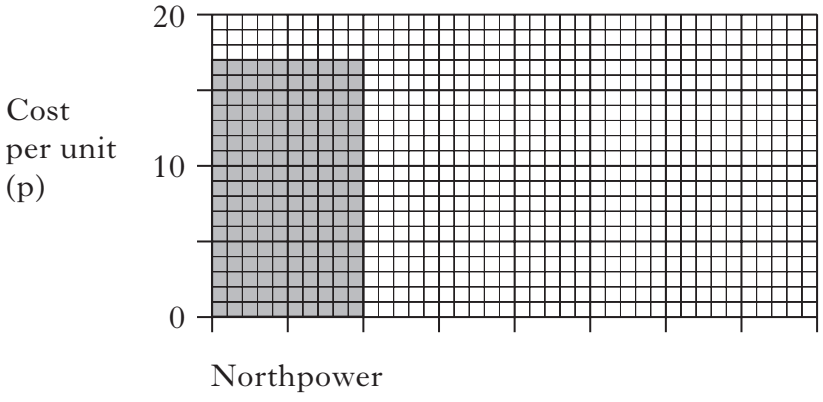
(i) Use this information to complete the table.

Electricity Supplier	*Cost per unit* (p)

2

(ii) Use this information to complete the bar graph.

(Another copy of the graph may be found on *Page nineteen*).



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13. The boxes below show different groups of materials.

1 silver, copper, iron	2 paper, wood, water	3 petrol, paper, cotton
4 water, petrol, stone	5 aluminium, iron, cotton	6 wood, water, stone

Which box shows

(*a*) materials that are **all** metals?

Box number **1**

(*b*) materials that are **all** natural?

Box number **1**

(*c*) materials that **all** catch fire easily?

Box number **1**

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14. Fossil fuels are our main source of energy.

(*a*) (i) Name **two** fossil fuels.

..... **1**

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

.....

..... **1**

(*b*) Renewable energy sources can be used to produce electricity.

One renewable energy source is **wind power**.

Name **one** other renewable energy source.

..... **1**

(*c*) The table shows the power generated by a wind turbine at different wind speeds.

Wind speed (m/s)	7·5	9	10	11	12	14
Power generated (kW)	100	200	300	400	500	600

(i) Complete the conclusion by (circling) the correct answer in the box.

As the wind speed increases, the power generated

increases
decreases
stays the same

. **1**

(ii) Predict the power generated when the wind speed is 13 m/s.

..... kW **1**

[Turn over

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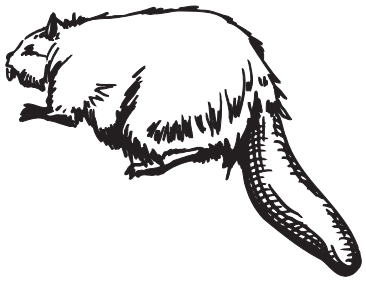
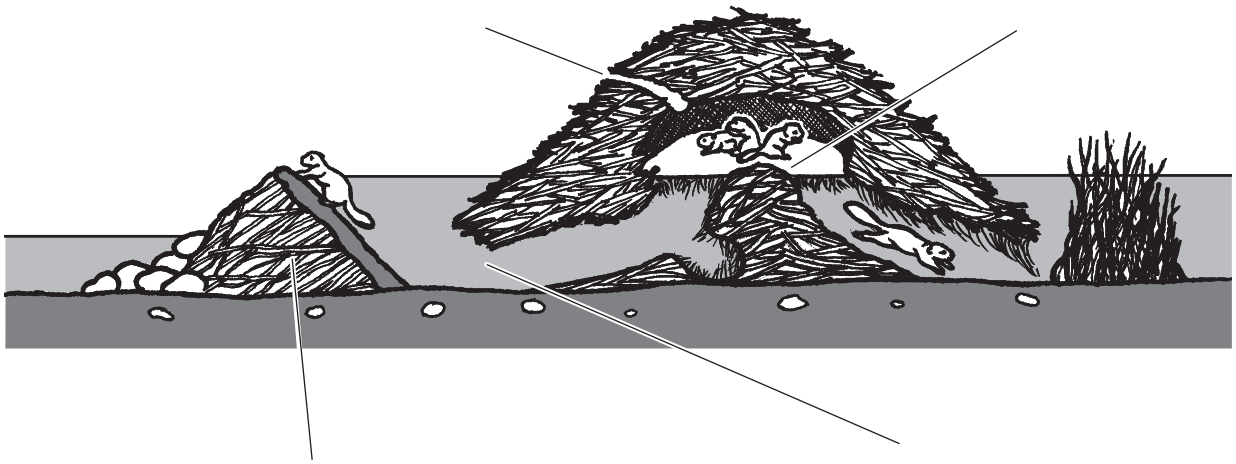
Marks | KU | PS

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



Beavers use branches, sticks and mud to build a lodge. The **log dam**, in front of the lodge, raises the water level. The lodge has a dry **upper chamber** above the water level, where the beavers live. There is also an area for drying off when they come out of the water. An **air vent** allows fresh air to get into the lodge. The lodge has two entrances, both of which are under water. The main entrance is narrow and steep to keep predators out. The **food entrance** is wider and less steep with a gently sloping floor.



....

....

log

....

dam

.... **2**

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16. The table below shows the size of bulbs and the depth at which they should be planted.

Bulb	*Size of bulb* (cm)	*Depth of planting* (cm)
Snowdrop	2	6
Tulip	3	9
Hyacinth	5	15
Daffodil	8	24

(*a*) Which bulb is 3 cm in size?

..... **1**

(*b*) Which bulb should be planted at the greatest depth?

..... **1**

(*c*) Draw **one** conclusion from the information in the table.

.....

..... **1**

(*d*) Another bulb has a size of 4 cm.

Predict the depth at which this bulb should be planted.

..... cm **1**

[Turn over

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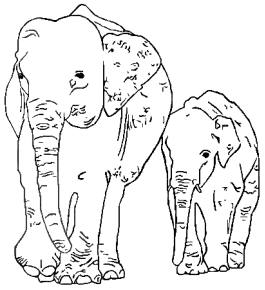
17. Read the passage and then answer the questions below.

Humans can hear sounds between 20 Hertz (a low-pitched sound) and 20 000 Hertz (a high-pitched sound). This means that the human hearing range is 20 to 20 000 Hertz.

The hearing ranges of other animals are different from that of humans. Some animals can hear sounds which are too high-pitched for humans to hear. These are called ultrasonic sounds. For example, a dog whistle is easily heard by a dog but not by humans because the sound that the whistle makes is too high-pitched.



Other animals can hear sounds that are too low-pitched for humans to hear. About 65% of the noises an elephant makes are pitched below the human hearing range. Elephants make low rumbling sounds that can be heard by other elephants up to 5 kilometres away.

(*a*) What is the human hearing range?

..... to ..... Hertz **1**

(*b*) What name is given to sounds which are too high-pitched for humans to hear?

..... **1**

(*c*) Why can humans not hear a dog whistle?

..... **1**

(*d*) From what distance can elephants hear the low rumbling sounds made by other elephants?

..... **1**

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18. Match the use of each material below with its property.

One has been done for you.

Use of material	**Property of material**
steel girders	resistance to corrosion
copper wiring	thermal conductivity
aluminium saucepan	electrical conductivity
PVC drain pipes	strength

2

19. Use the words in the boxes to answer the questions below.

1 shivering	2 bronchitis	3 anorexia
4 lung cancer	5 sweating	6 heart disease

(*a*) Which **two** boxes show conditions that may be associated with unhealthy eating habits?

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

(*b*) Which box describes a process that decreases body temperature?

Box number **1**

20. In which of these lists do all the drinks contain **one unit** of alcohol?

A a single whisky, a glass of wine, a half pint of beer

B a single whisky, a glass of wine, a pint of beer

C a double whisky, a glass of wine, a half pint of beer

D a double whisky, a glass of wine, a pint of beer

Underline the correct answer. **1**

[Turn over

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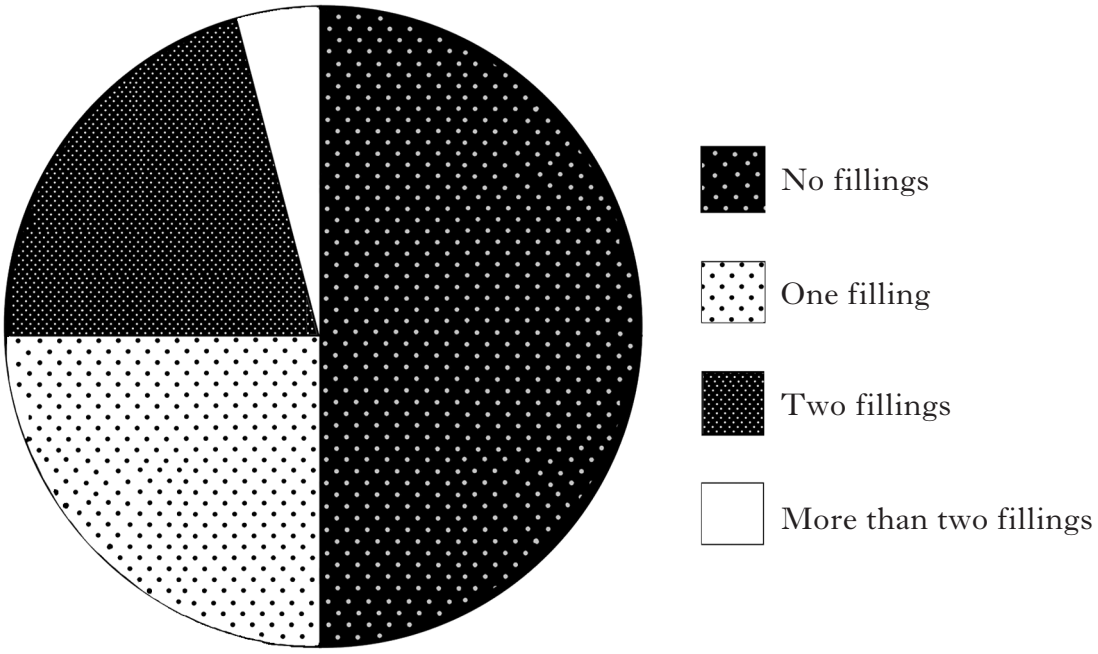
21. In a survey, secondary school pupils were asked how many fillings they had in their teeth.

The results are shown in the pie chart.



(*a*) What percentage of pupils had one filling?

..... % **1**

(*b*) There were 80 pupils in the survey.

How many pupils had no fillings in their teeth?

Space for working

Answer ..... pupils **1**

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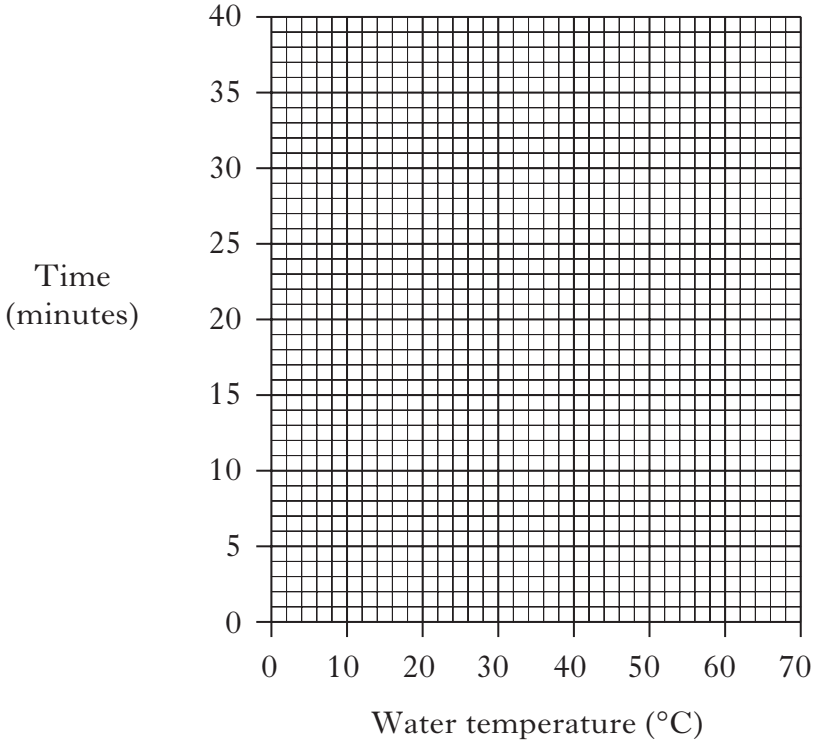
22. The table below shows the time taken for a biological washing powder to completely remove an egg stain from a shirt at different water temperatures.

Water temperature (°C)	10	20	30	40	50	60
Time (minutes)	34	23	16	9	12	16

(*a*) Draw a **line** graph to show these results.

(Another copy of the graph may be found on *Page nineteen*).



2

(*b*) At what water temperature does the washing powder remove the egg stain most quickly?

..... °C **1**

[Turn over

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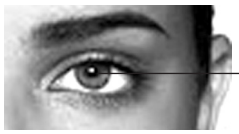
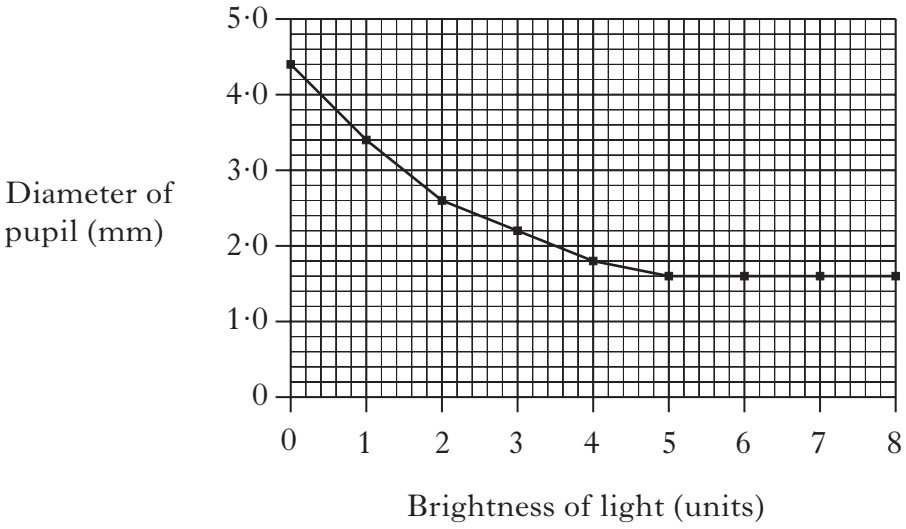
23. Light enters the eye through the pupil.



The graph shows how the diameter of the pupil changes as the brightness of light changes.



Complete the following sentences by (circling) the correct answer in each box.

(*a*) As the brightness of light increases from 0 to 5 units,

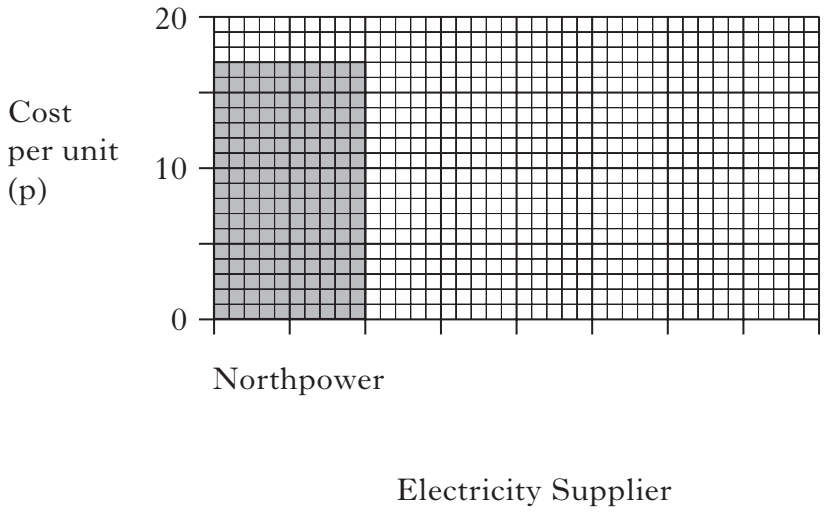
the diameter of the pupil [increases / decreases / stays the same]. **1**

(*b*) As the brightness of light increases from 5 to 8 units,

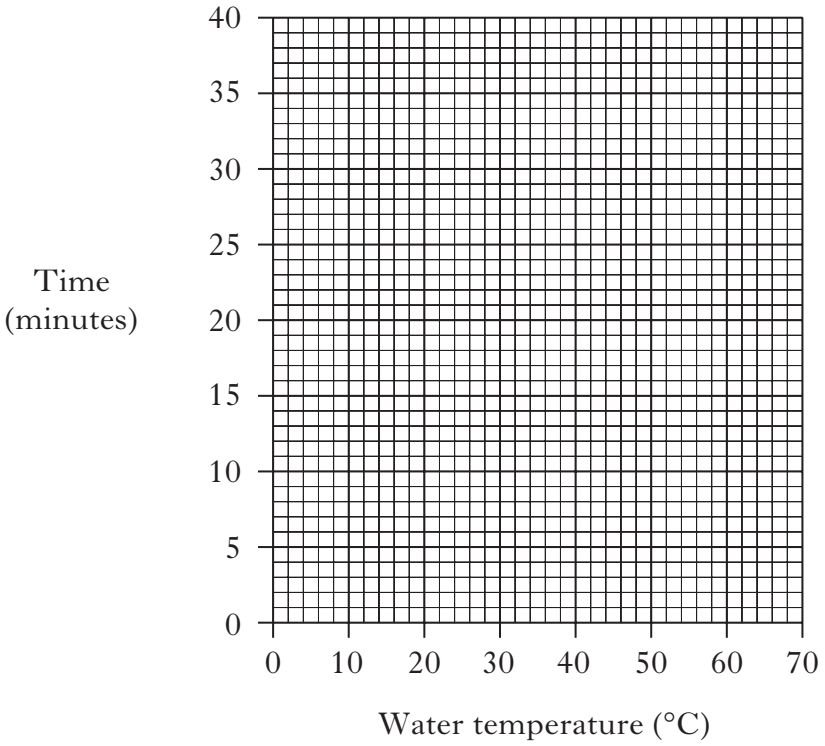
the diameter of the pupil [increases / decreases / stays the same]. **1**

[*END OF QUESTION PAPER*]

ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 12(*b*)(ii)



ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 22(*a*)



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