FOR OFFICIAL USE

F

	KU	PS
Total Mark		

3700/401

NATIONAL QUALIFICATIONS 2009

THURSDAY, 28 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.

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

Accident prevention		1	Cuts		17
Allergies		10	Eye injuries		29
Arm injury		22	Fainting		15
Asthma		9	Food poisoning		12
Bites		11	Fractures	– open	19
Bleeding	– internal	16		– closed	21
	– open wound	18	Head injury		27
Breathing		8	Leg injury		23
Bruising		14	Shock		24
Burns	– chemical	30	Sprains		25
	– heat	31	Stings		11
Choking		5	Vomiting		6

(*a*) Which **two** pages would you look up to find out about vomiting and food poisoning?

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

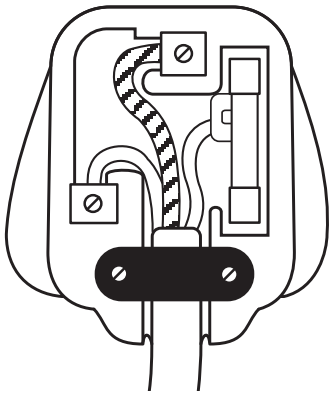
(*b*) Megan looked up pages 16 and 24.

What was she trying to find out about?

..... **1**

2. The wires in a plug are called live, neutral and earth.

Each wire has a different colour of insulation.



(*a*) What **colour** is the insulation on the neutral wire?

..... **1**

(*b*) **Name** the wire which is a safety device in a plug.

..... **1**

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3. A pair of children's pyjamas has this label attached to it.

(*a*) Which of the following is the best description of a flame-proofed material?

A The material has been treated so that it will never catch fire.

B The material has been tested using a bunsen flame and did not burn.

C The material has been treated so that it does not catch fire easily.

D The material has been tested to show that it burns with a yellow flame.

Underline the correct answer. **1**

(*b*) An old pair of pyjamas which had been washed regularly, was no longer flame-proof.

Explain why.

.....

..... **1**

4. This box shows some materials.

steel	copper	nylon	polystyrene

Use these materials to complete the table below.

Material	*Use of material*
	Packaging, disposable cups
	Carpets, climbing ropes
	Bridges, car bodies
	Water pipes, electrical wiring

2

[Turn over

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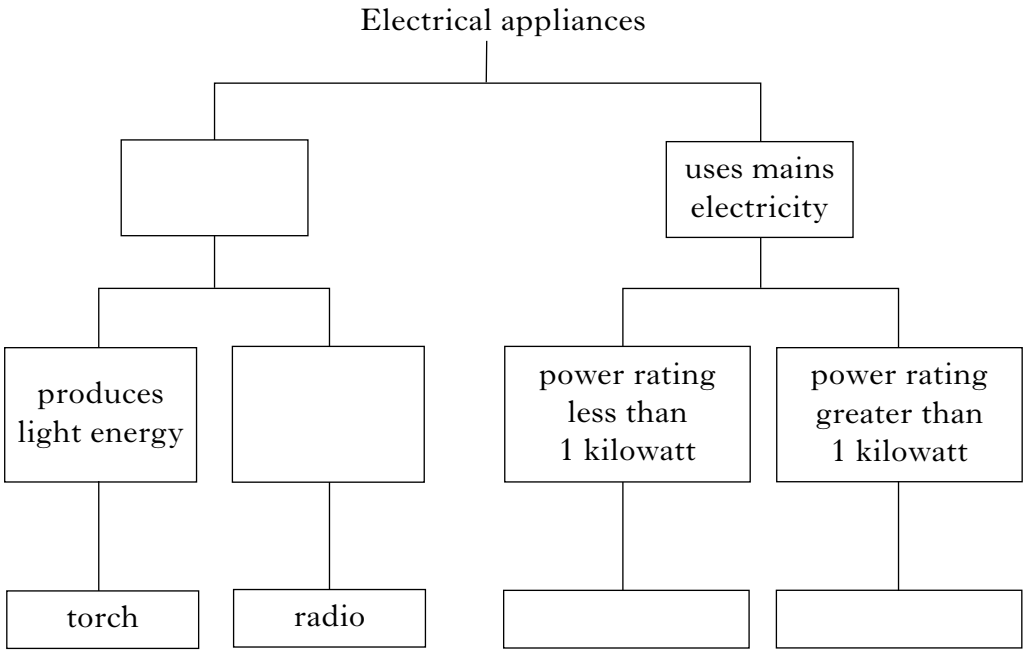
5. Cookers, televisions, torches and radios are electrical appliances.

A torch and a radio use batteries. A radio produces sound energy and a torch produces light energy. A cooker uses mains electricity and has a power rating greater than 1 kilowatt. A television has a power rating less than 1 kilowatt and also uses mains electricity.

Use this information to complete the following key.



2

6. Mr Buchan uses electricity for heating his home.

His neighbour does **not** use electricity for heating.

State **one** energy source that could be used to heat his neighbour's home.

..... **1**

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7. (*a*) The table below shows information about recycled waste, and waste dumped in land-fill sites over a 5 year period.

Year	*2001*	*2002*	*2003*	*2004*	*2005*
Recycled waste (million tonnes)	5	6	8	10	13
Waste dumped in land-fill sites (million tonnes)	160	150	130	110	90

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

As the amount of recycled waste increases, the amount of waste dumped in land-fill sites

increases
decreases
stays the same.

1

(ii) Which **one** of the following, A, B, C or D, was the most likely information for the year 2006?

	A	B	C	D
Recycled waste (million tonnes)	15	9	10	17
Waste dumped in land-fill sites (million tonnes)	120	60	140	70

Letter .....

1

(*b*) Name one **type** of waste which can be recycled easily.

.....

1

[Turn over

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8. (*a*) David's **pulse rate** is 60 beats per minute.

What is his **heart rate**?

..... beats per minute **1**

(*b*) David exercised for 15 minutes and then rested for 5 minutes.

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

(i) While exercising, David's heart rate [increased decreased]. **1**

(ii) It took 5 minutes for David's heart rate to return to normal after he stopped exercising.

This is called the [resting recovery repairing] time. **1**

(*c*) **Stamina** is one aspect of fitness which can be improved by regular exercise.

Name **one** other aspect of fitness.

..... **1**

9. (*a*) Which of the following carries oxygen round the body?

A blood
B windpipe
C lung
D muscle

Underline the correct answer. **1**

(*b*) Complete the following sentences by (circling) the correct word in each box.

We start to shiver when our body temperature is [lower higher] than normal.

Shivering helps to makes our bodies [warmer cooler]. **1**

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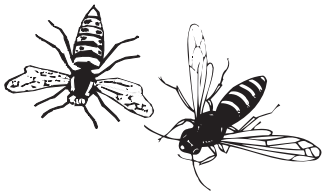
10. Use the information in the passage to answer the questions.



Bees, wasps and termites are social insects. They live in family groups or colonies, and often build large nests. The number of insects in a colony can vary from a few hundred to several million.

Bees use wax to build hexagonal cells in their nests. Wasps build their nests from wood fibres, which they chew to produce a paper-like substance. Termites build large earth mounds which can be up to 6 metres high.

The insects in a colony differ in size and carry out different tasks. The smallest insects are called workers. Workers collect food, look after the young and repair the nest but are unable to reproduce. Larger insects, called soldiers, defend the nest from predators. Only one insect, called the queen, can reproduce. She is much bigger than the other members of the colony and may live for many years. A queen termite can lay up to 30 000 eggs a day and can live for 50 years, which is longer than any other insect.

(*a*) Name **three** types of social insects.

..... **1**

(*b*) Which type of insect uses wood fibres to build its nest?

..... **1**

(*c*) List **all** the tasks carried out by worker insects.

.....

.....

..... **1**

(*d*) Describe **two** ways in which the queen is different from the other insects in a colony.

1 .....

2 ..... **1**

[Turn over

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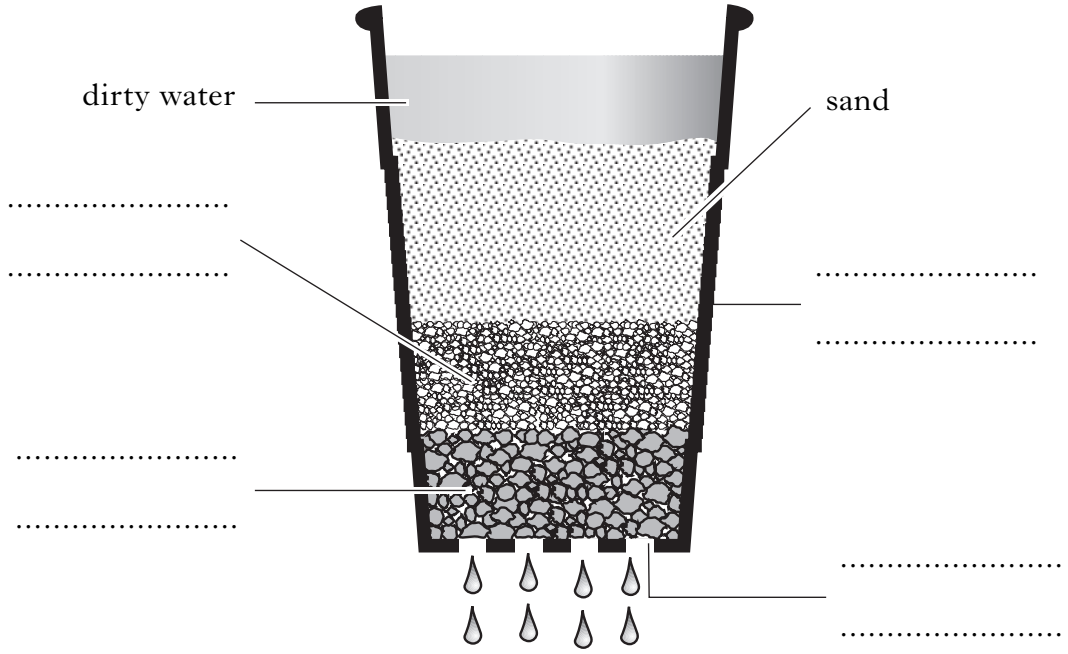
11. Read the information below and use it to label the diagram.

A group of pupils made a model filter bed to show how dirty water can be cleaned.

They put a layer of **coarse gravel** into the bottom of a **plastic cup**. This was covered with a layer of **fine gravel** and then a layer of fine sand. Dirty water was poured into the model filter bed. After a few minutes, the pupils observed clean water dripping from the **perforated base**.



2

12. Fossil fuels are our main source of energy.

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

..... and **1**

(*b*) Name the gas in the air that is needed to burn fossil fuels.

..... **1**

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13. A road tanker delivers unleaded petrol, super-unleaded petrol and diesel to a filling station.

The volume of unleaded petrol in the tanker is 6 600 litres. The volume of super-unleaded petrol is 1 200 litres.

(*a*) Calculate the **total** volume of petrol.

Space for working

Answer ..... litres **1**

(*b*) The total volume of all **three** fuels in the tanker is 11 000 litres.

Calculate the volume of diesel.

Space for working

Answer ..... litres **1**

[Turn over

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14. Smoking causes damage to the lungs.

(*a*) Tick (✓) the **three** harmful substances in tobacco smoke.

water vapour	
carbon monoxide	
nitrogen	
oxygen	
tar	
nicotine	

2

(*b*) Smoking increases the risk of lung cancer.

Name **one** other disease which may be caused by smoking.

..... **1**

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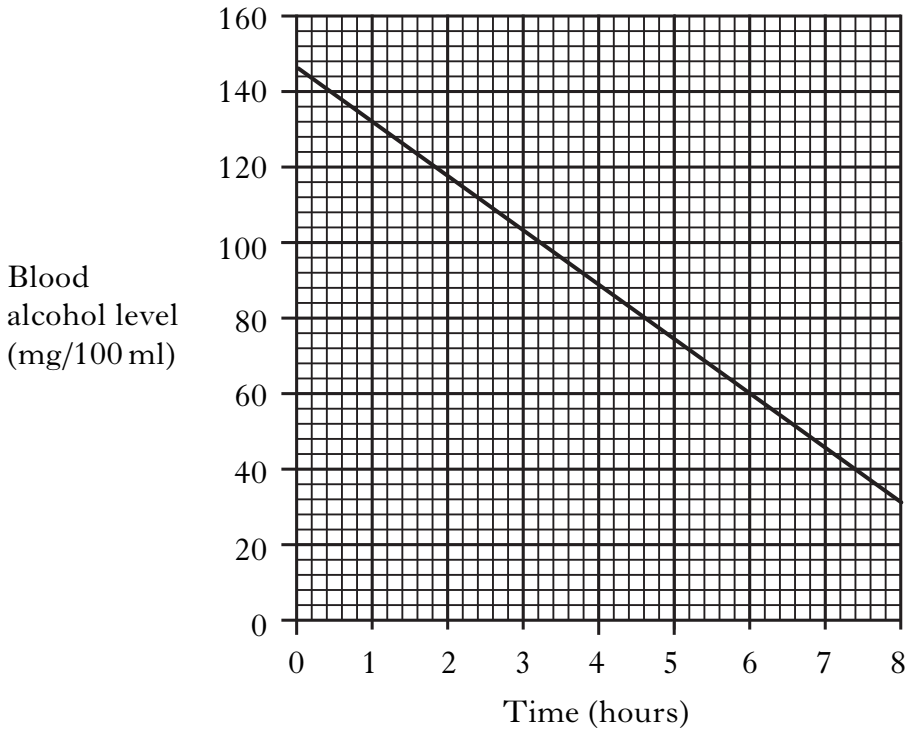
15. The line graph shows how a person's blood alcohol level changed over a period of time.



(*a*) Draw **one** conclusion from the information in the graph.

.....

..... **1**

(*b*) What is the person's blood alcohol level after 6 hours?

..... mg/100 ml **1**

(*c*) Drinking too much alcohol damages the body.

It can also affect a person's **behaviour**.

Give **one** example of how a person's behaviour can be affected by drinking too much alcohol.

..... **1**

[Turn over

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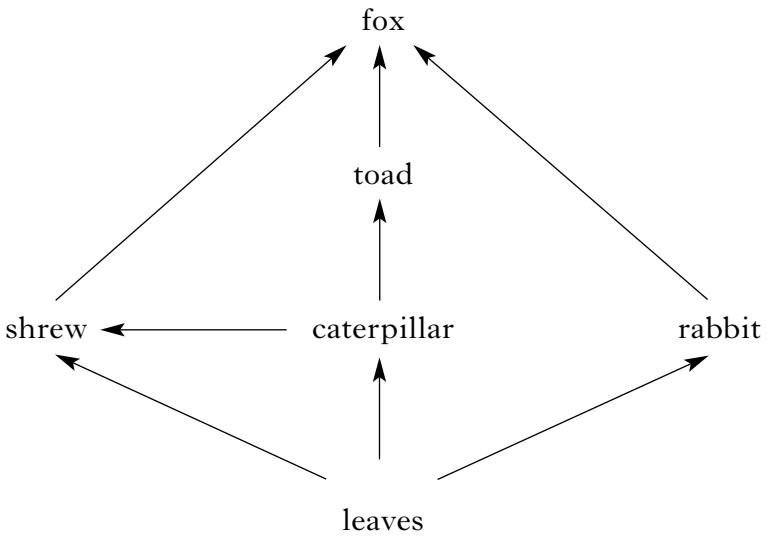
16. A food web from a forest is shown below.



(*a*) Name the producer in this food web.

..... **1**

(*b*) Name the organism that is a **prey** of the toad.

..... **1**

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

..... → ..... → ..... → **1**

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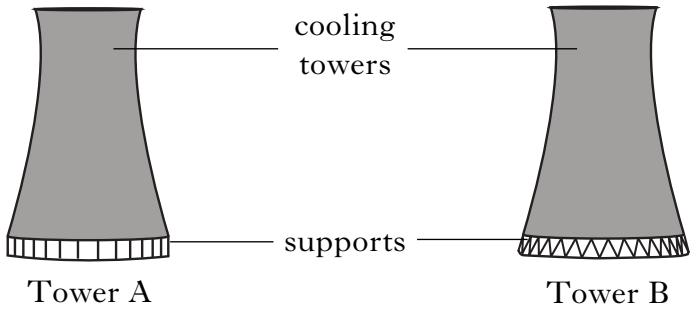
17. The pictures show cooling towers in a power station.



(*a*) Tower B is stronger than Tower A.

Explain why.

..... **1**

(*b*) The cooling towers are made from concrete.

Name **two** substances used to make concrete.

..... and **1**

18. (*a*) **Land, water** and **air** are parts of the environment which can be polluted.

Complete the table below.

Pollution problem	*Part of the environment which can be polluted*
A pipe leaks untreated sewage into a river	
Chemicals from an old factory site get into the soil	
Black smoke is produced by a forest fire	

2

(*b*) Which **one** of the statements below is an example of conservation?

A Creating wildlife parks

B Building new power stations

C Spraying crops with pesticides

D Clearing hedgerows around fields

Underline the correct answer. **1**

[Turn over

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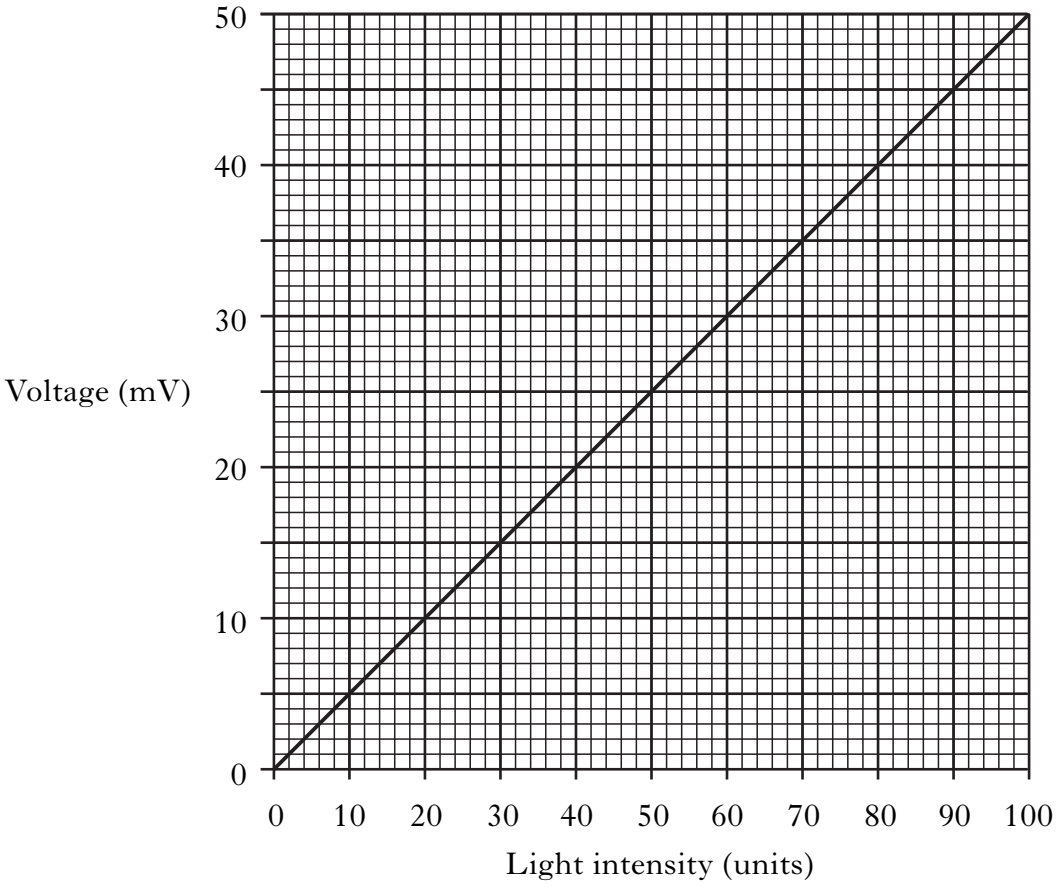
19. Solar power is a renewable source of energy.

(*a*) Name **two** other renewable sources of energy.

1 .....

2 ..... **2**

(*b*) The graph below shows the voltage produced by a solar cell when light of different intensities shines on it.



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

.....

..... **1**

(ii) What is the voltage when the light intensity is 70 units?

..... mV **1**

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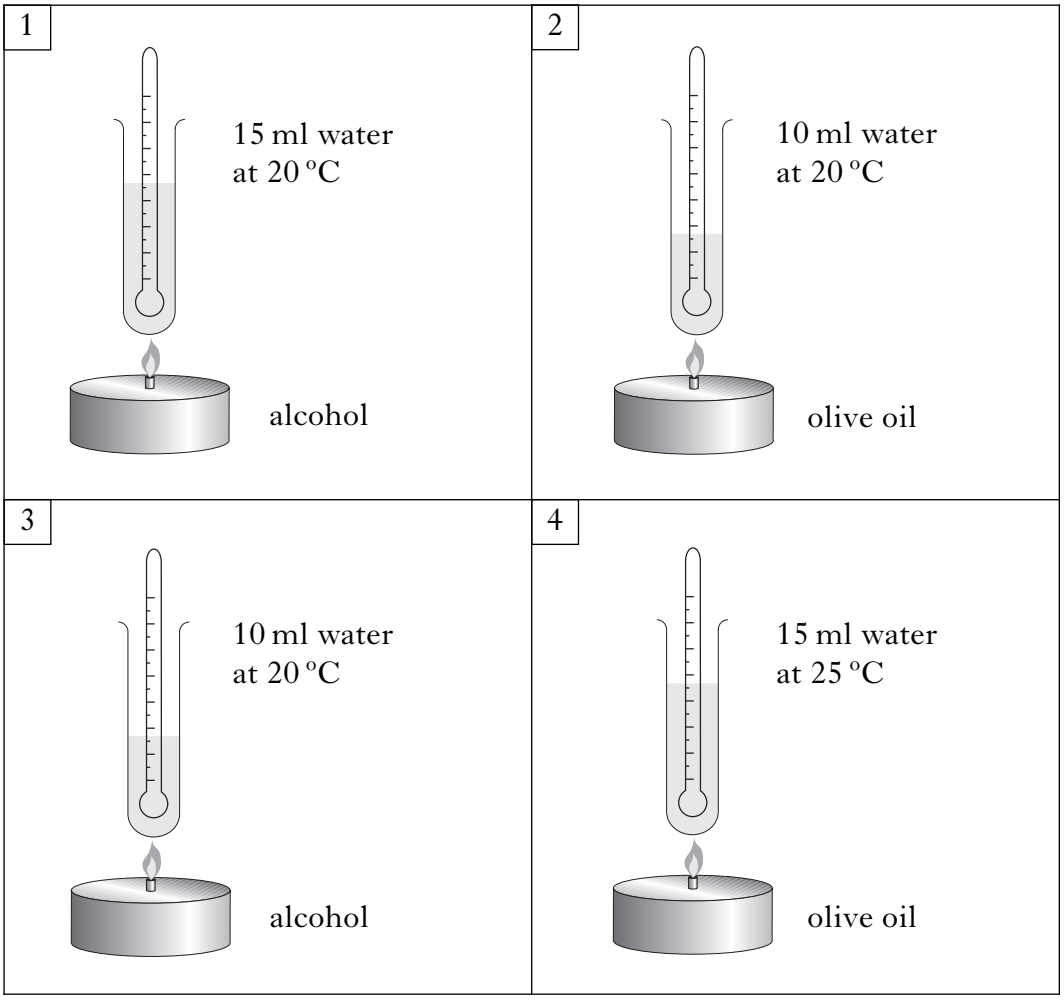
20. Craig investigated how quickly water could be boiled using liquid fuels.



(*a*) Craig wanted to find out whether alcohol or olive oil would boil the water faster.

Which **two** boxes should he choose for a fair test?

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

(*b*) Craig compared the experiments in boxes 1 and 3.

What was he trying to find out?

..... **1**

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21. Oceans cover a large area of the Earth.

The Arctic Ocean has an area of 14 million square kilometres and a depth of 5 500 metres. The Indian Ocean has an area of 73 million square kilometres and the Atlantic Ocean has an area of 82 million square kilometres. Both the Indian Ocean and the Atlantic Ocean have a depth of 8 000 metres. The biggest ocean is the Pacific Ocean, with an area of 165 million square kilometres and a depth of 11 000 metres.

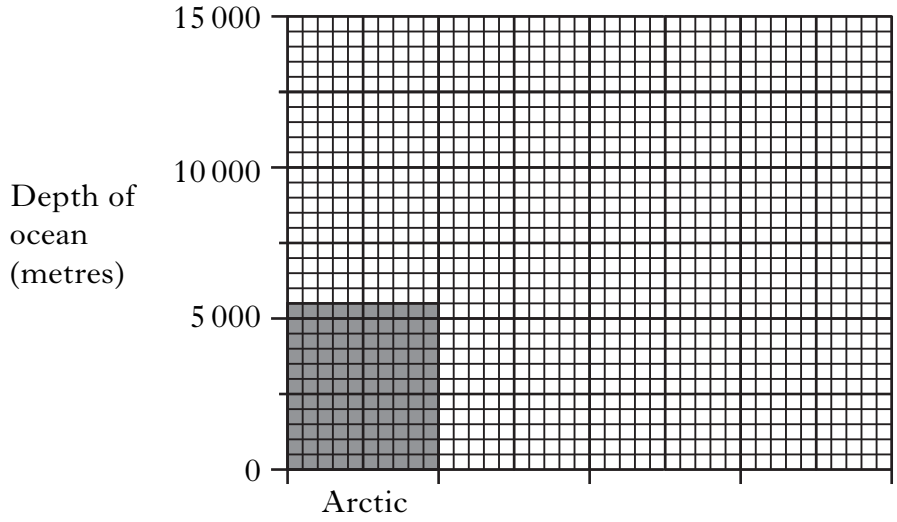
(*a*) Use the information in the passage to complete the table below.

Name of ocean	*Area of ocean* (million square kilometres)	*Depth of ocean* (metres)
Arctic	14	5 500

2

(*b*) Use this information to complete the bar graph showing the **depth** of the oceans.

(Additional graph paper, if required, can be found on page 20.)



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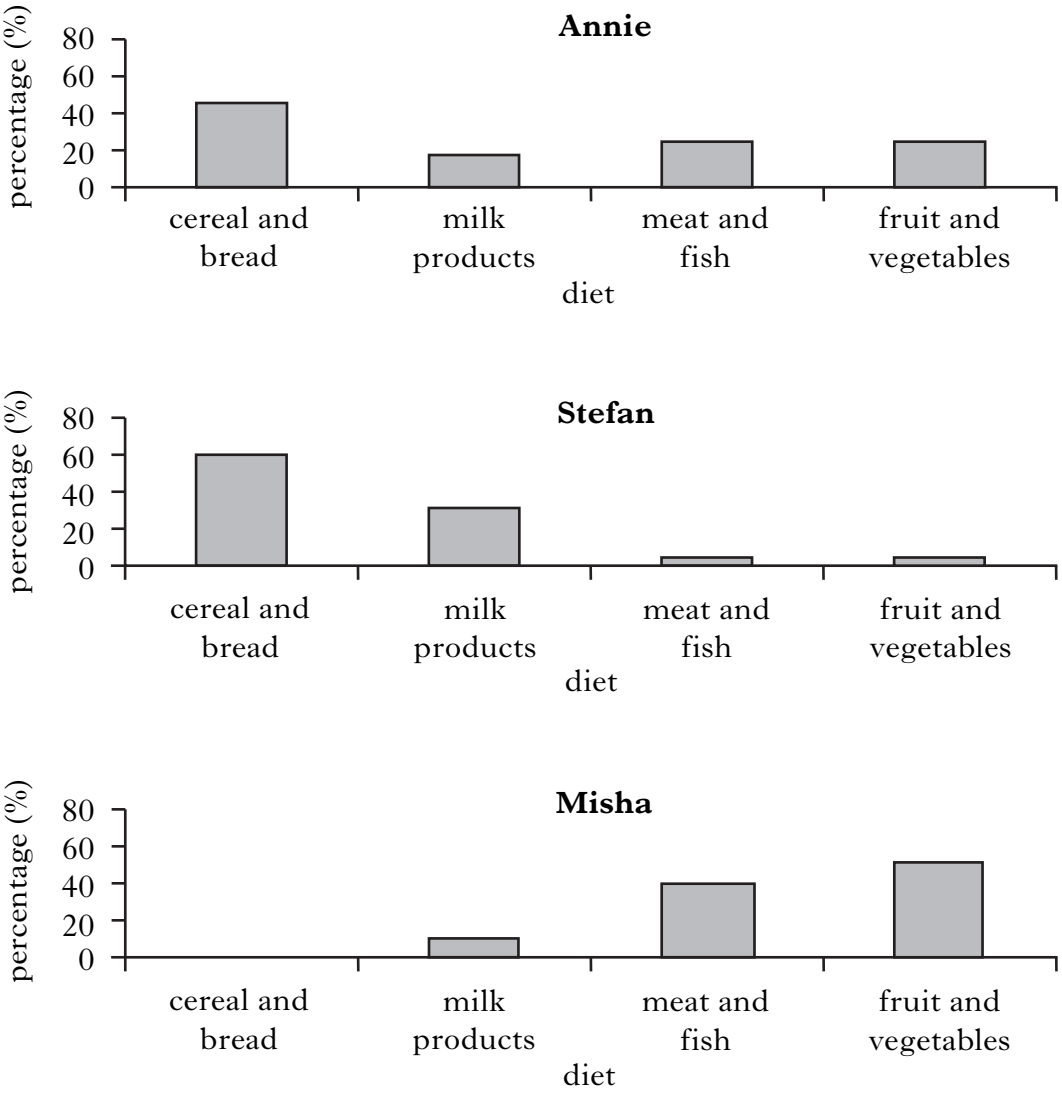
22. The bar graphs show information about the diets of Annie, Stefan and Misha.



For each question tick (✓) the correct box.

(*a*) Which person has the most fruit and vegetables in their diet?

Annie		Stefan		Misha	

1

(*b*) Which person has 45% cereal and bread in their diet?

Annie		Stefan		Misha	

1

[Turn over

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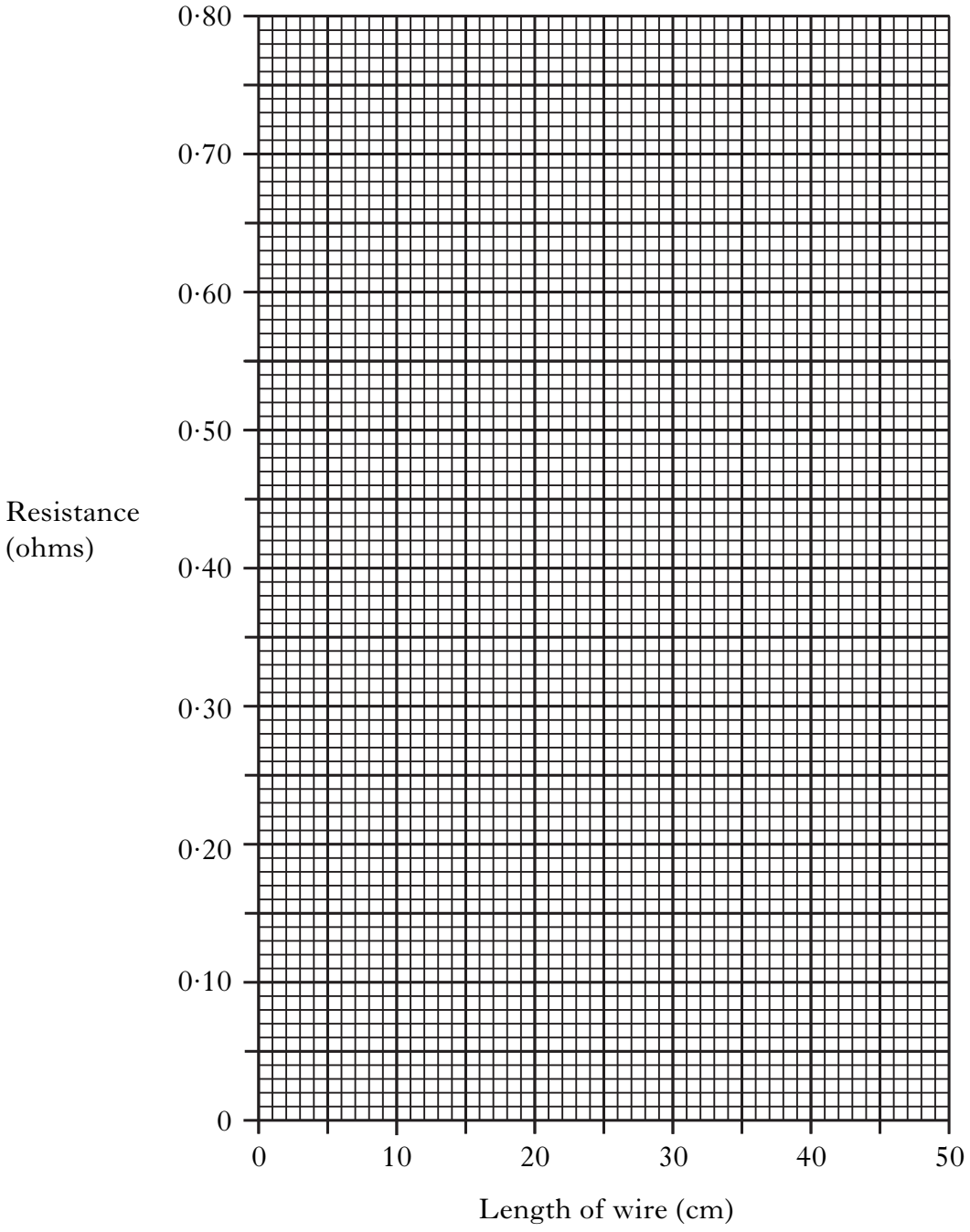
23. Kyle investigated how the length of a wire affects its electrical resistance. His results are shown below.

Length of wire (cm)	0	10	20	30	40	50
Resistance (ohms)	0	0·15	0·30	0·45	0·60	0·75

(*a*) Use the results in the table to complete the line graph.
(Additional graph paper, if required, may be found on page 20.)



2

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	Marks	KU	PS

23. (continued)

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

.....

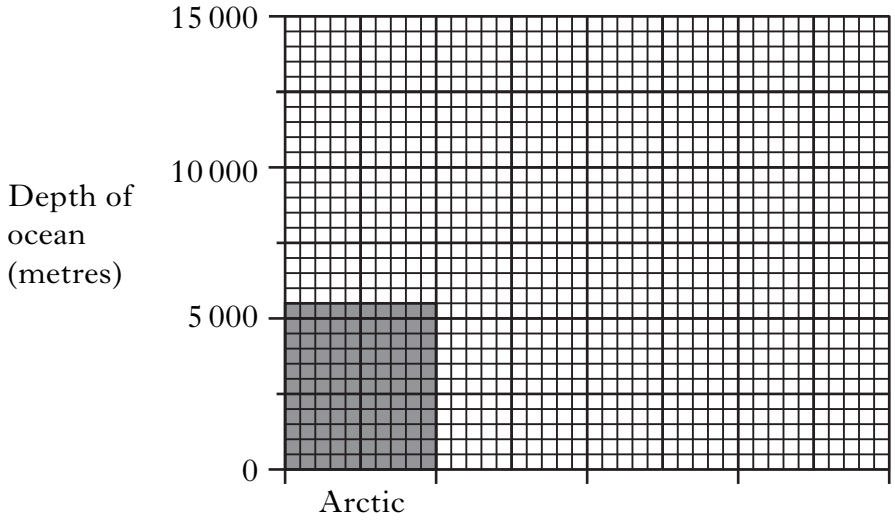
..... **1**

(*c*) Predict what the resistance would be if the length of the wire was 25 cm.

..... ohms **1**

[*END OF QUESTION PAPER*]

ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 21(*b*)



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