

FOR OFFICIAL USE

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F

3700/401

	KU	PS
Total Mark		

NATIONAL
QUALIFICATIONS
2010

THURSDAY, 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

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Scottish candidate number

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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.



Marks	KU	PS
	1	
1		
2		

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

Ears	116	Faeces	13
Ear lobes	118	Fainting	197
Egg cells	90	Families	97
Embryos – human	93	Fats	44
– plant	85	Feeding	177
Emotions	77	Fertilisation – chromosomes	95
Emphysema	45	– human	94
Enzymes – digestion	34	– plant	87
– food	142	Fitness	157
– respiration	42	Fixed joints	63
Excretion	12	Foetus	95
Exercise	156	Food	22

(a) Kerry wanted to find out about human fertilisation and egg cells.

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

..... and

1

(b) Kerry looked up pages 22 and 34.

What was she trying to find out about?

.....

.....

1

2. The box below shows some health problems.

arthritis	common cold	lung cancer	heart disease
measles	bronchitis	obesity	anorexia

Which **three** of these health problems can be caused by smoking?

1

2

3

2

Marks	KU	PS
1		
1		
2		

3. (a) Glass and paper are two **types** of household waste.
State one other **type** of household waste.

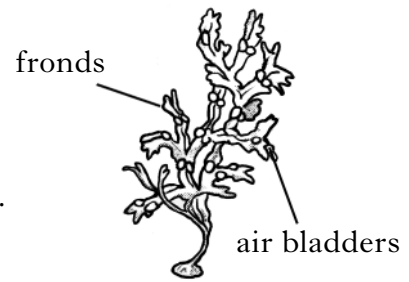
.....

(b) Glass and paper can be **recycled**.
What does this mean?

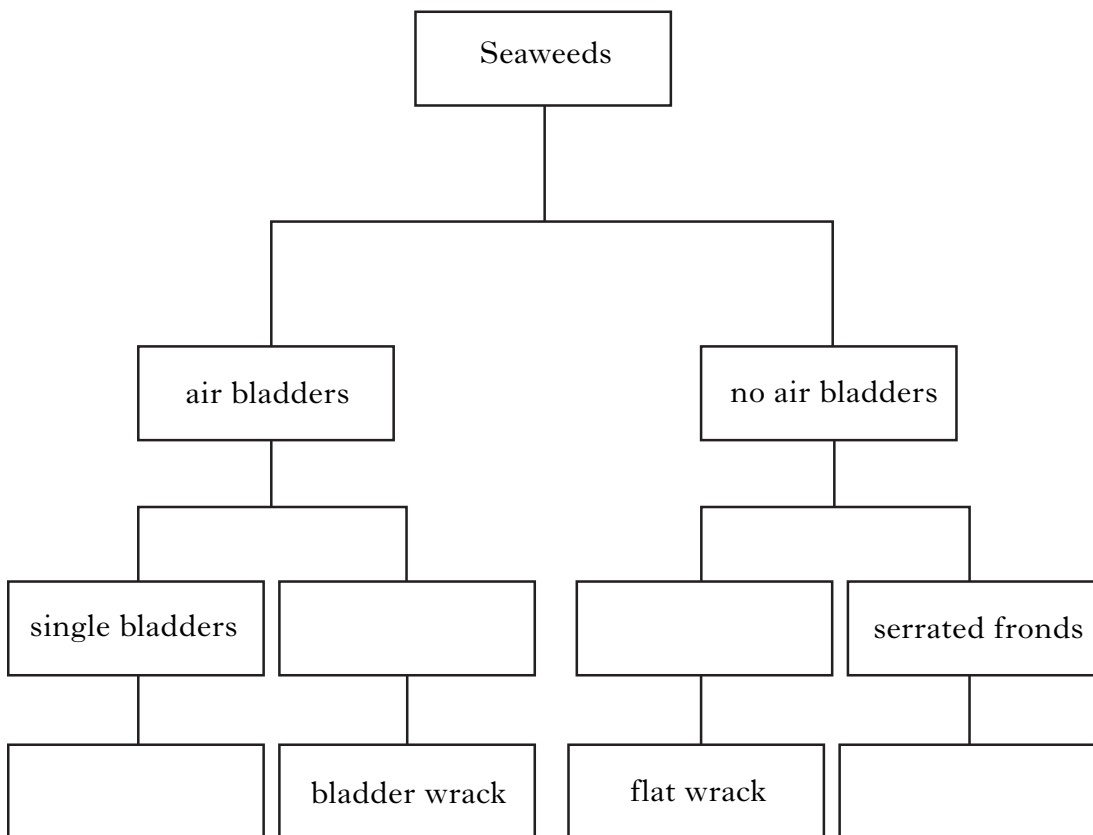
.....

4. **Seaweeds**

Egg wrack and bladder wrack are seaweeds that have air bladders.
Egg wrack has single bladders.
Bladder wrack has paired bladders.
Flat wrack and toothed wrack have no air bladders.
Toothed wrack has serrated fronds.
Flat wrack has smooth fronds.



Use this information to complete the following key.



2

[Turn over

Marks

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5. The boxes below show some electrical appliances.

1	toaster	2	oven
3	food mixer	4	hair dryer

Which electrical appliance

(a) is the **cheapest** to use for one hour?

Box number

1

(b) has a thermostat?

Box number

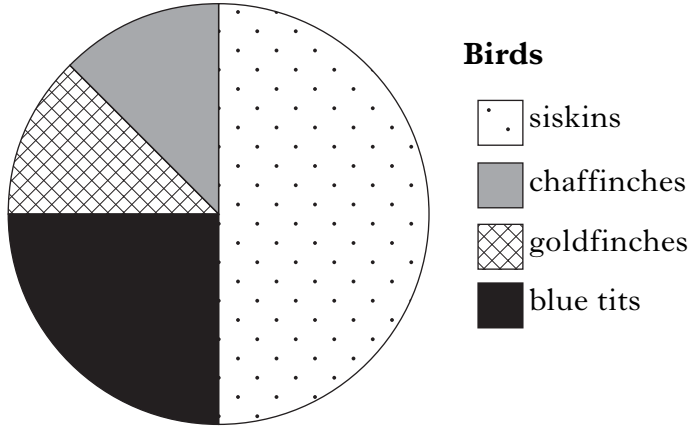
1

Marks

KU	PS

6. Joanne counted the numbers of different birds which visited her bird table in one hour.

Her results are shown in the pie chart below.



(a) What percentage of the birds were blue tits?

..... %

1

(b) 40 birds visited the table.

How many were siskins?

Space for working

1

[Turn over

Marks		KU	PS
1			
1			
2			
1			

7. The boxes below show groups of objects.

1	water pipes electric wiring coins	2	railway lines pylons car bodies
3	carpets climbing ropes fishing nets	4	disposable cups ceiling tiles packaging

Which box shows three objects that can be made from

(a) steel?

Box number

(b) polystyrene?

Box number

8. Eating a balanced diet helps people to stay healthy.

(a) Complete the list below to show the four main parts of a balanced diet.

1 Milk and dairy products

2 Fruit and vegetables

3

4

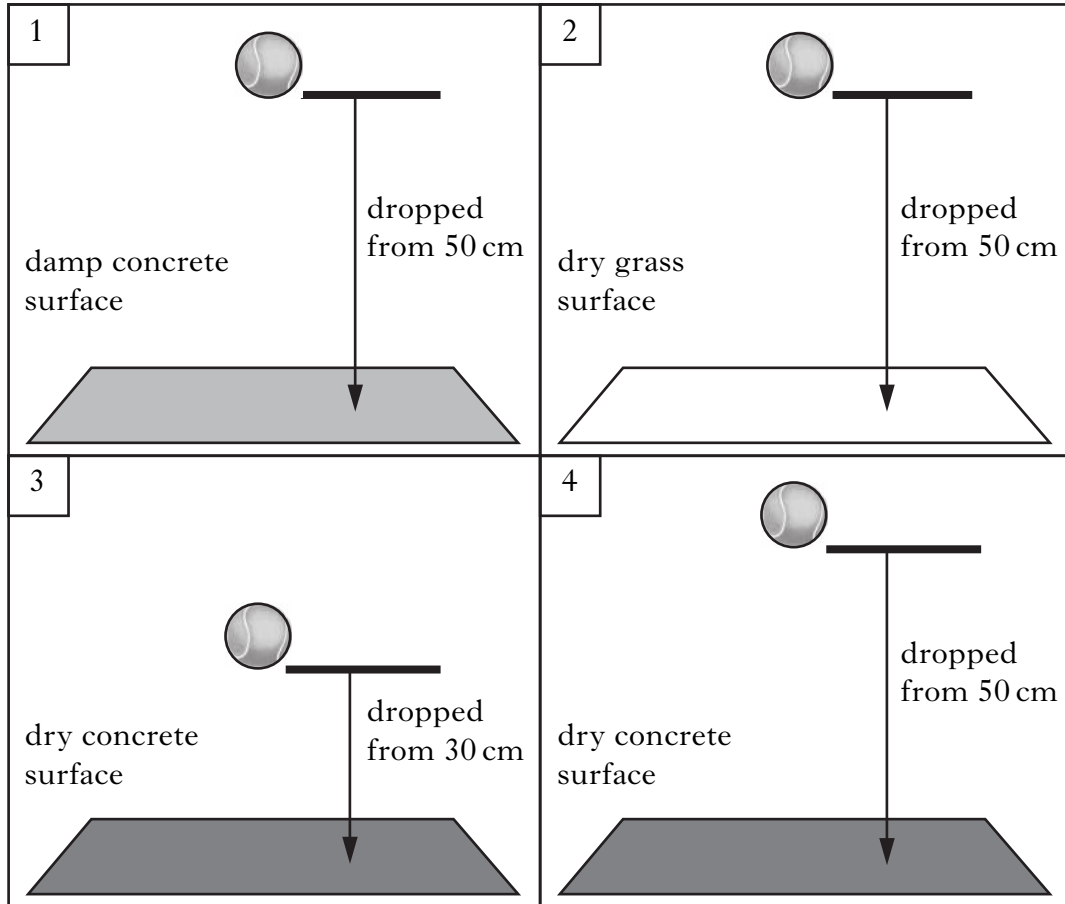
(b) An unhealthy diet can cause health problems.

Name **one** health problem caused by an unhealthy diet.

.....

9. Marek investigated how high tennis balls bounce.

For each experiment, he measured how high the tennis ball bounced after it hit the surface.



(a) Marek wanted to find out if the **dampness of the surface** affected how high the tennis ball bounced.

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

Box numbers and

1

(b) Marek compared the experiments in boxes **3** and **4**.

What was he trying to find out?

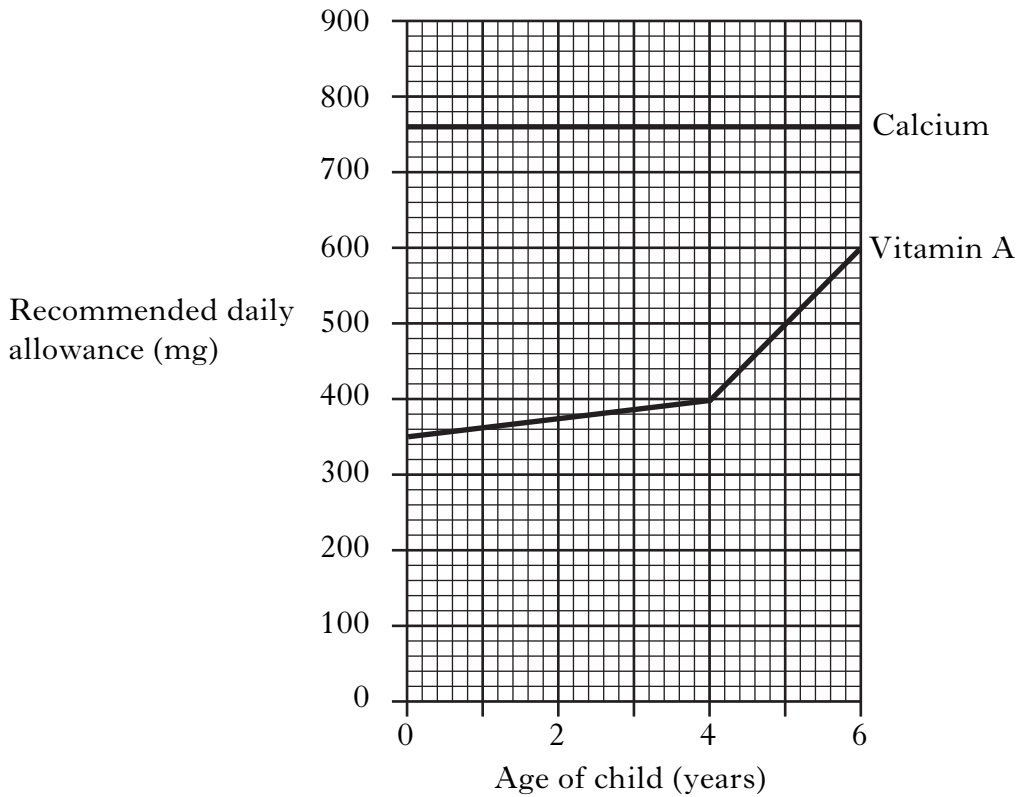
.....

.....

1

[Turn over

10. The graph below shows the recommended daily allowance of vitamin A and calcium for children of different ages.



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

As the age of the child increases, the recommended daily allowance of calcium

increases
decreases
stays the same

1

(b) What is the increase in the recommended daily allowance of vitamin A between the ages of 4 years and 6 years?

Space for working

..... mg

1

Marks	KU	PS
1		
1		
1		
1		

11. (a) Humans have five basic needs.

Two of these basic needs are

- A water and shelter
- B air and work
- C money and warmth
- D food and money.

Underline the correct answer.

(b) The boxes below all show substances which cause pollution.

1	oil spill smoke sewage	2	sulphur dioxide sewage litter
3	litter car fumes oil spill	4	smoke car fumes sulphur dioxide

Which box shows substances which can all pollute the **air**?

Box number

12. The boxes below show some substances.

1	nitrogen cotton leather	2	steel copper aluminium
3	steel silver wood	4	carbon dioxide nitrogen oxygen

Which box shows

(a) three gases?

Box number

(b) three metals?

Box number

[Turn over

Marks	Marks	
	KU	PS
1		
1		
1		
1		
2		

13. Tar, nicotine and carbon monoxide are harmful substances.

All three are found in

- A car exhaust fumes
- B water polluted with oil
- C tobacco smoke
- D smoke from a barbecue.

Underline the correct answer.

14. Fossil fuels are our main source of energy.

(a) From which fossil fuel is petrol made?

.....

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

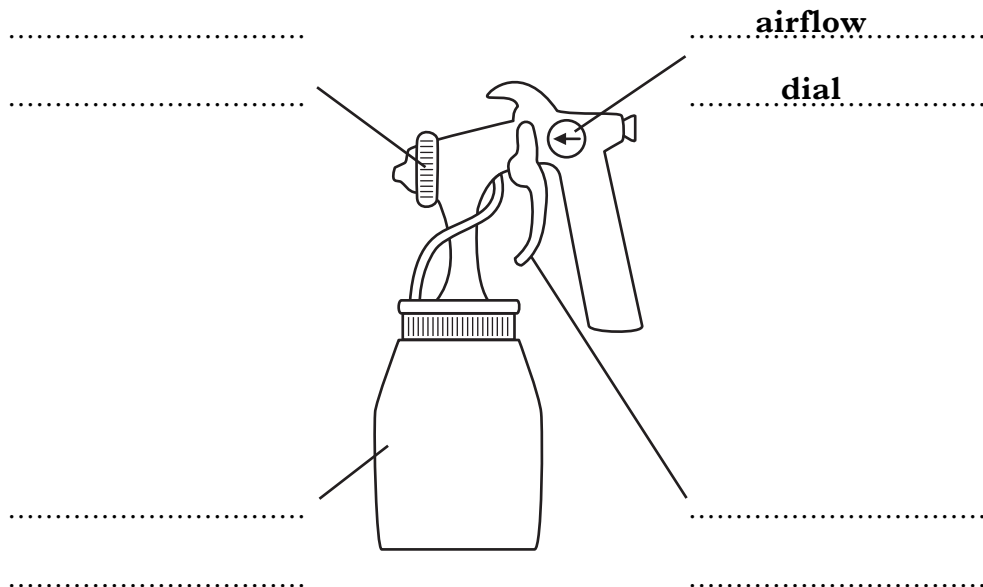
.....

(c) Which gas from the air is used up when fossil fuels are burned?

.....

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

Paint spray guns can be used to apply paint to garden fences. The paint is poured into the **metal canister**. When the **spray trigger** is pulled the paint is released in a steady flow. The **airflow dial** controls the rate of flow of the paint. Turning the **pattern dial** gives different paint spray effects.



Marks

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17. (continued)

(c) A reel of nichrome wire weighs 200 g.

Calculate the mass of nickel in the reel of nichrome wire.

<u>Space for working</u>

..... g

2

--	--

[Turn over

Marks

KU	PS
1	
1	
1	

18. The box below shows some properties of materials.

strength	electrical conductivity
resistance to corrosion	thermal conductivity

Which property is **most important** for

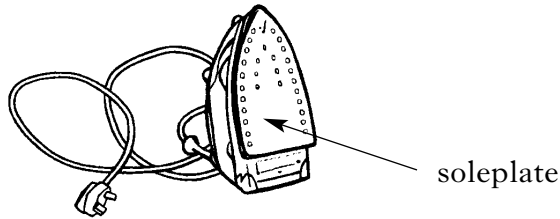
(a) copper used to make electrical wiring?

.....

(b) steel used to make bridges?

.....

(c) aluminium used to make the soleplate of an iron?



.....

Marks	Marks	
	KU	PS
2		
1		
1		
1		

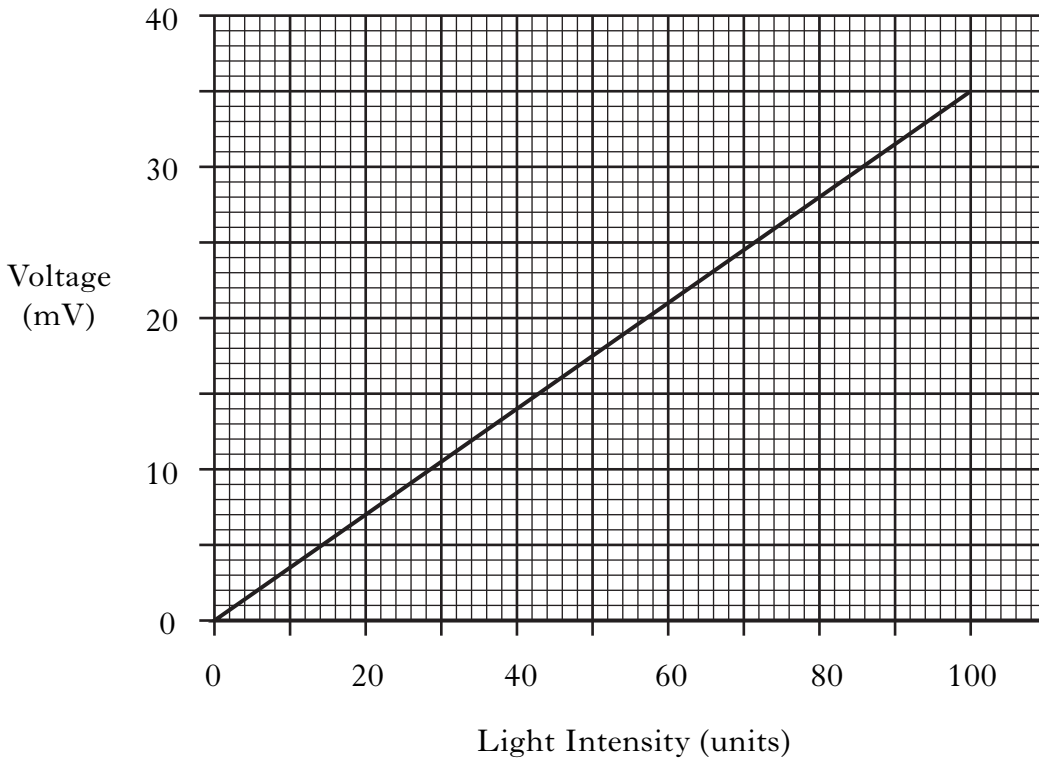
19. Solar power is a renewable source of energy.

(a) Give two **other** examples of renewable sources of energy.

..... and

(b) A pupil measured the voltage produced by a solar cell at different light intensities.

The results are shown below.



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

.....
.....

(ii) What is the voltage produced when the light intensity is 80 units?

..... mV

(iii) What light intensity gives a voltage of 14 mV?

..... units

[Turn over

Marks

KU	PS
----	----

20. Germany is the biggest producer of electrical energy in the European Union. Germany produced 580 billion kWh in one year. France and the United Kingdom were the second and third largest producers with 520 and 370 billion kWh. A total of 280 billion kWh of electrical energy was produced by Italy, the fourth largest producer.

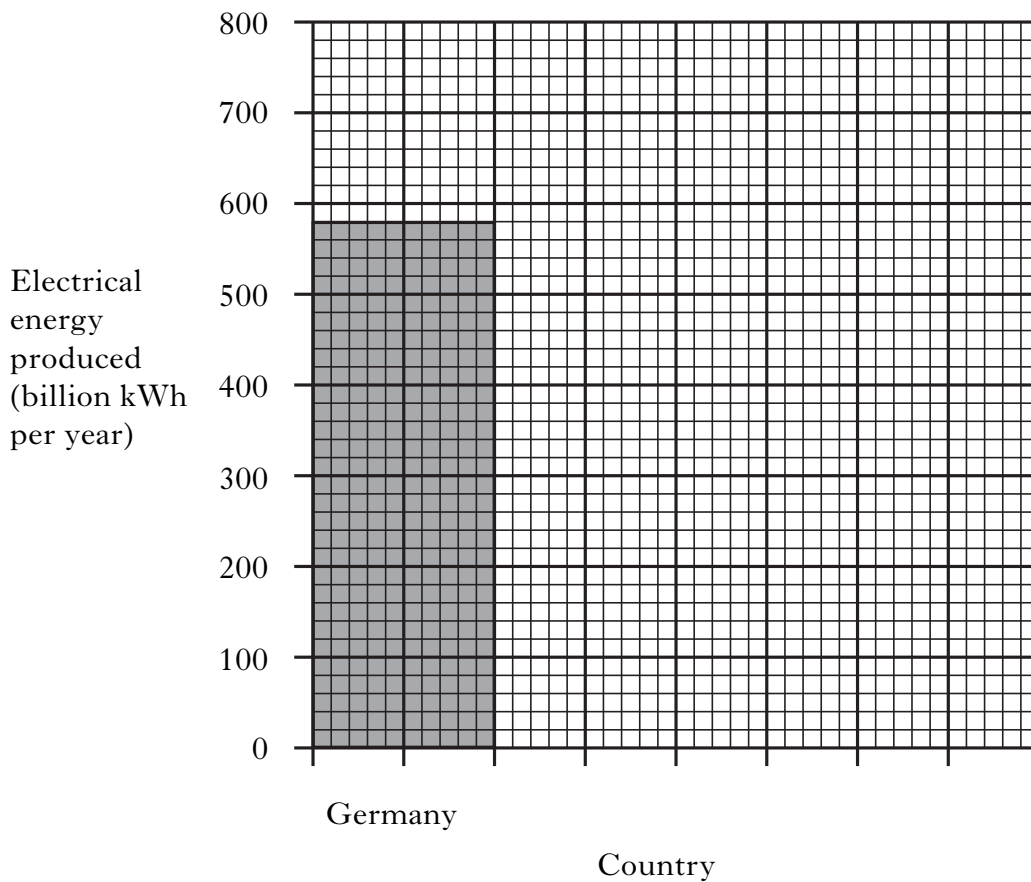
(a) Use this information to complete the table below.

<i>Country</i>	<i>Electrical energy produced (billion kWh per year)</i>

2

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

(Additional graph paper, if required, can be found on page 21)



2

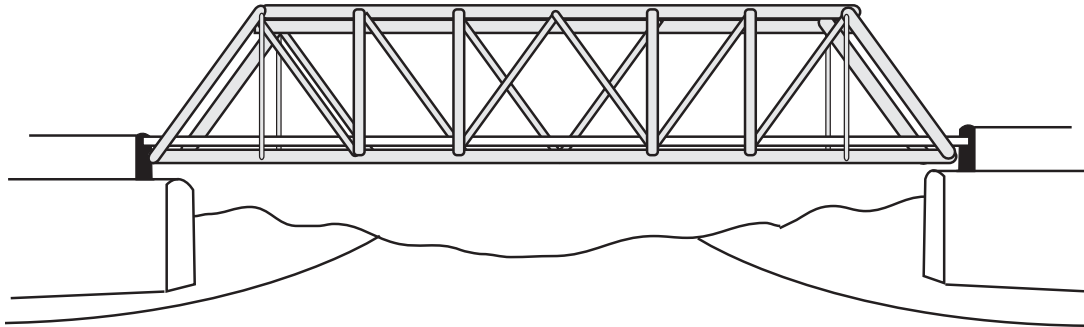
Marks	KU	PS
1		
1		

21. At rest, Jordan's pulse rate was 71 beats per minute. Immediately after playing basketball his pulse rate was 124 beats per minute. Which of the following would also have a value of **124** after playing basketball?
- A His breathing rate
 - B His heart rate
 - C His recovery time
 - D His resting rate

Underline the correct answer.

1

22. The picture shows a type of bridge called a **truss bridge**.



What **shape** is used in the design of this bridge to make it very strong?

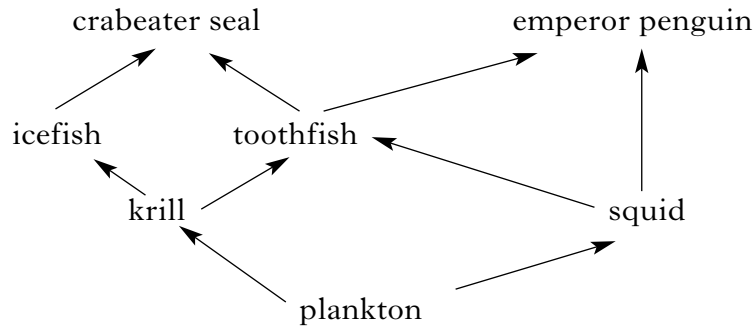
.....

1

[Turn over

Marks	KU	PS

23. An Antarctic food web is shown below.



Use the food web to answer the questions.

(a) Name **two** predators of the toothfish.

..... and

1

(b) Name an animal that is both a predator and a prey.

.....

1

(c) Complete a food chain with four organisms, which ends with emperor penguin.

..... → → → emperor penguin

1

(d) Plankton is a green plant.

Where does plankton get its energy from?

.....

1

<i>Marks</i>		KU	PS
1		
1 kcal		

24. The daily energy needs of children of different ages are shown below.

<i>Age (years)</i>	<i>Daily energy needs (kcal)</i>	
	<i>Males</i>	<i>Females</i>
1	1300	1200
4	1800	1700
7	2000	1900
11	2500	2100
15	3000	2200

(a) One conclusion that can be drawn from these results is that **males have a higher daily energy need than females.**

Draw one **other** conclusion from these results.

.....
.....

(b) Predict the daily energy need of a female aged 9 years.

..... kcal

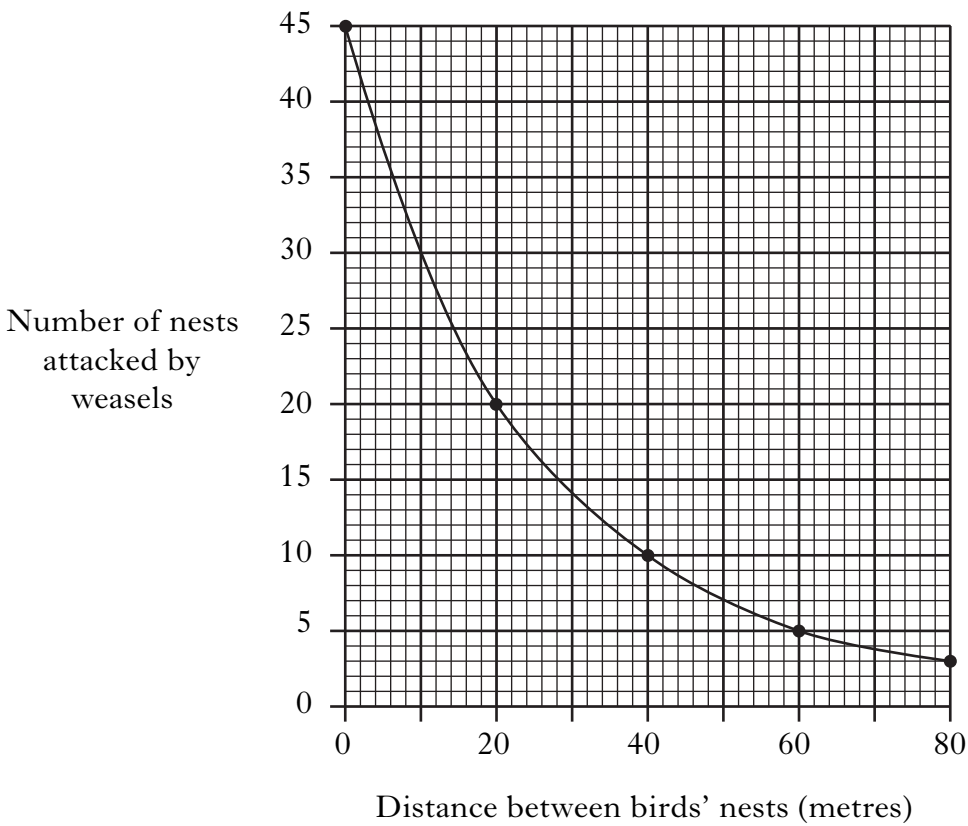
[Turn over

Marks

KU	PS
----	----

25. Weasels are known to attack the nests of small birds.

The graph below shows how the distance between the birds' nests affects how many are attacked by weasels.



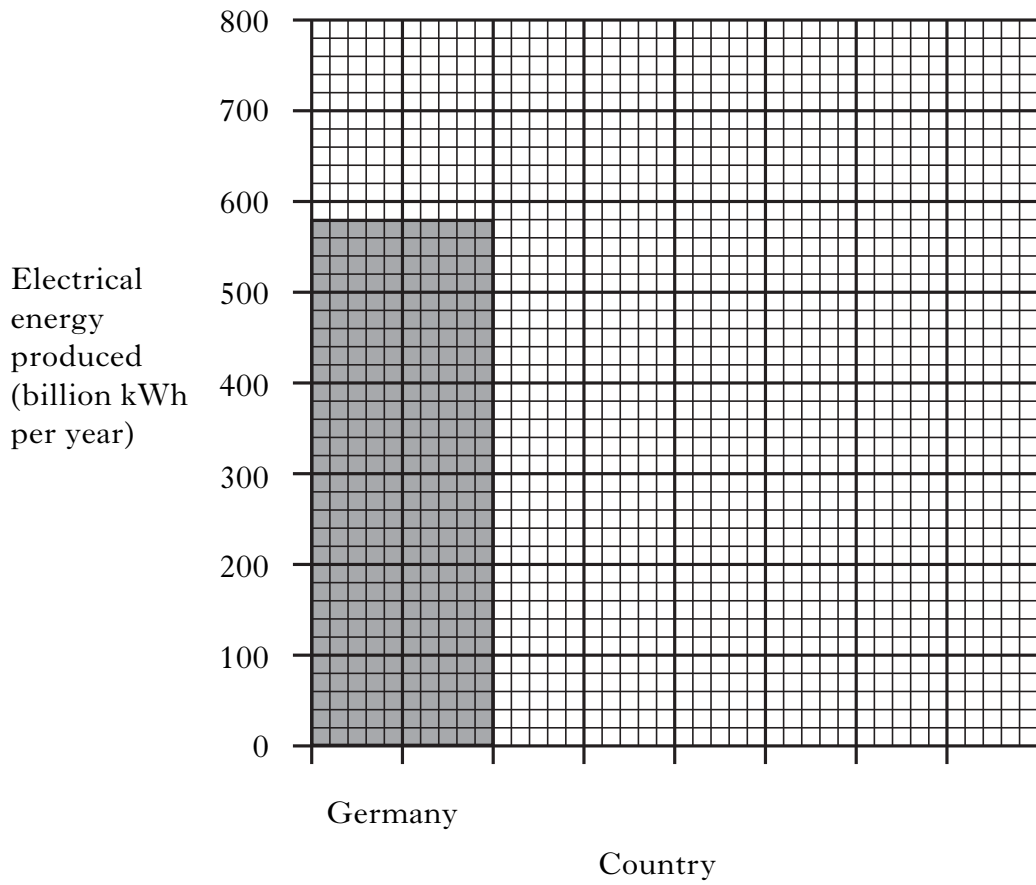
Draw **one** conclusion from the graph.

.....
.....

1

[END OF QUESTION PAPER]

ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 20(b)



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