

FOR OFFICIAL USE

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C

KU PS

Total Mark

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3700/403

NATIONAL
QUALIFICATIONS
2008

TUESDAY, 27 MAY
1.00 PM – 2.30 PM

SCIENCE
STANDARD GRADE
Credit 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

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- 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
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1. Some waste gases cause environmental damage.

(a) **Circle** the correct answers in the sentences below.

The main cause of the Greenhouse Effect is increased levels of

carbon dioxide / sulphur dioxide from burning fossil fuels.

The Greenhouse Effect results in increased / decreased heat loss from the Earth.

This causes a rise in sea levels / skin cancer rates.

(b) Give **one** way of reducing air pollution.

.....

(c) The break down of the ozone layer is caused by

- A smoke particles
- B CFCs
- C nitrogen oxides
- D water vapour.

Underline the correct answer.

2. Three toxic gases are shown in the box below.

carbon monoxide hydrogen chloride hydrogen cyanide

Which of these gases

(a) is produced when polyvinylchloride (PVC) burns?

.....

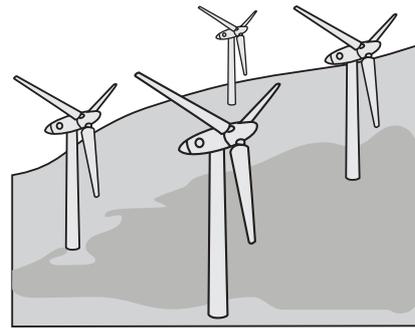
(b) prevents the red blood cells from carrying oxygen?

.....

(c) damages the nervous system?

.....

5. Wind turbines are used to generate electricity.



Marks

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(a) One **advantage** of this method of generating electricity is that the energy comes from a renewable source.

Give one other **advantage**.

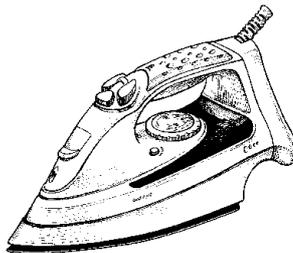
.....
.....

(b) One **disadvantage** of this method of generating electricity is that no electricity is produced when there is no wind.

Give one other **disadvantage**.

.....
.....

6. An iron contains a thermostat.



Explain how the thermostat keeps the temperature steady.

.....
.....
.....

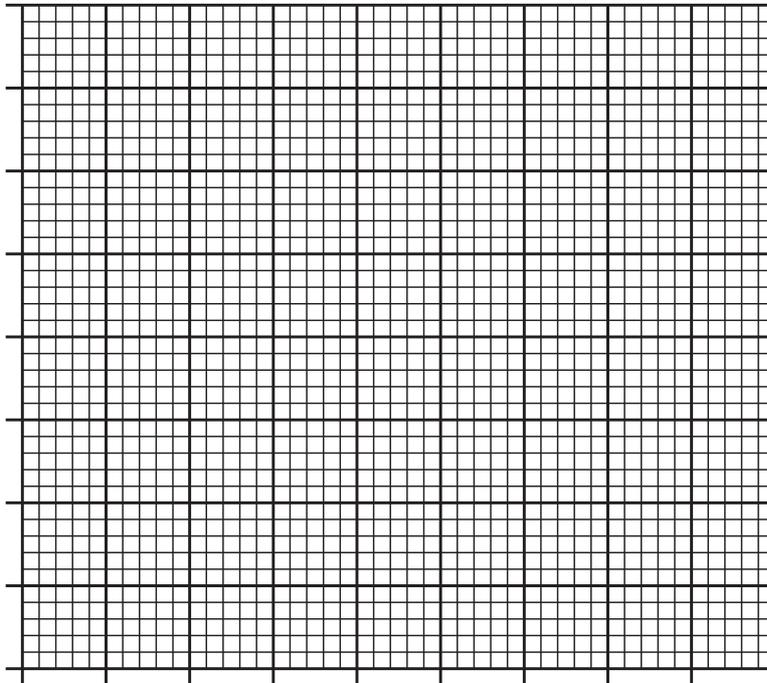
[Turn over

7. The table shows the percentage of electricity generated by nuclear and coal power stations in three European countries.

Marks

Country	Electricity generated (%)	
	Nuclear	Coal
Germany	31	26
Sweden	39	2
UK	28	35

Construct a **single** bar graph to show **all** of this information.
(Additional graph paper, if required, may be found on page 26.)



KU	PS
3	

Marks

KU	PS

8. The box shows some properties of materials.

flammability	electrical resistance	resistance to corrosion
strength	electrical conductivity	thermal conductivity
hardness	wear resistance	heat resistance

(a) Choose **two** properties which would be **most important** for a material used to make cooking pans.

1

2

2

(b) Which property fits each of the descriptions below?

(i) The ability of a material to allow electricity to pass through.

.....

1

(ii) The ability of a material to resist damage caused by impact.

.....

1

(iii) The ability of a material to support heavy loads without breaking.

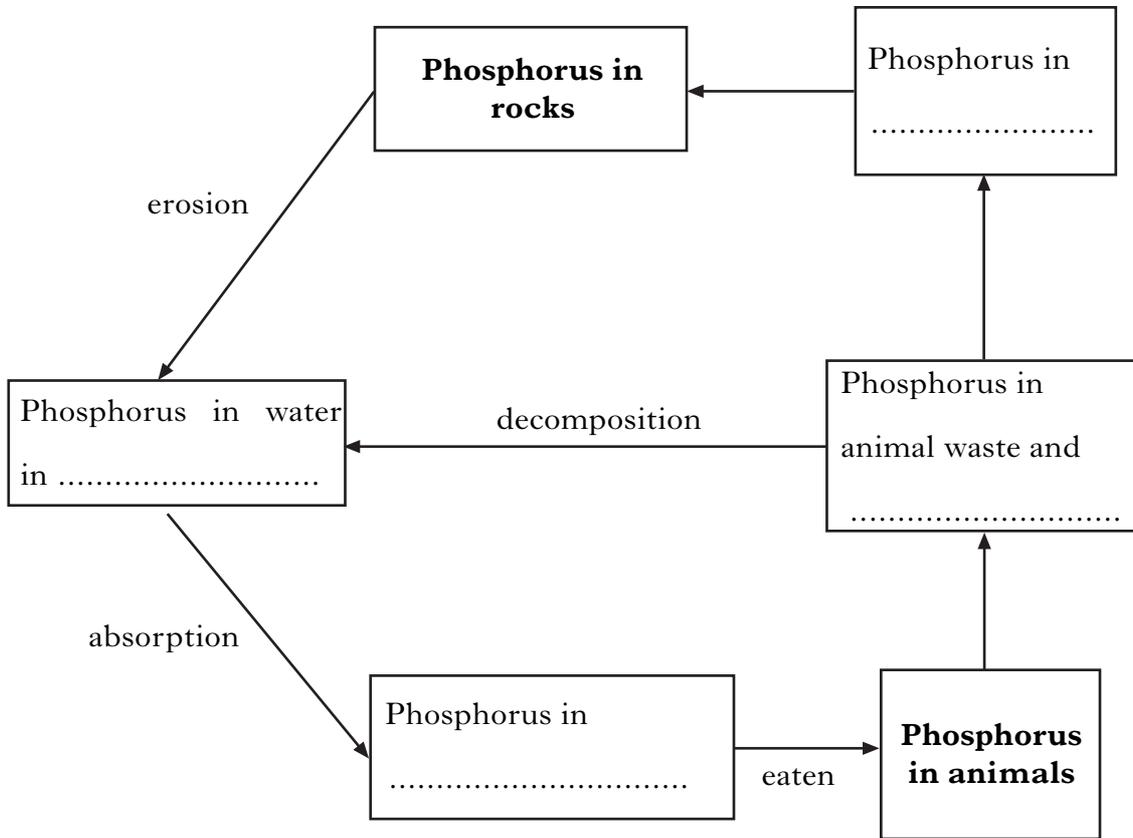
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1

[Turn over

9. (continued)

(c) Use the information in the second paragraph to complete the diagram of the phosphorus cycle.



Marks

	KU	PS
2		
1		
1		

(d) Explain why animals cannot survive in lakes which are polluted by too much phosphorus.

.....
.....

(e) Describe what happened to factory workers suffering from “Phossey Jaw”.

.....
.....

[Turn over

Marks

KU	PS

10. Alcohol abuse, smoking and eating too much fatty food can cause health problems.

(a) Many people who drink too much alcohol develop health problems.

Describe one effect **on the body** of regularly drinking too much alcohol.

..... 1

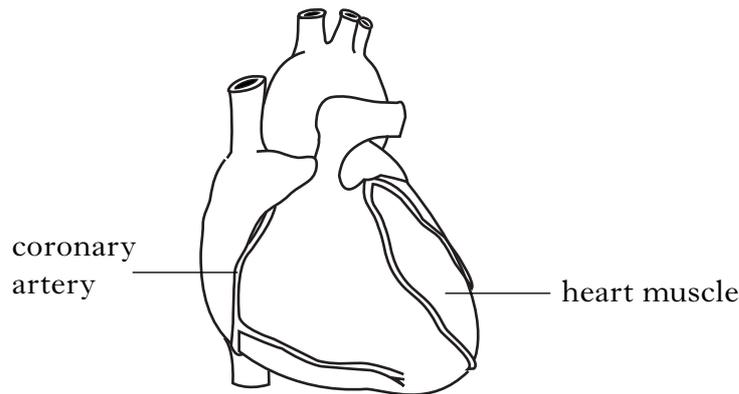
(b) (i) Name the substance in tobacco smoke which reduces gas exchange in the lungs.

..... 1

(ii) Name the substance in tobacco smoke which is addictive.

..... 1

(c) A heart attack can be caused by a lack of food and oxygen getting to the heart muscle. This causes heart muscle cells to die.



Explain why eating too much fatty food increases the risk of a heart attack.

.....
..... 1

Marks

KU	PS

11. The food chain below is from a grass field environment.

grass → beetle → shrew → weasel

(a) Energy is lost at each stage in a food chain.

For example, the shrew uses up some energy to keep warm and this energy is not passed on to the weasel.

Give **one other** way in which the shrew uses up energy.

..... **1**

(b) In April, the grass was sprayed with low levels of pesticide.

Months later, the weasel was found to have high levels of pesticide in its body.

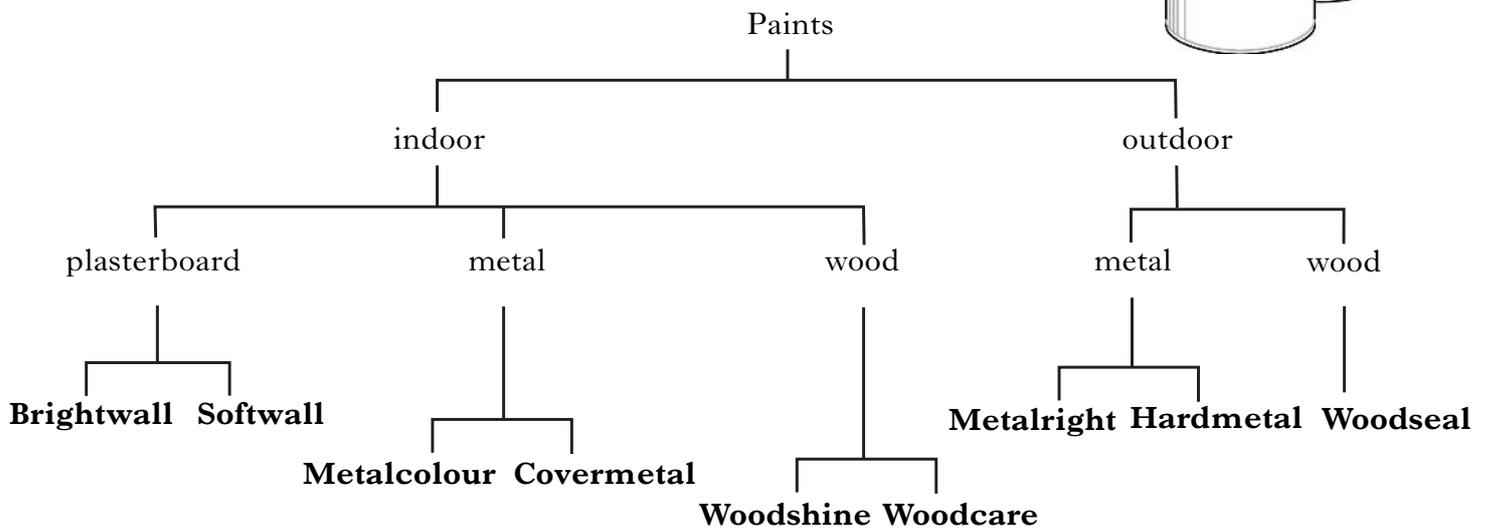
This is because the weasel

- A ate the grass
- B ate lots of beetles
- C breathed in the pesticide when the grass was being sprayed
- D ate lots of shrews which had eaten lots of beetles.

Underline the correct answer. **1**

[Turn over

12. The key shows information about the uses of different paints.



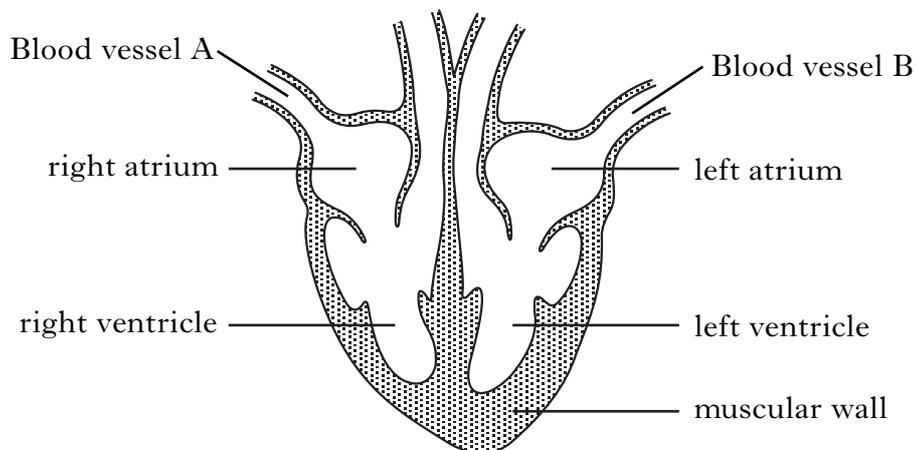
The table shows the type of finish available for each paint.

<i>Paint</i>	<i>Type of finish</i>					
	<i>Matt</i>	<i>Eggshell</i>	<i>Gloss</i>	<i>Metallic</i>	<i>Satin</i>	<i>Silk</i>
Brightwall	✓	✓			✓	
Covermetal		✓				
Hardmetal			✓	✓		
Metalcolour			✓	✓	✓	
Metalright			✓			
Softwall	✓					✓
Woodcare						✓
Woodseal			✓		✓	
Woodshine			✓			

Marks

KU	PS

14. The diagram below shows a section through the human heart.
Two blood vessels and four heart chambers are labelled.



- (a) **Circle** the correct word in each box.

Blood in vessel A contains oxygen

and carbon dioxide than blood in vessel B.

1

- (b) Explain why the muscular wall of the left ventricle is thicker than that of the right ventricle.

.....

.....

1

16. Different methods of protecting materials against damage are shown below.

anodising	pesticide treatment	waterproofing
packaging	galvanising	electroplating

Marks

KU	PS

Which method would be **most appropriate** to protect

(a) an aluminium ladder?

..... **1**

(b) a TV during transport?

..... **1**

(c) the steel hull of a ship?

..... **1**

(d) wooden rafters in a loft?

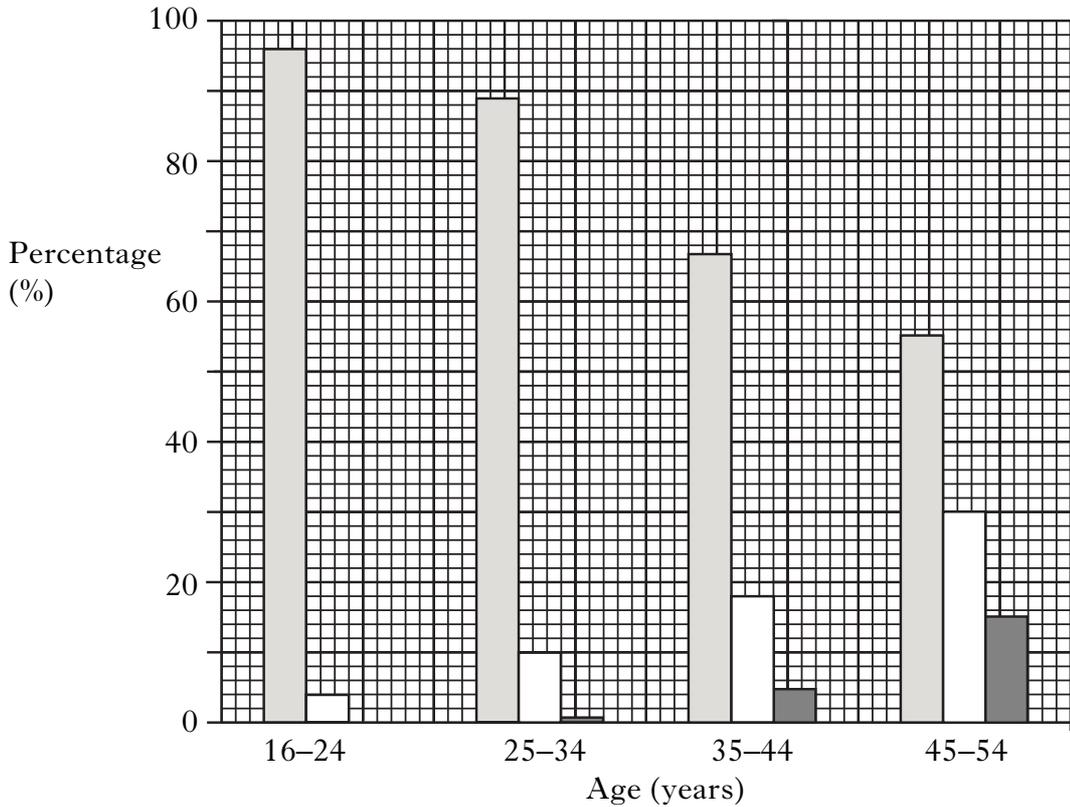
..... **1**

Marks

KU	PS

22. Information about the dental health of adults was obtained in a Scottish Health Survey.

- Key**
- adults with no false teeth
 - adults with some false teeth
 - adults with a full set of false teeth



One conclusion that can be drawn from this information is:

“As age increases, the percentage of adults with a full set of false teeth increases.”

Draw **three** other conclusions from the information.

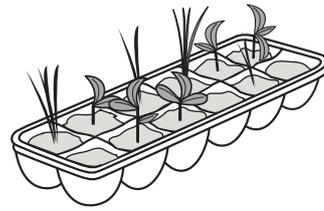
- 1
- 2
- 3

Marks

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23. Plants need certain conditions before they will grow well.

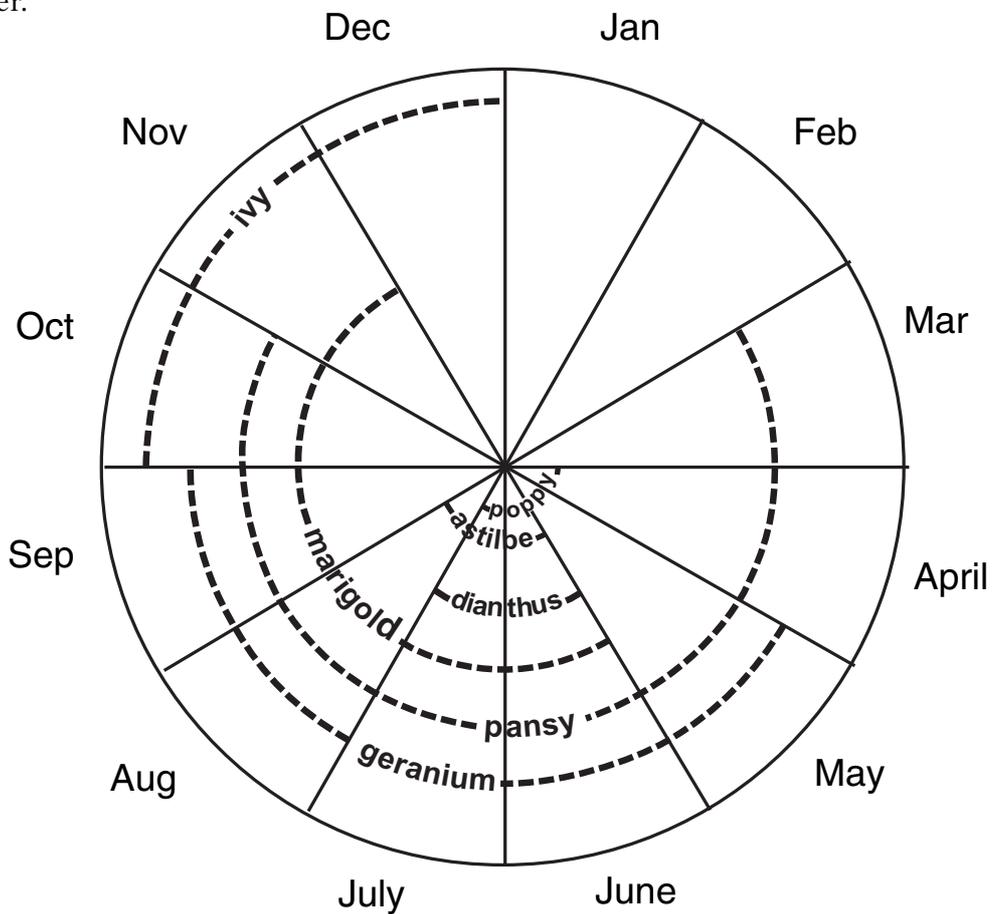
The table shows the best growing conditions for some plants.



Name of plant	Light needed for flowering	Soil pH range
Ivy	●	6.0–7.5
Geranium	◐	6.0–8.0
Pansy	○	5.5–6.5
Marigold	○	5.5–7.0
Dianthus	◐	6.0–7.0
Astilbe	●	6.0–8.0
Poppy	○	6.0–7.5

○ = Full Sun ◐ = Sun or Shade ● = Shade

The diagram below shows the months of the year during which these plants flower.



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

23. (continued)

(a) Which soil pH would be suitable for all the plants?

pH 5.5 pH 6.0 pH 7.0 pH 7.5

Circle the correct answer.

(b) Which two plants flower in May and need full sun?

Plants and

(c) Which plant can flower in sun or shade, could grow in a soil pH of 7.0 and is in flower in August?

Plant

(d) One of the plants shown has a soil pH range of 6.0–7.5 and flowers from October to December.

The light needed for flowering is

Full Sun

Sun or Shade

Shade

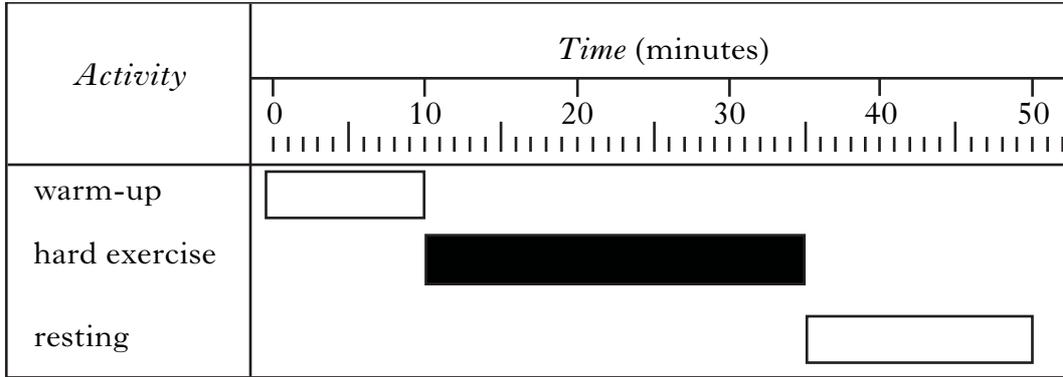
Underline the correct answer.

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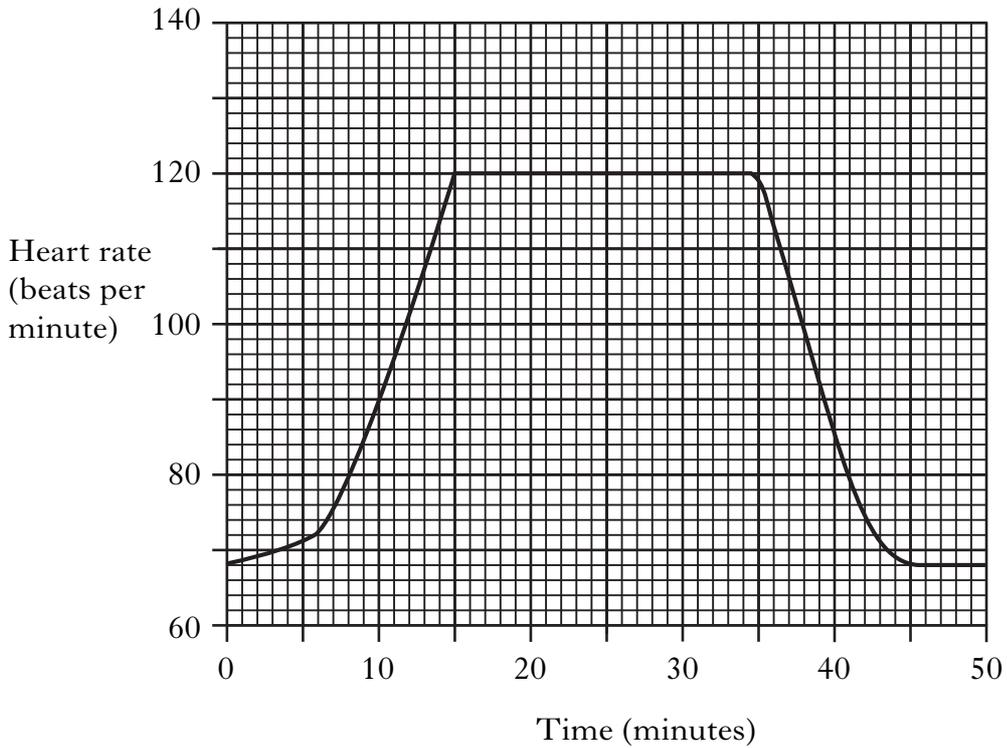
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24. Lorne took part in a fitness training session.
The chart shows Lorne's training session times.



The graph below shows how her heart rate changed during the session.



24. (continued)

Marks		KU	PS
	1		
	2		
	1		
	1		

(a) (i) Calculate the increase in Lorne's heart rate during **warm-up** time.

Space for working

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

(ii) Calculate the percentage increase in Lorne's heart rate during **hard exercise** time.

Space for working

.....% **2**

(b) Two waste products build up in the body during exercise.
Carbon dioxide is the waste product which builds up in the blood.

(i) Name the waste product which builds up in the muscles.

..... **1**

(ii) What name is given to the period of time, after exercise stops, during which this waste product is removed from the muscles?

..... **1**

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