

<b>Candidate Forename</b>		<b>Candidate Surname</b>	
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<b>Centre Number</b>						<b>Candidate Number</b>				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**B493/01  
ENVIRONMENTAL AND LAND-BASED  
SCIENCE**

**Management of the Natural Environment  
(Foundation Tier)**

**WEDNESDAY 20 MAY 2009: Afternoon**

**DURATION: 45 minutes**

**SUITABLE FOR VISUALLY IMPAIRED CANDIDATES**

**Candidates answer on the question paper**

**OCR SUPPLIED MATERIALS:**

**None**

**OTHER MATERIALS REQUIRED:**

**Electronic calculator**

**Pencil**

**Ruler (cm/mm)**

**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

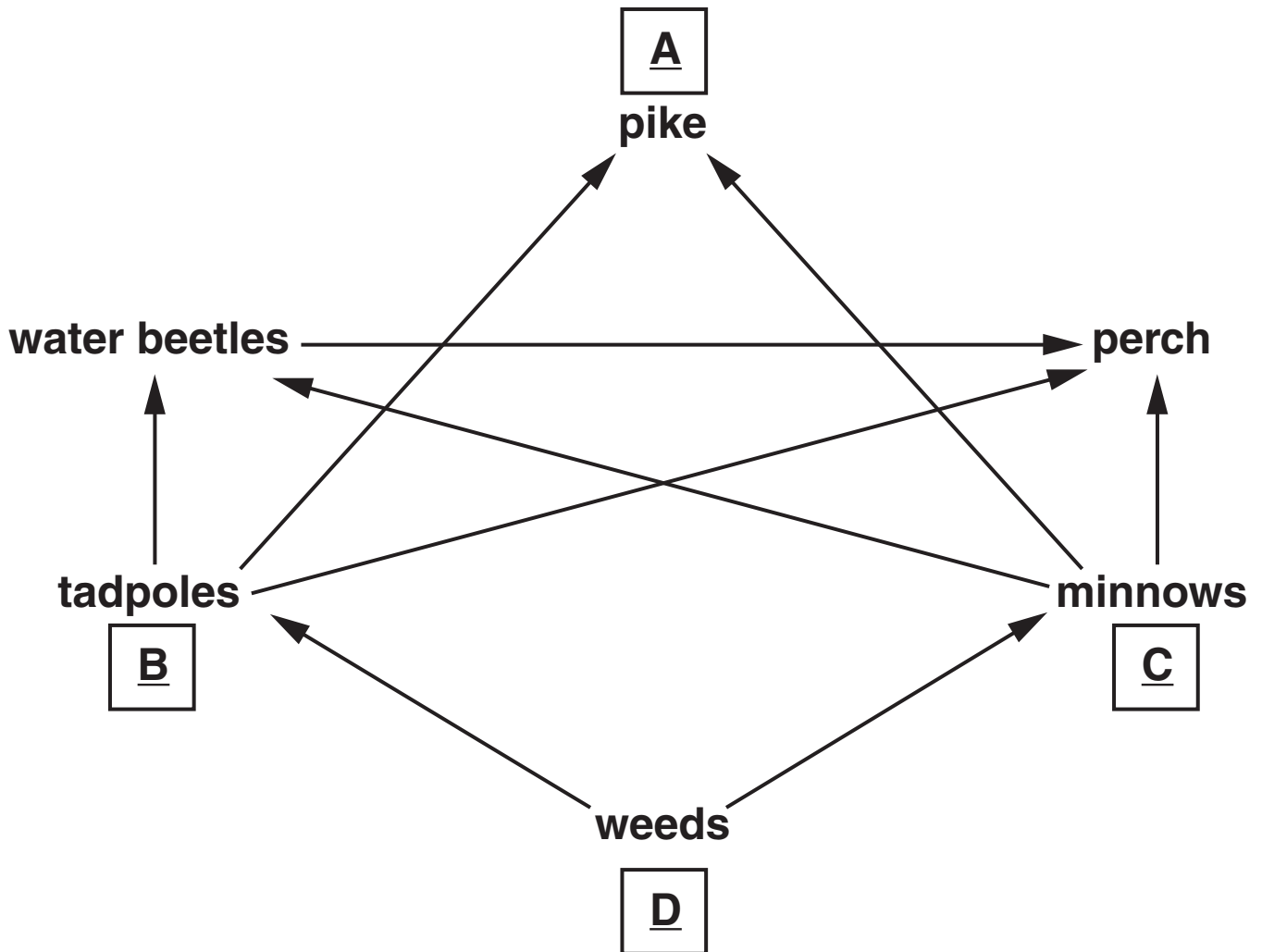
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Answer ALL the questions.**
- **Write your answer to each question in the space provided, however additional paper may be used if necessary.**
- **There are no separate marks for the quality of written communication, but make sure that your answers are written in clear and well-structured English.**

## **INFORMATION FOR CANDIDATES**

- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **The total number of marks for this paper is 36.**

Answer ALL the questions.

1 The diagram shows a simple food web.



Which letter represents a predator?

A

B

C

D

Answer A, B, C or D \_\_\_\_\_ [1]

**2 On what scale is the pH of soil measured?**

**A 1 to 3**

**B 1 to 7**

**C 1 to 10**

**D 1 to 14**

**Answer A, B, C or D \_\_\_\_\_ [1]**

**3 The same crop has been grown in a large area for several years.**

**What term is used to describe the practice of growing the same crop in a large area for many years?**

**A maxiculture**

**B monoculture**

**C permanent cultivation**

**D perennial cultivation**

**Answer A, B, C or D \_\_\_\_\_ [1]**

**4 Clover is a legume.**

**Choose the correct word from the list below to complete the following sentence.**

**Legumes are used in crop rotations because they increase the level of \_\_\_\_\_ in the soil.**

**nitrate**

**oxygen**

**phosphate**

**potash**

**[1]**

**5 This table is about the features of intensive and extensive production systems.**

<b><u>INTENSIVE PRODUCTION SYSTEM</u></b>	<b><u>EXTENSIVE PRODUCTION SYSTEM</u></b>

**Put the following features of plant and animal production systems into the correct columns in the table.**

**uses a lot of labour**

**has small numbers in large area**

**is a natural production system**

**uses ICT for regular monitoring**

**has high running costs**

**[3]**

- 6** Some people are concerned that the growing of GM crops may affect the wild flowers growing in hedgerows.

**What is the most likely reason for their concern?**

- A** Disease from GM plants infects wild flowers.
- B** Leaves from GM plants shade wild flowers.
- C** Pollen from GM plants pollinates wild flowers.
- D** Roots from GM plants compete with wild flowers.

**Answer A, B, C or D \_\_\_\_\_ [1]**

- 7** Which statement is true for **ALL** vegetables that are produced as 'organic'?

- A** They are grown without using fertiliser.
- B** They are grown without using chemical herbicides.
- C** They are grown from old natural varieties.
- D** They are grown in loam soil with a lot of organic matter.

**Answer A, B, C or D \_\_\_\_\_ [1]**

**8 A farm has a large pile of plastic wrapping and packaging in a corner of the farmyard.**

**(a) What kind of pollution does this represent?**

**A air**

**B noise**

**C smell**

**D visual**

**Answer A, B, C or D \_\_\_\_\_ [1]**

**(b) Farmers now have to comply with EU regulations on waste disposal.**

**State ONE reason why burning plastic wrapping and packaging is not allowed.**

\_\_\_\_\_  
\_\_\_\_\_ [1]



**9 A crop of oats has a number of weeds growing in it.**

**State TWO reasons why farmers control weeds in their crops.**

**reason 1** \_\_\_\_\_

\_\_\_\_\_

**reason 2** \_\_\_\_\_

\_\_\_\_\_ **[2]**

**10 Soil can be regarded as a habitat.**

**What is meant by the term 'habitat'?**

\_\_\_\_\_

\_\_\_\_\_ **[1]**

**11 (a) Earthworms are found in the soil habitat.**

**State ONE adaptation the earthworm has for living in the soil.**

\_\_\_\_\_ [1]  
\_\_\_\_\_

**(b) Give TWO ways earthworms help to maintain the soil environment.**

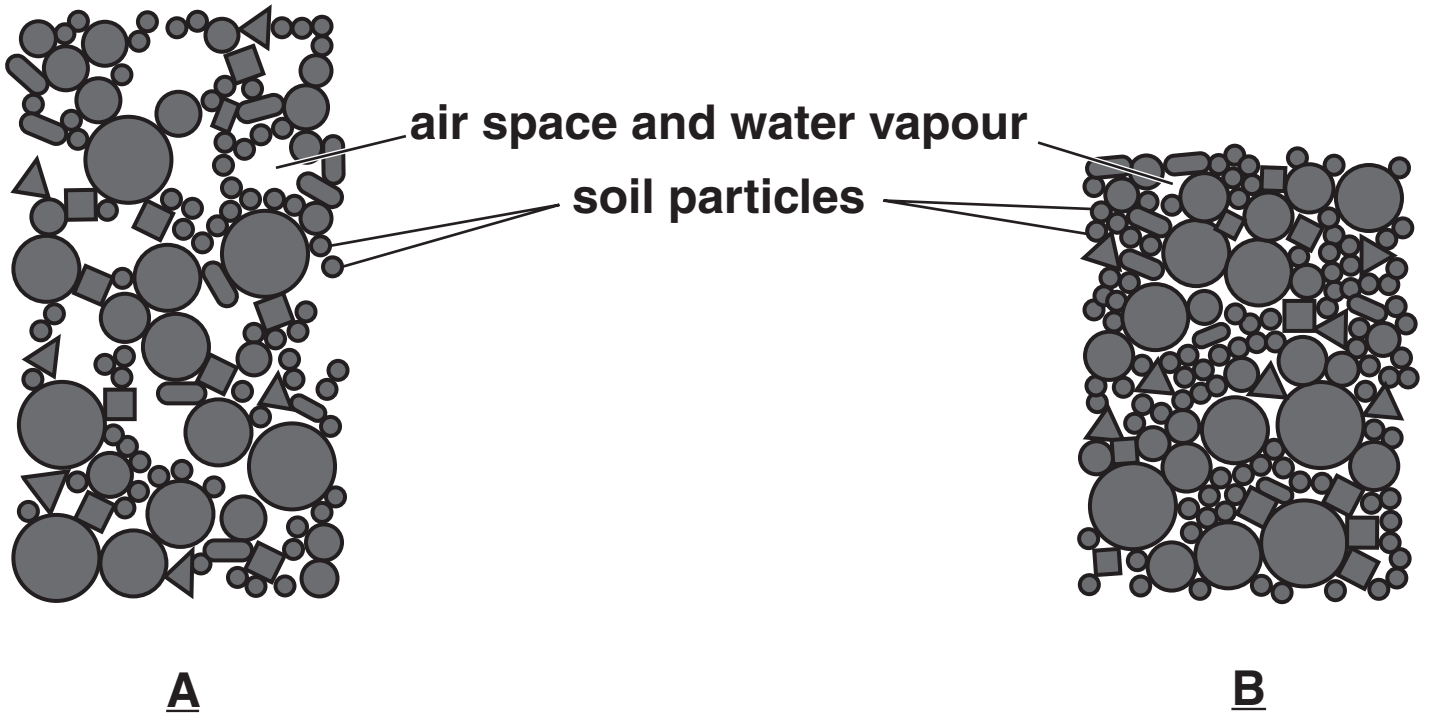
**1** \_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_ [2]

12 The diagrams show the structure of two soil habitats from the side.  
The soil in diagram B has been compacted.



(a) Suggest what could have caused this compaction.

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[1]

(b) Plants grow in soil.  
They will grow better in soil A than in soil B.  
Suggest TWO reasons why soil A will produce better plants.

1 \_\_\_\_\_

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2 \_\_\_\_\_

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[2]

**13 The Government has produced a leaflet to advise on ‘best practice’ when using pesticides on the farm.**

**State TWO precautions that can be taken when applying pesticide in order to protect the environment and water courses.**

**1** \_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_ **[2]**

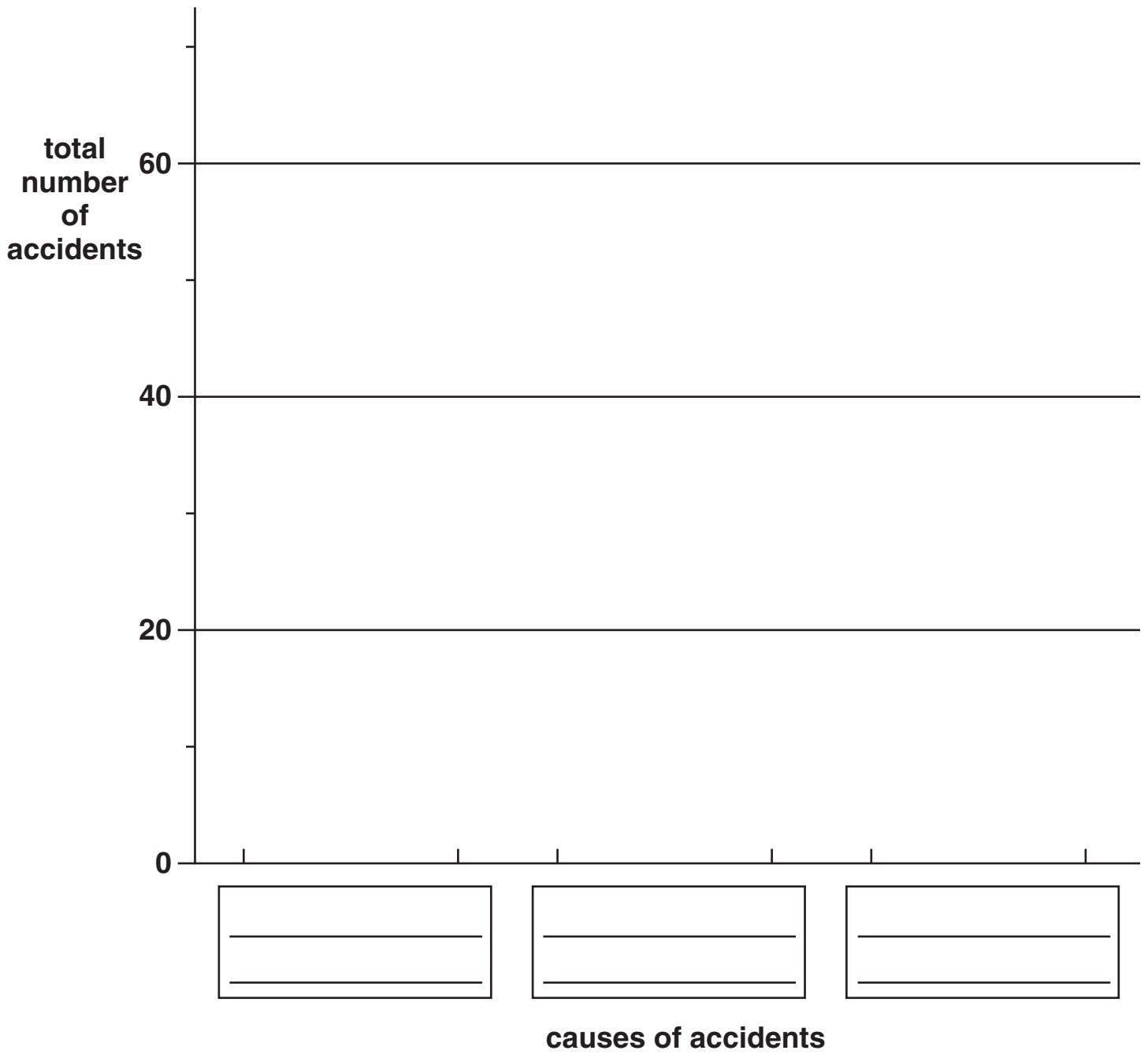
**14 Accidents can happen during fieldwork.  
A school keeps records of these over several years.  
The table shows the causes and levels of injury in these accidents.**

<b><u>CAUSES OF ACCIDENTS</u></b>	<b><u>LEVELS OF INJURIES SUSTAINED</u></b>		
	<b><u>SERIOUS</u></b>	<b><u>MINOR</u></b>	<b><u>NO INJURY</u></b>
<b>poor behaviour</b>	<b>3</b>	<b>19</b>	<b>38</b>
<b>not following instructions</b>	<b>5</b>	<b>15</b>	<b>20</b>
<b>misuse of equipment</b>	<b>12</b>	<b>6</b>	<b>2</b>

**(a) What caused the largest number of serious accidents?**

\_\_\_\_\_ **[1]**

**(b) Complete the bar chart to show the total number of accidents that resulted from each cause.**



**[2]**

**15 The list below gives some information taken from the logos of some conservation groups.**

**A RBST**

**B NATURAL ENGLAND**

**C RSPB**

**D WWF**

**Select one of the above or a conservation body you know about.**

**For the conservation body chosen state:**

- its name
- its aim
- an example of a successful project it has carried out.

**name** \_\_\_\_\_

**aim** \_\_\_\_\_

\_\_\_\_\_

**project** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**[2]**

**UNITED KINGDOM FACES**  
**ENERGY SHORTAGE**

**Government to**

- **fund research into alternative sources of energy**
- **campaign to make the public more energy conscious**

**Suggest reasons why there may be a shortage of energy in the UK in the future.**

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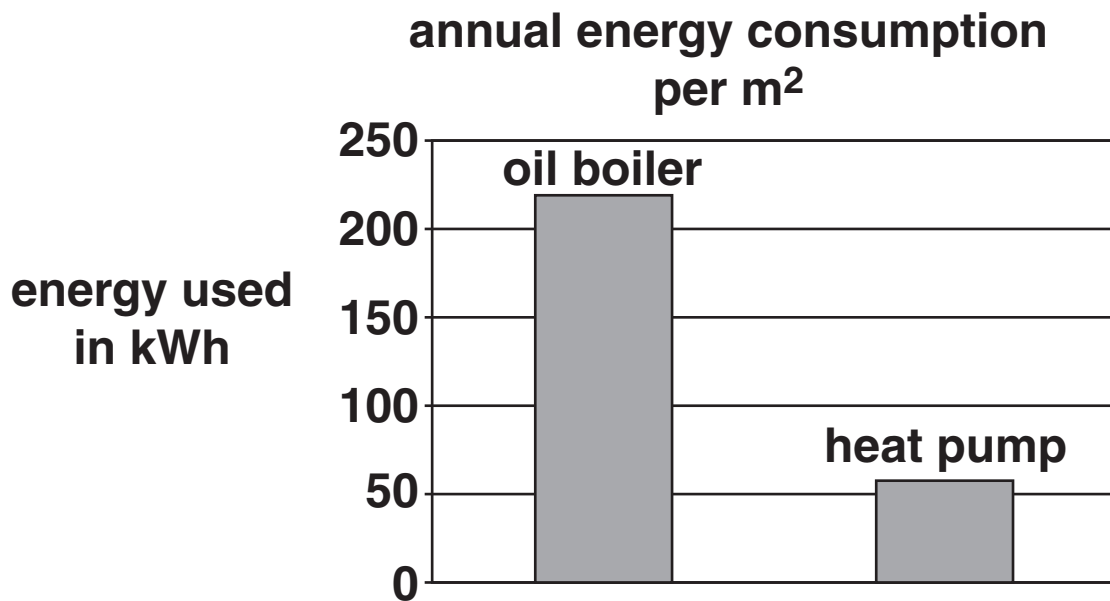
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[3]

**17 A heat pump is a new alternative method of heating a house.  
Heat from the soil is taken up by water in underground pipes.  
These pipes connect to the house heating system.**

**(a) The bar chart compares the energy used when a house was heated by an oil boiler with the energy used when it is heated by a heat pump.**



**What conclusion can be made from the data?**

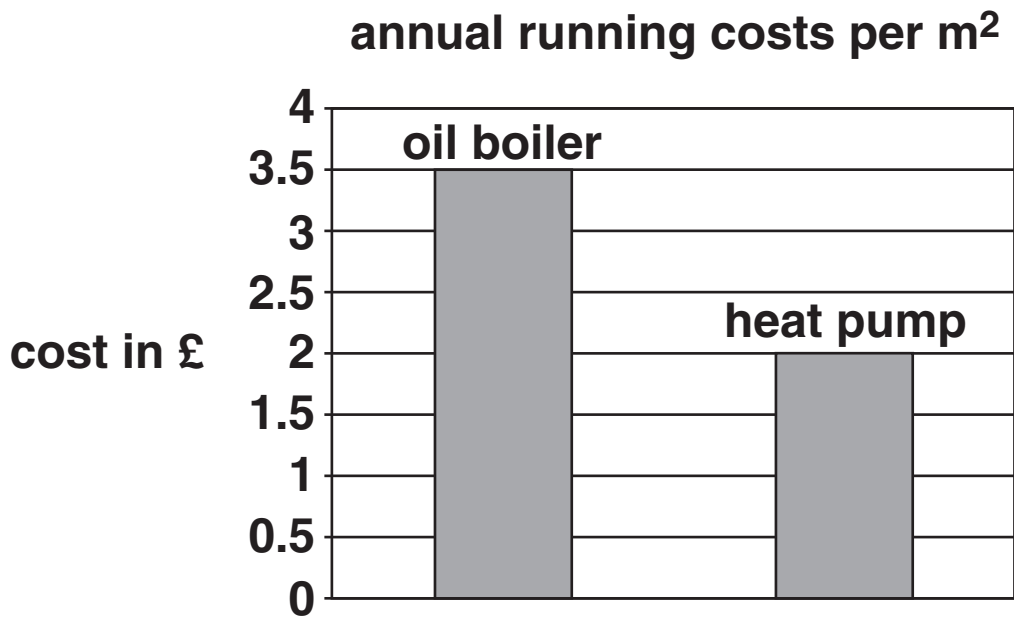
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**[1]**



- (b) This bar chart compares the running costs of heating each  $\text{m}^2$  of a house by an oil boiler and by a heat pump.



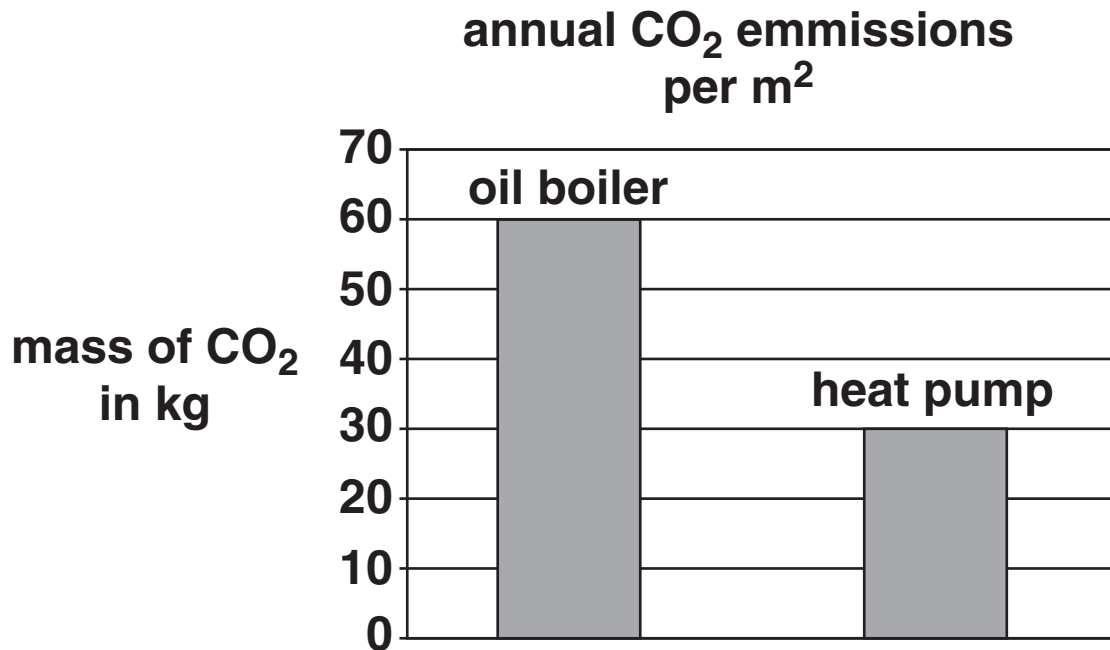
**How much money is saved per  $\text{m}^2$  by using the heat pump?**

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[1]

(c) This bar chart compares the CO<sub>2</sub> emissions from a house heated by an oil boiler and one heated by a heat pump.



What is the percentage reduction in CO<sub>2</sub> emissions when a heat pump is used?

- A 30%
- B 50%
- C 60%
- D 100%

Answer A, B, C or D \_\_\_\_\_ [1]

**(d) Heat pumps are an example of an alternative energy source.**

**Describe THREE other forms of alternative energy that may be used to produce electricity.**

**1** \_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_

**3** \_\_\_\_\_

\_\_\_\_\_ **[3]**

**END OF QUESTION PAPER**



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