A

AQA

Surname _____

Other Names _____

Centre Number _____

Candidate Number _____

Candidate Signature _____

I declare this is my own work.

GCSE

MATHEMATICS

F

Foundation Tier Paper 3 Calculator

8300/3F

Time allowed: 1 hour 30 minutes

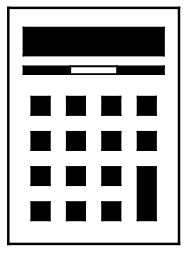
At the top of the page, write your surname and other names, your centre number, your candidate number and add your signature.

[Turn over]

JUN218300 3F 01

For this paper you must have:

- **a calculator**
- **mathematical instruments.**



INSTRUCTIONS

- **Use black ink or black ball-point pen. Draw diagrams in pencil.**
- **Answer ALL questions.**
- **You must answer the questions in the spaces provided. Do not write on blank pages.**
- **If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).**
- **Do all rough work in this book. Cross through any work you do not want to be marked.**

INFORMATION

- **The marks for questions are shown in brackets.**
- **The maximum mark for this paper is 80.**
- **You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.**

ADVICE

In all calculations, show clearly how you work out your answer.

DO NOT TURN OVER UNTIL TOLD TO DO SO

Answer ALL questions in the spaces provided.

1 Solve $4 + x = 12$

Circle your answer. [1 mark]

$x = -16$ $x = -8$ $x = 8$ $x = 16$

2 Circle the largest number. [1 mark]

4.5061 4.5 4.516 4.56

3 Circle the expression that means half the value of x [1 mark]

$\frac{x}{2}$ $\frac{2}{x}$ $\frac{1}{2} - x$ $x - \frac{1}{2}$

4 Circle the value of 10^6 [1 mark]

one hundred one thousand

one million one billion

5 Complete the bank statement. [3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/05/2020	Starting balance			670.43
08/05/2020	Salary	2156.75		_____
11/05/2020	Water bill		48.97	_____
18/05/2020	Mortgage payment		_____	1642.49

6

7

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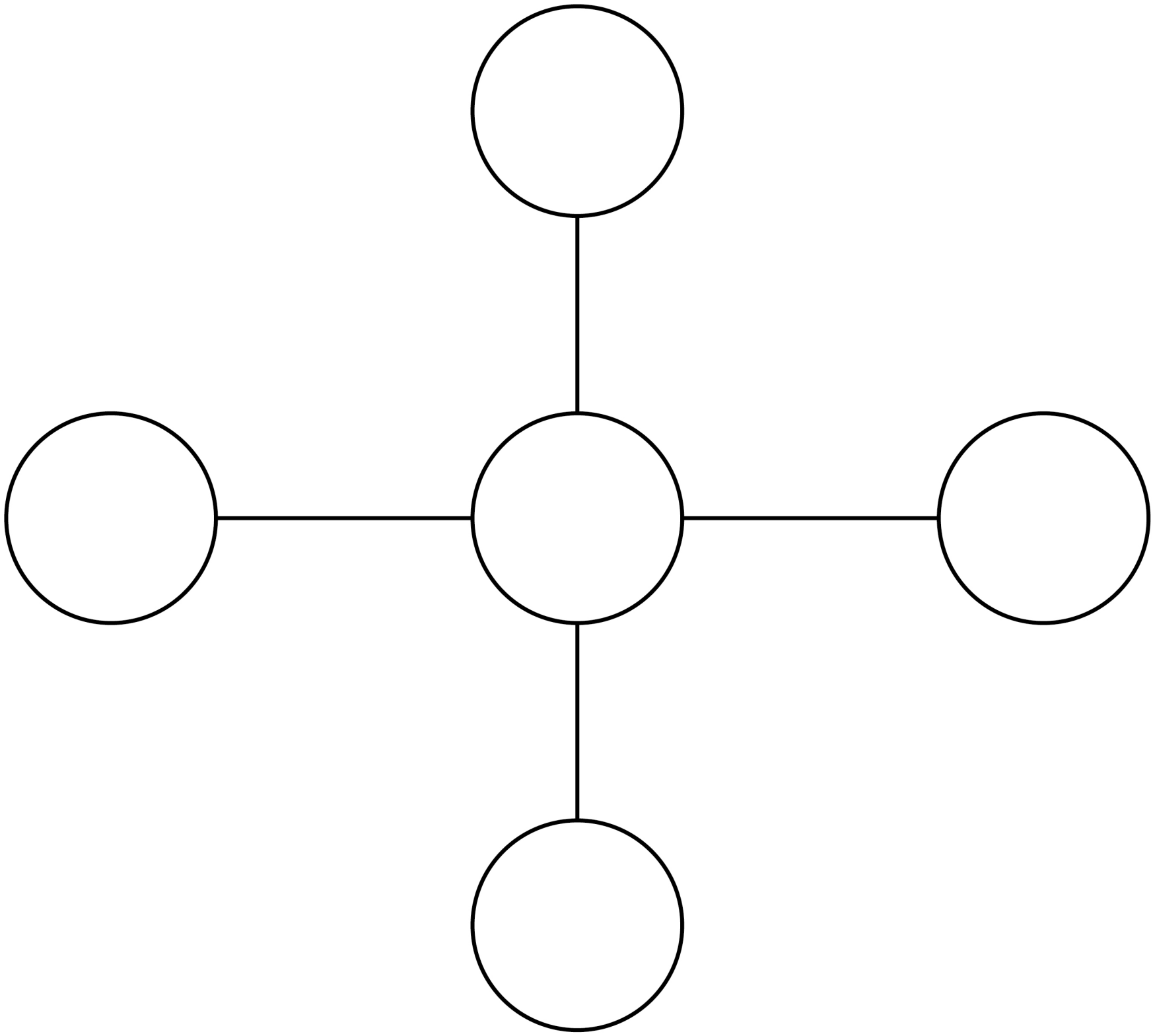
[Turn over]

6 On the opposite page, put the numbers 1, 2, 3, 4 and 6 into the circles so that

each line of three numbers multiplies to 12

the total of the vertical line is one more than the total of the horizontal line.

Use each number once. [2 marks]



[Turn over]

7 **Point A is 217 metres ABOVE sea level.**

Point B is 145 metres LOWER than point A.

Point C is 59 metres BELOW sea level.

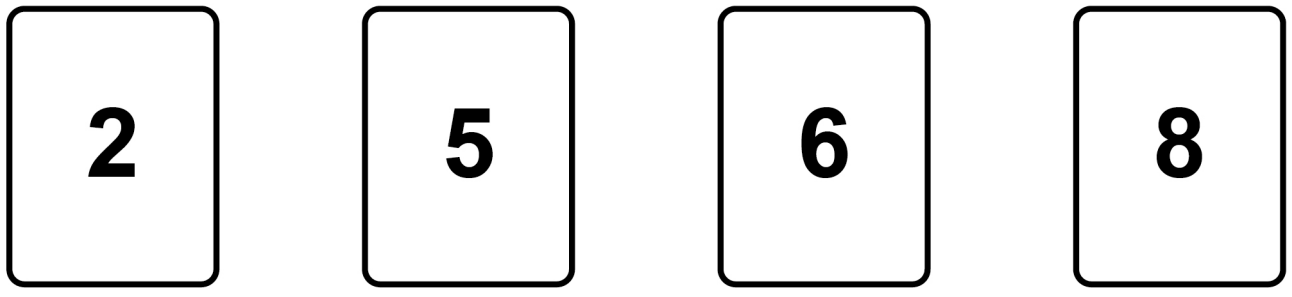
How much HIGHER is point B than point C? [3 marks]

Answer _____ **metres**

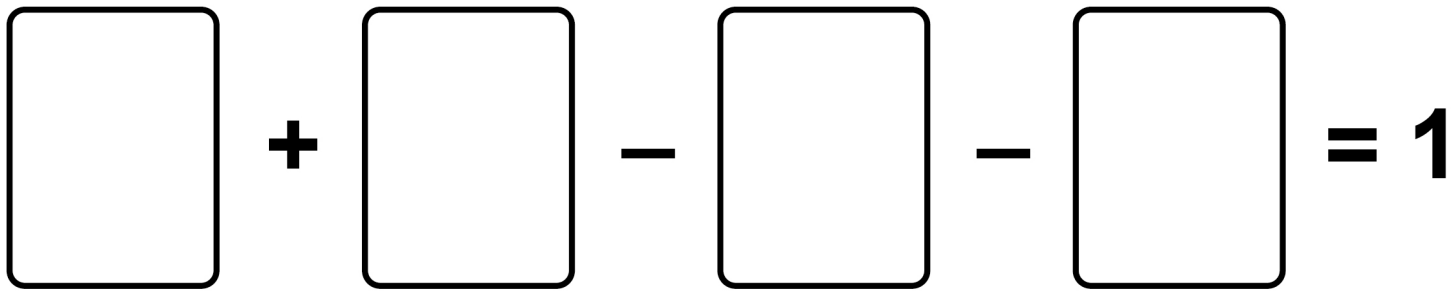
[Turn over]

5

8 Here are four number cards.



8(a) Use each card once to make this calculation correct. [1 mark]



Two of the cards are chosen at random.

8(b) On the opposite page, list all the possible pairs of cards.

Two have been done for you.
[2 marks]

First card	Second card
2	5
5	2

8(c) Write down the probability that the first card is an even number. [1 mark]

Answer _____

9 School A has 72 tutor groups.

Each group has 28 students.

School B has 16 tutor groups.

Each group has 18 students.

Show that

$$\frac{\text{number of students at school A}}{\text{number of students at school B}}$$

is a whole number. [2 marks]

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[Turn over]

10 **Boxes of chocolates each contain 25 chocolates.**

One box costs £3.25

A shop has a special offer.

Two boxes for £5

How much cheaper PER CHOCOLATE is the special offer? [3 marks]

Answer _____ pence

5

11 In a game, the player going first uses crosses and the player going second uses circles.

To win the game, a player must get three crosses or three circles together in a line.

The line must be horizontal, vertical or diagonal.

11(a) Here is the position in a game.

	A	B	C	D	E	F
1					O	
2				O		
3			X	X		
4				X		
5		O			O	
6		X				

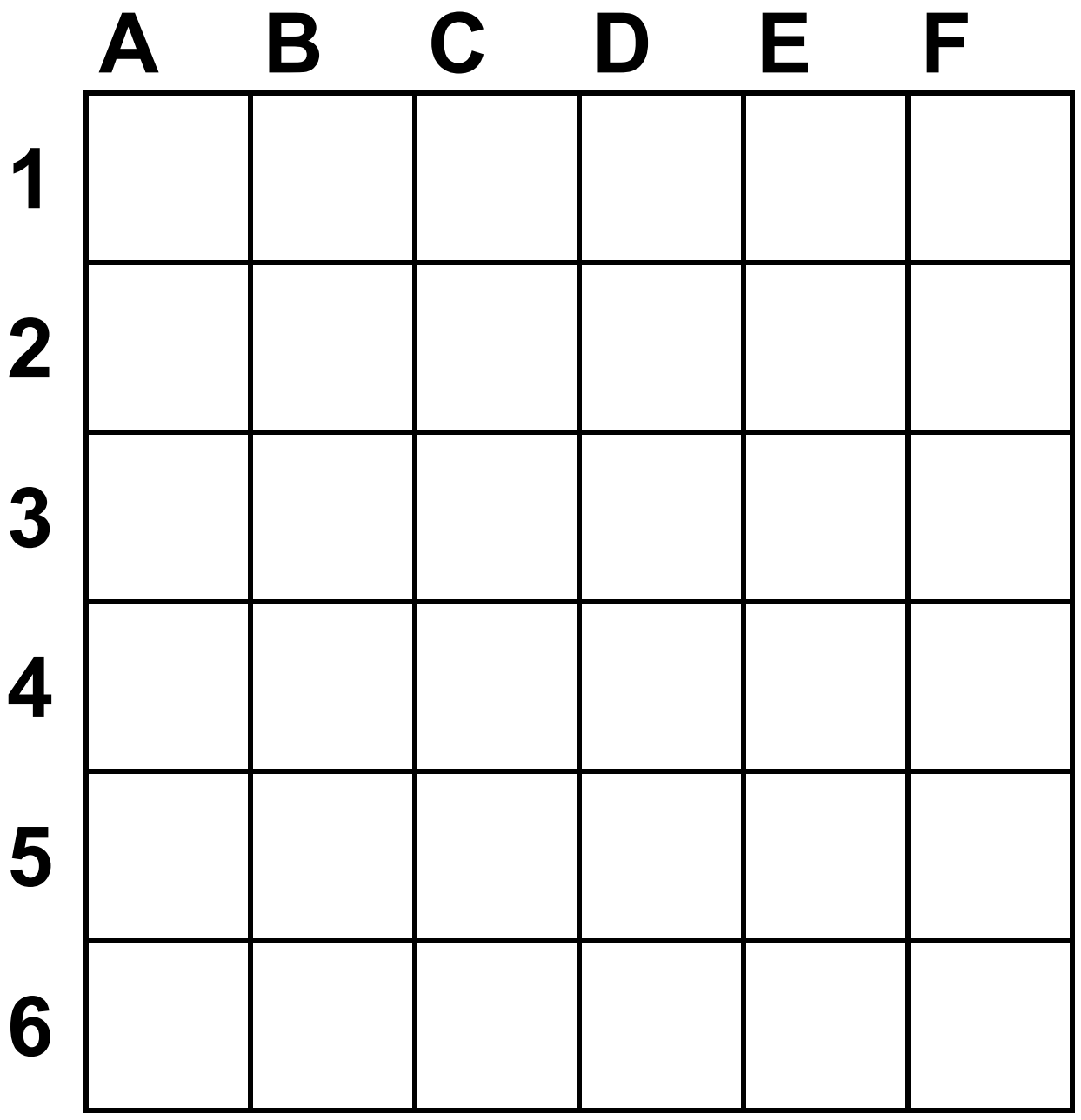
It is Amy's turn to put a cross on the grid.

She wins if she puts a cross in B3

Write down ALL the other squares where she could put a cross to win the game. [2 marks]

Answer _____

Amy goes first in the next game.



11(b) Assume that she will choose a square at random.

Write down the probability that she will put her first cross in square F6 [1 mark]

Answer _____

11(c) In fact, Amy decides to put her first cross into a corner square.

What does this mean about the probability that she will put her first cross in square F6?

Tick a box.

☐ It is smaller than the answer to part (b)

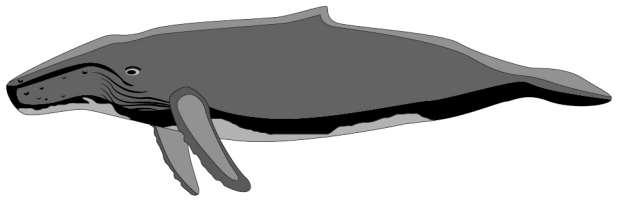
☐ It is greater than the answer to part (b)

☐ It is the same as the answer to part (b)

Give a reason for your answer.
[1 mark]

12 A dolphin and a whale are drawn to scale.

Dolphin



Whale

The actual length of the dolphin is 3 metres.

Estimate the actual length of the whale.

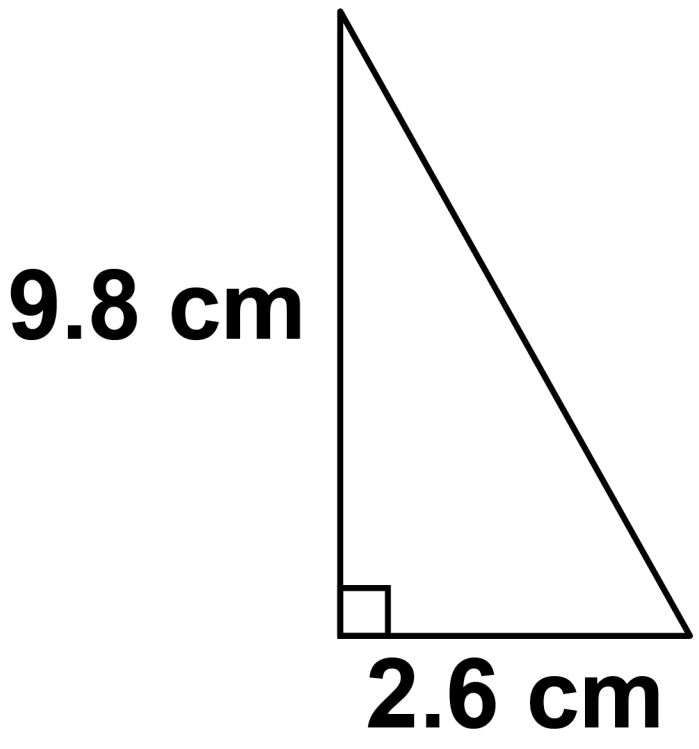
You MUST show your working.
[2 marks]

Answer _____ **metres**

[Turn over]

13(a) Work out the area of this triangle.

The diagram is not drawn accurately.

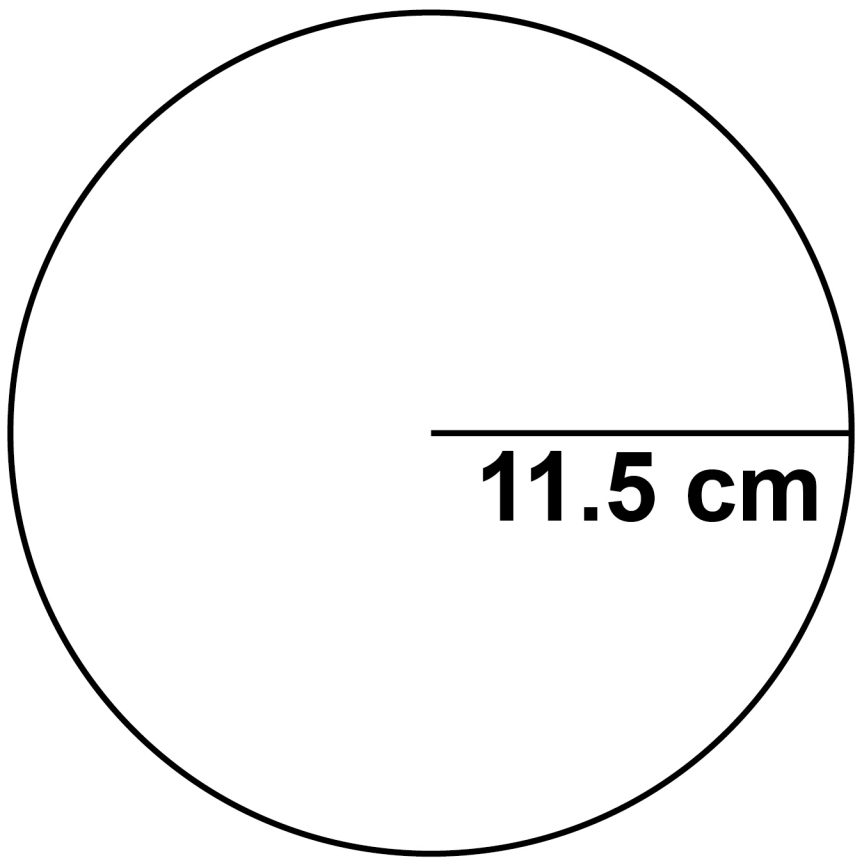


[2 marks]

Answer _____ cm^2

13(b) A circle has a radius of 11.5 cm

The diagram is not drawn accurately.



Work out the area of the circle.
[2 marks]

Answer _____ cm^2

14 A machine takes 4 seconds to fill a packet of crisps.

14(a) In total, how many packets can 35 of these machines fill in 8 hours? [4 marks]

Answer _____

14(b) Each packet of crisps contains 32.5 grams of crisps.

At what rate does a machine put the crisps into the packets?

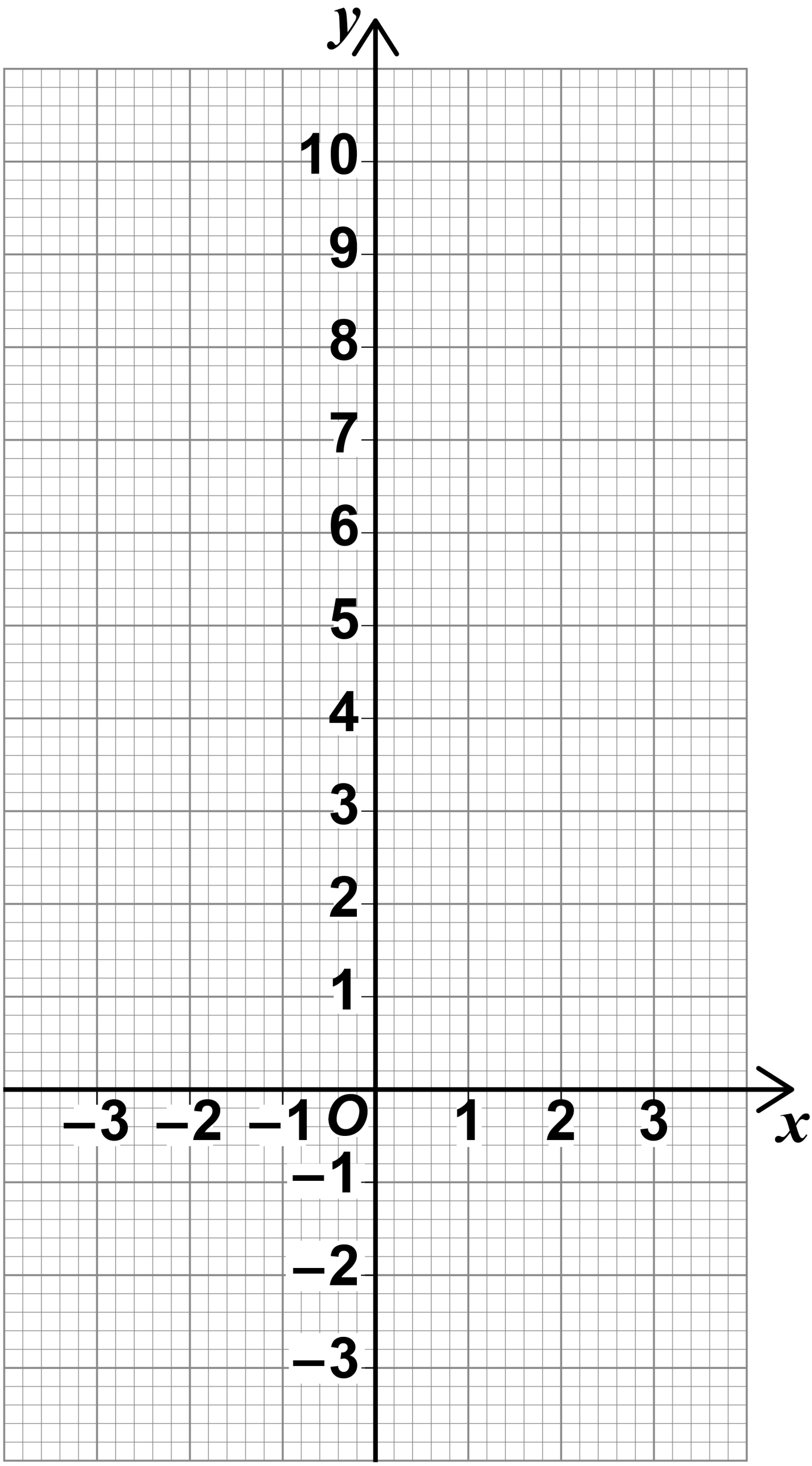
Give your answer in grams per second. [2 marks]

Answer _____ grams per second

15(a) Complete the table of values for $y = x^2 - 2$ [1 mark]

x	–3	–2	–1	0	1	2	3
y		2	–1	–2	–1		

15(b) On the opposite page, draw the graph of $y = x^2 - 2$ for values of x from –3 to 3 [2 marks]



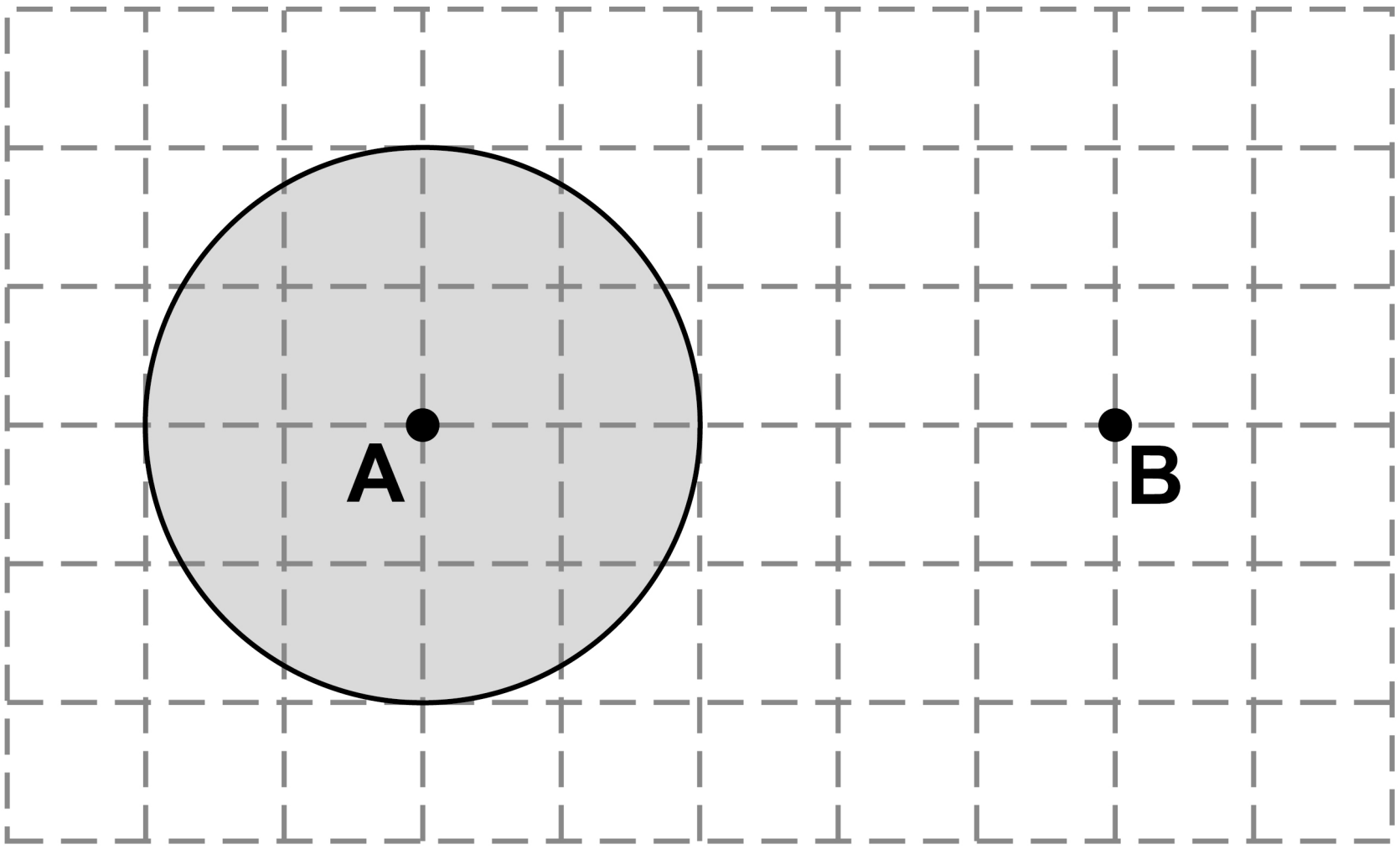
[Turn over]

9

16(a) Towns A and B are shown on a grid.

The side of each square on the grid represents 1 cm.

Scale: 1 cm represents 10 miles



What does the shaded area represent?

Tick ONE box. [1 mark]

- ☐ All the points nearer to A than to B
- ☐ All the points at least 30 miles from B
- ☐ All the points halfway between A and B
- ☐ All the points within 20 miles of A

[Turn over]

16(b) **Complete an accurate drawing of triangle *PQR* so that**

angle *QPR* is 53°

the length of side *PR* is 7.5 cm

[2 marks]

17 Multiply out $5x(3x - 2)$ [2 marks]

Answer _____

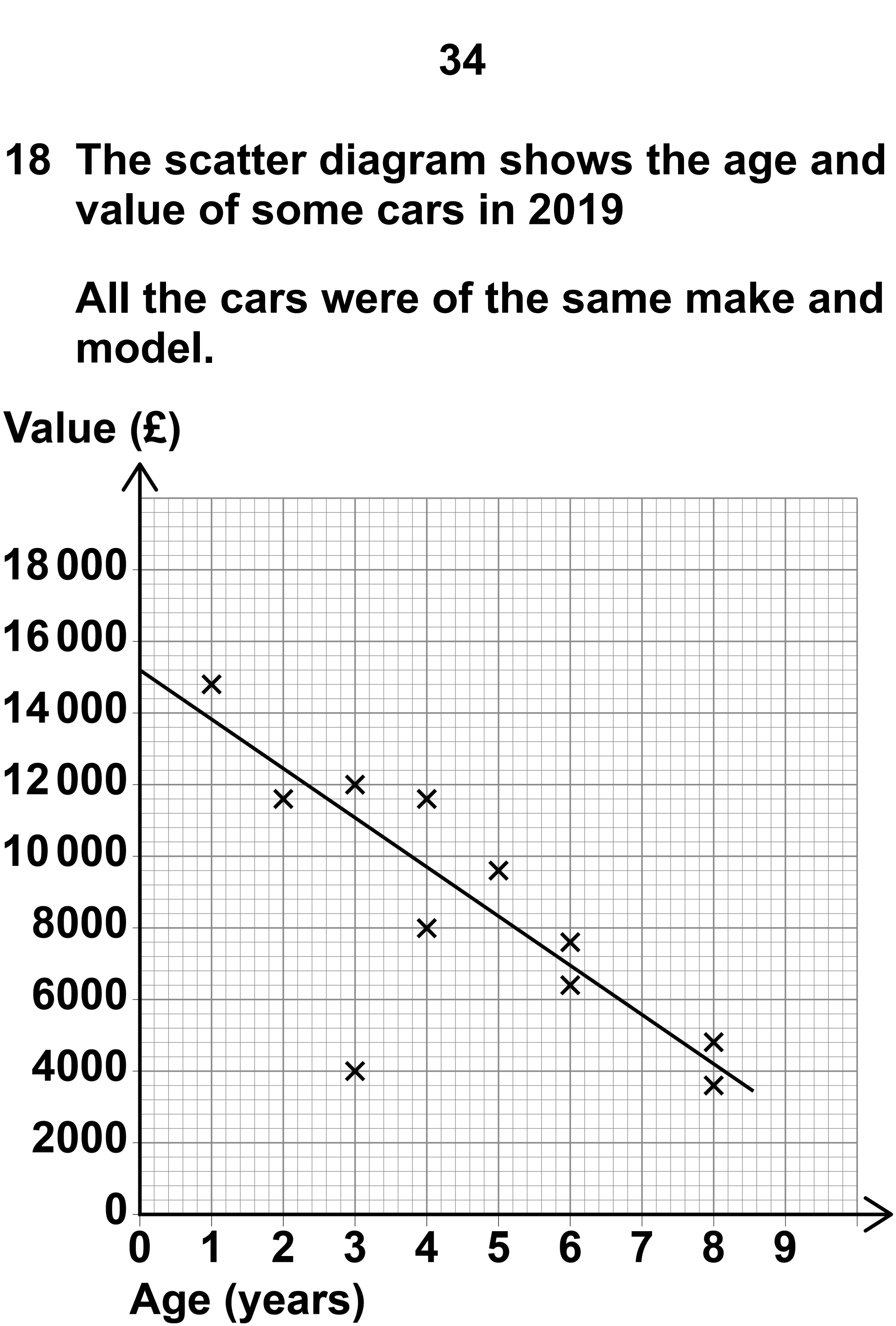
[Turn over]

5

3 3

18 The scatter diagram shows the age and value of some cars in 2019

All the cars were of the same make and model.



18(a) What type of correlation does the scatter graph show? [1 mark]

Answer _____

18(b) Write down the value of the car that was an outlier. [1 mark]

_____

_____

Answer £ _____

18(c) Use the graph to estimate the value of a new car of this make and model in 2019 [1 mark]

Answer £ _____

18(d) A car of this make and model had a value of £5600 in 2019

Use the graph, on page 34, to estimate the year in which it was made. [2 marks]

Answer £ _____

5

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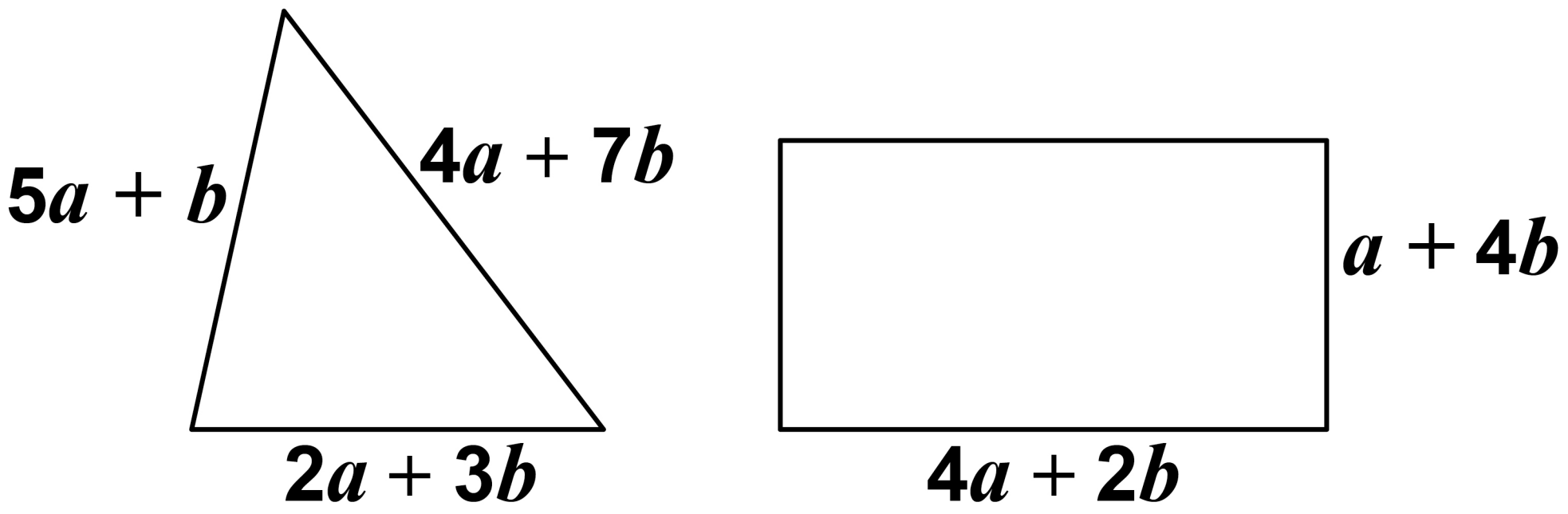
[Turn over]

19 Here are a triangle and a rectangle.

The diagrams are not drawn accurately.



a **and** ***b*** **are positive numbers.**

Which shape has the LARGER perimeter?

You MUST work out expressions for both perimeters. [3 marks]

Tick a box.

☐ triangle

☐ rectangle

☐ cannot tell

[Turn over]

20 The nth term of a sequence is
$19 - 4n$

What is the SMALLEST value of n that gives a negative term? [2 marks]

Answer _____

21 What is the name of the LONGEST possible chord in a circle?

Circle your answer. [1 mark]

tangent circumference

radius diameter

[Turn over]

6

22 **The number of people living in a town is 47 000 to the nearest 1000**

Which ONE of these is a possible number of people living in the town?

Circle your answer. [1 mark]

46 000 **46 500** **47 500** **48 000**

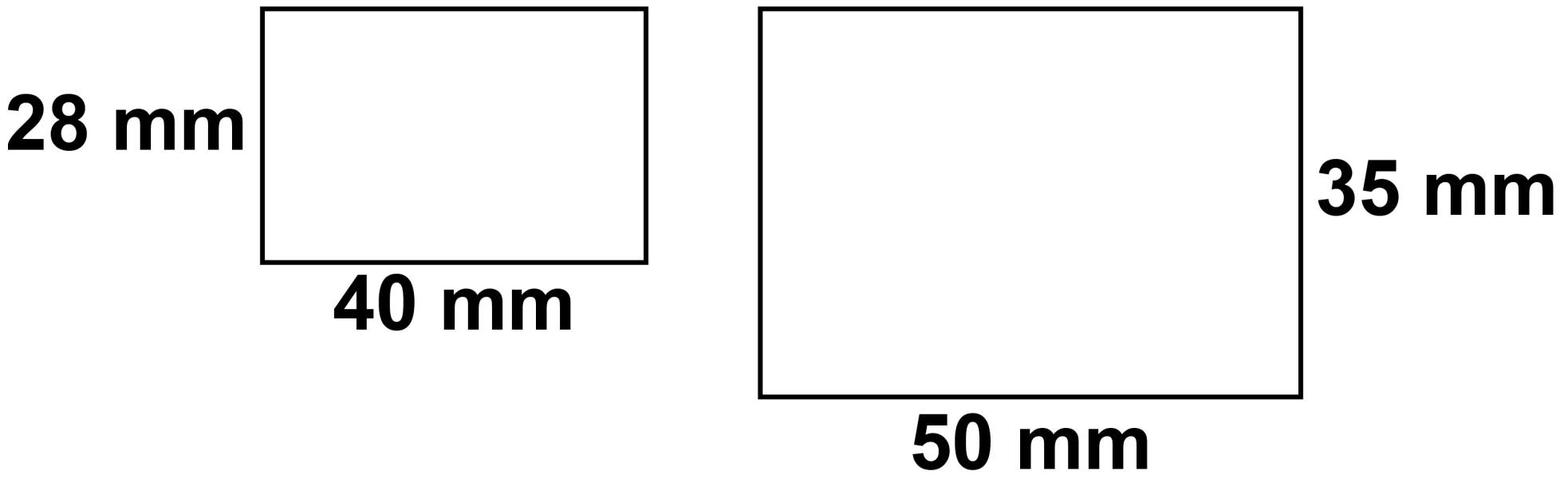
23 Jeff and Kaz share £270 in the ratio Jeff : Kaz = 2.6 : 1

How much MORE than Kaz does Jeff get? [3 marks]

Answer £

24 **Here are two rectangles.**

The diagrams are not drawn accurately.



Show that the rectangles are similar.
[1 mark]

25 The equation of a straight line is

$2y = 6x + 8$

Circle the gradient of the line.

[1 mark]

6 8 3 4

0 6

26 At a country park there is a house, a museum and a garden.

The table shows the prices per person to visit the park.

	Price per person
Garden only	Free
House and museum	£12.50
House only	£8
Museum only	£7

One day, 480 people visit the park.

67 visit the garden ONLY.

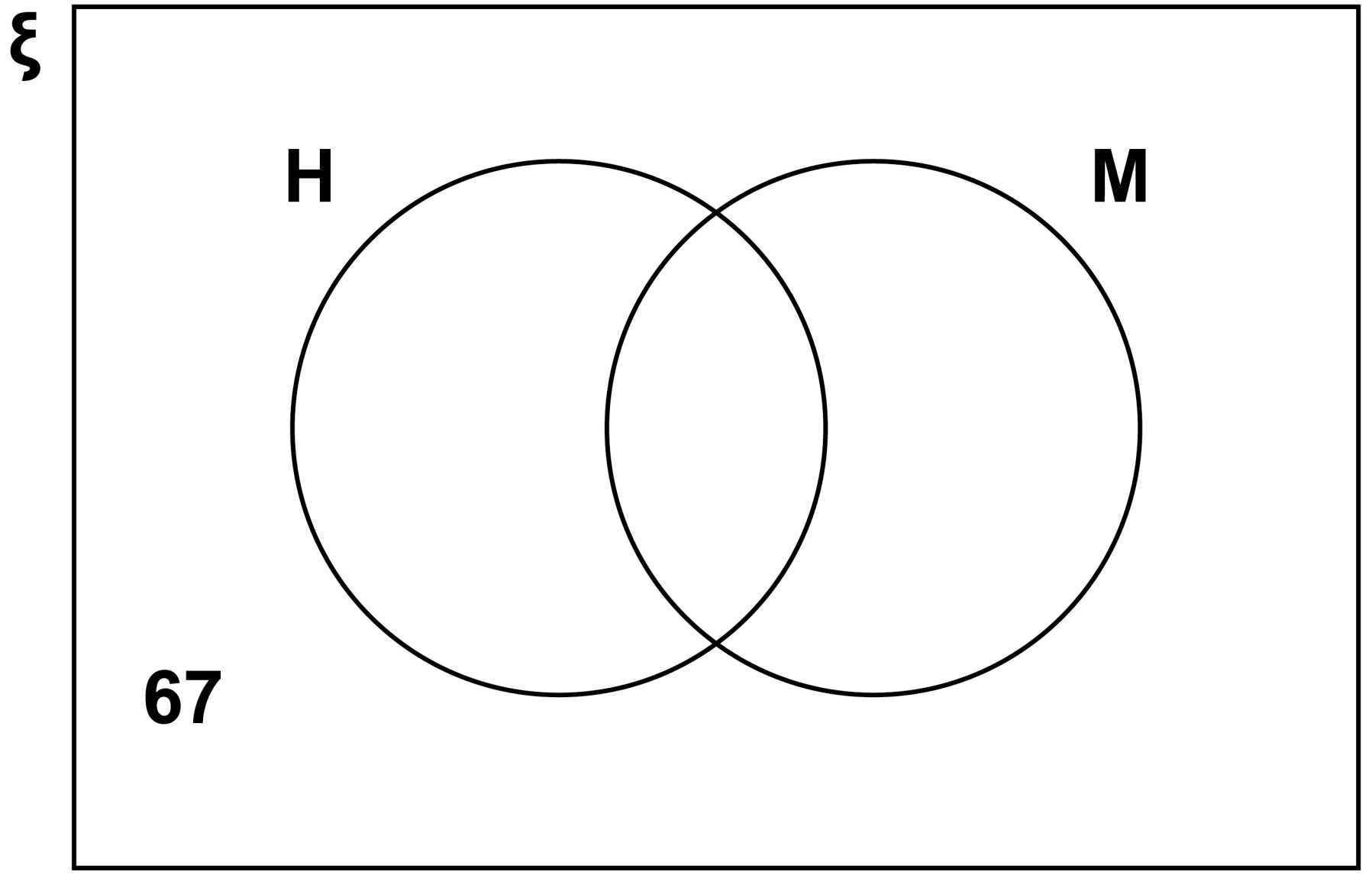
40% visit the house AND the museum.

$\frac{3}{8}$ visit the house ONLY.

The rest visit the museum ONLY.

In total, how much do the 480 people pay to visit the park?

You may use the Venn diagram to help you. [5 marks]



Answer £

5

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[Turn over]

27 The heel of a shoe exerts a pressure of 198 pounds per square inch.

Convert this pressure into kilograms per square centimetre.

Use

1 pound = 0.45 kilograms

1 square inch = 6.25 square centimetres

[3 marks]

Answer _____ kg/cm^2

[Turn over]

28 Six positive numbers have

a mean of 10

a range of 19

Four of the numbers are

12 7 15 3

Work out the other two numbers.
[3 marks]

Answer _____ and _____

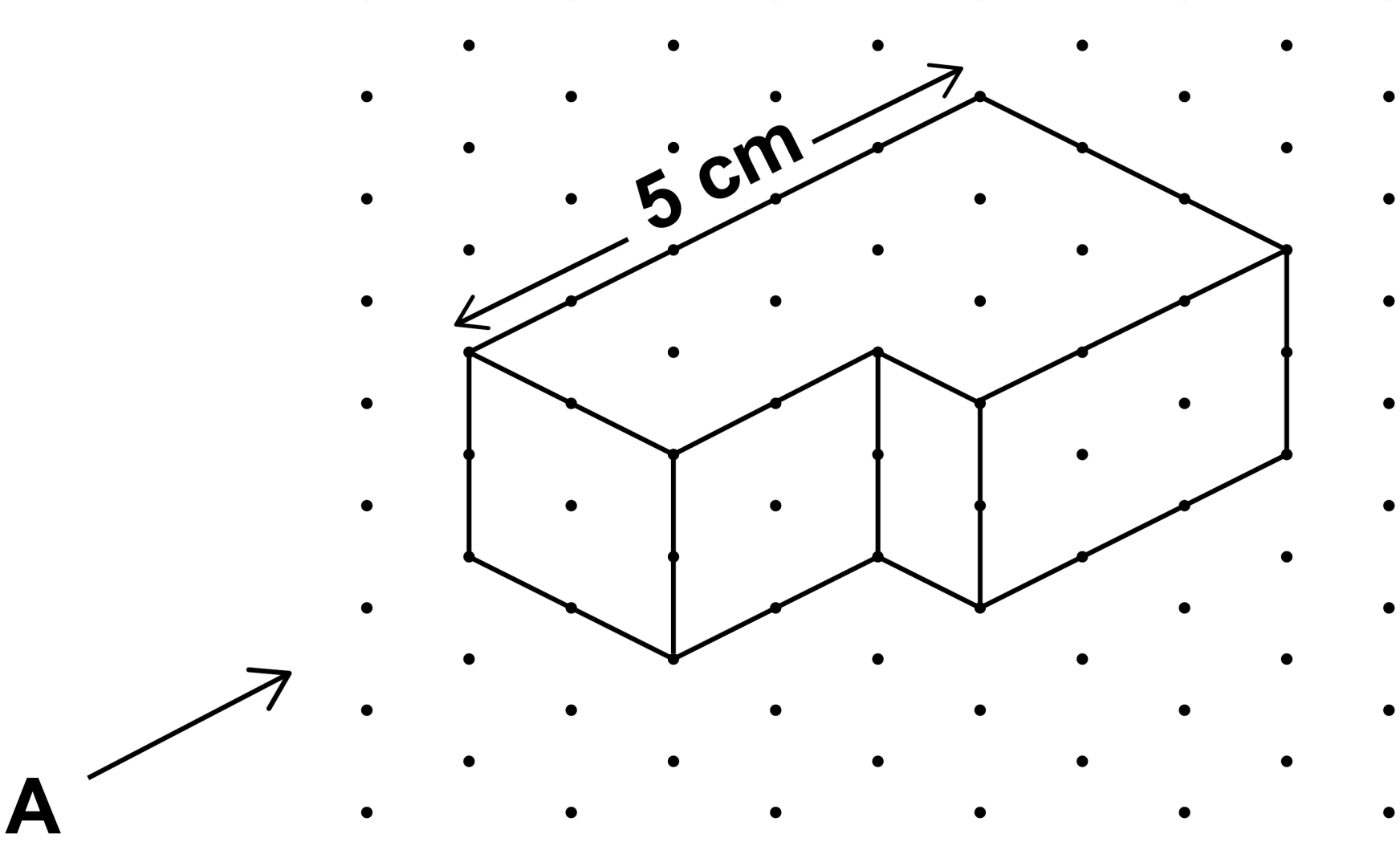
[Turn over]

6

5 3

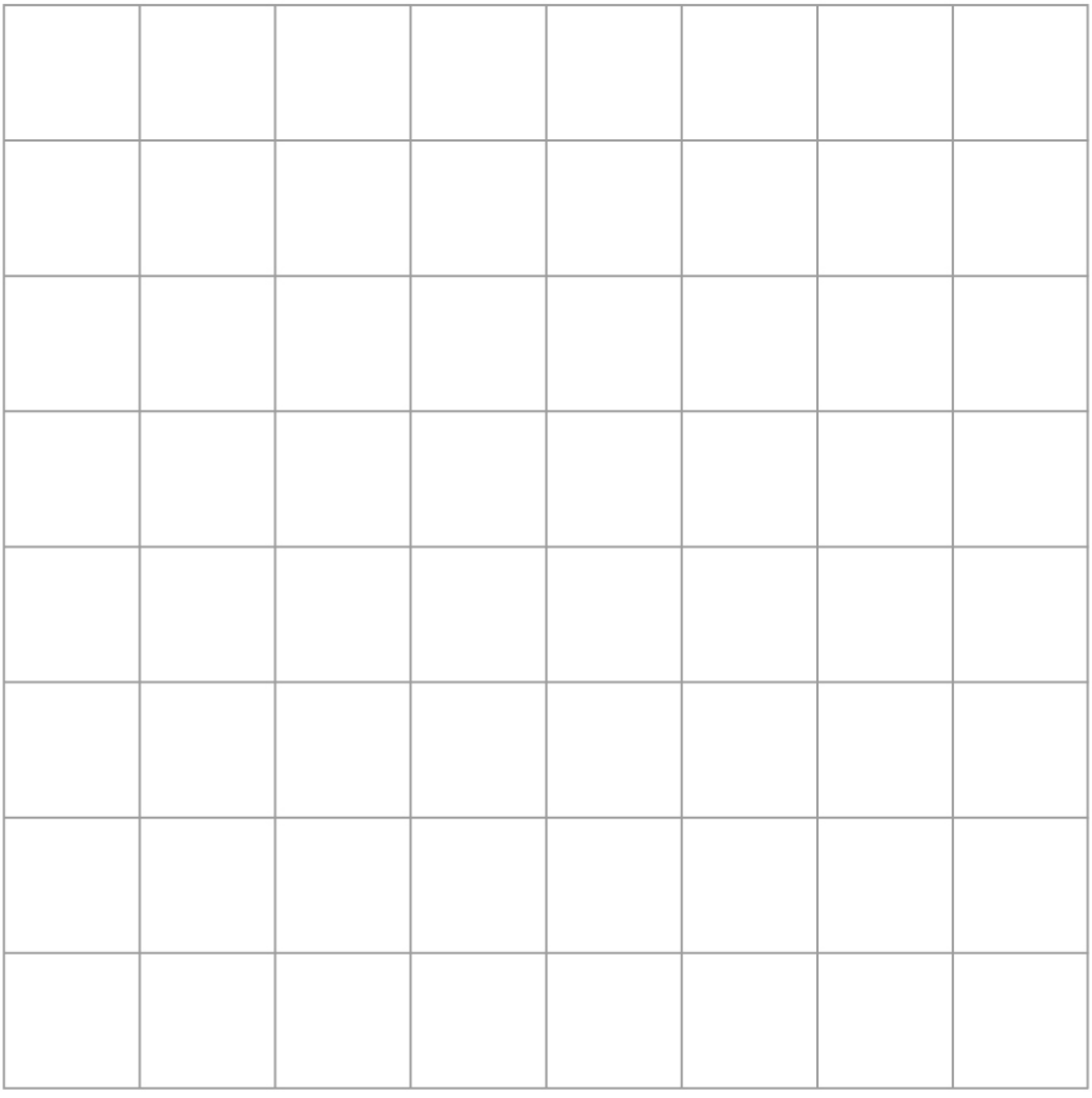
29 **A solid shape is drawn on isometric paper.**

The gaps between the dots represent 1 centimetre.



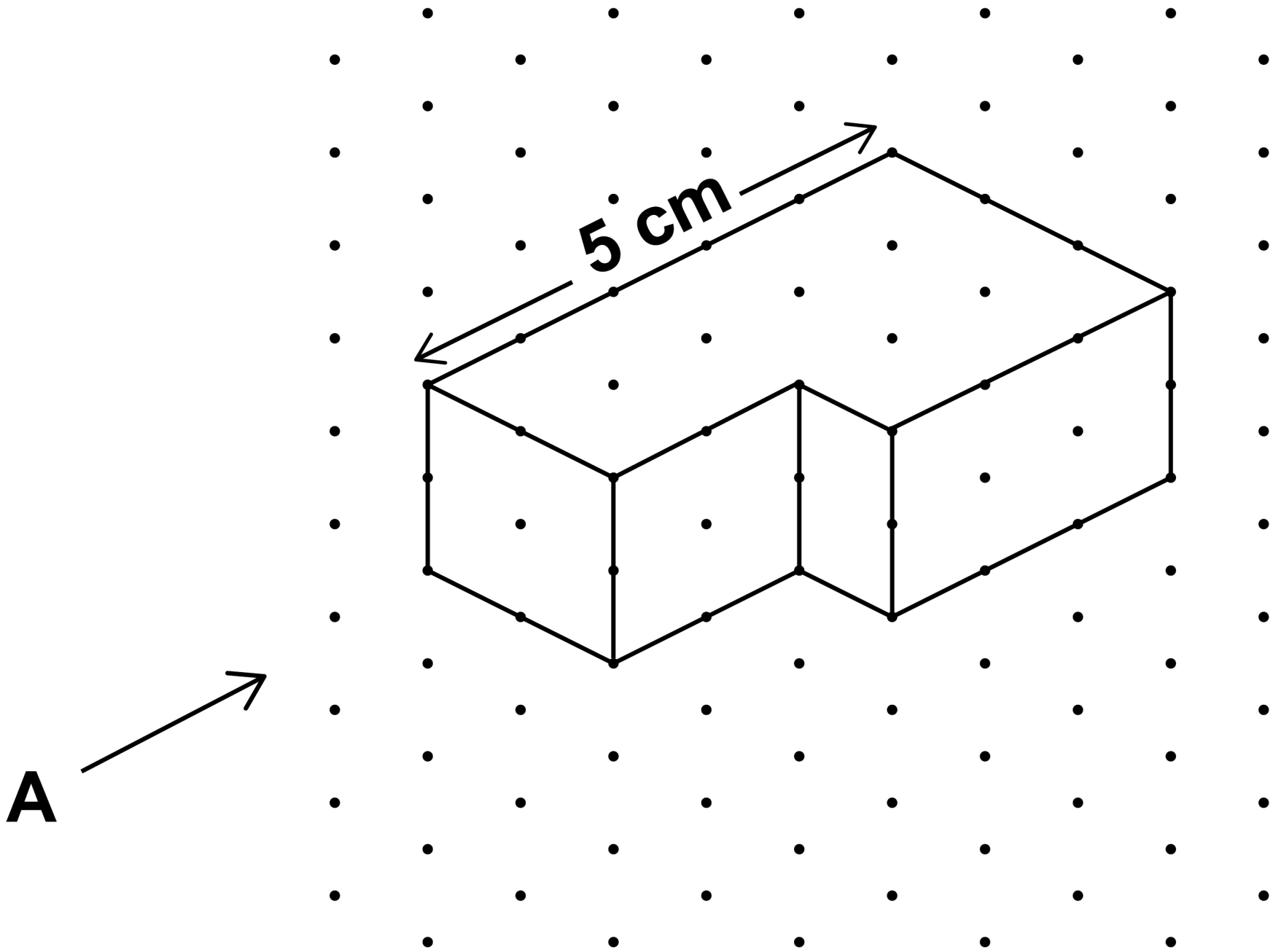
29(a) On the grid, draw the elevation of the shape from A.

The side of each square on the grid represents 1 centimetre. [1 mark]



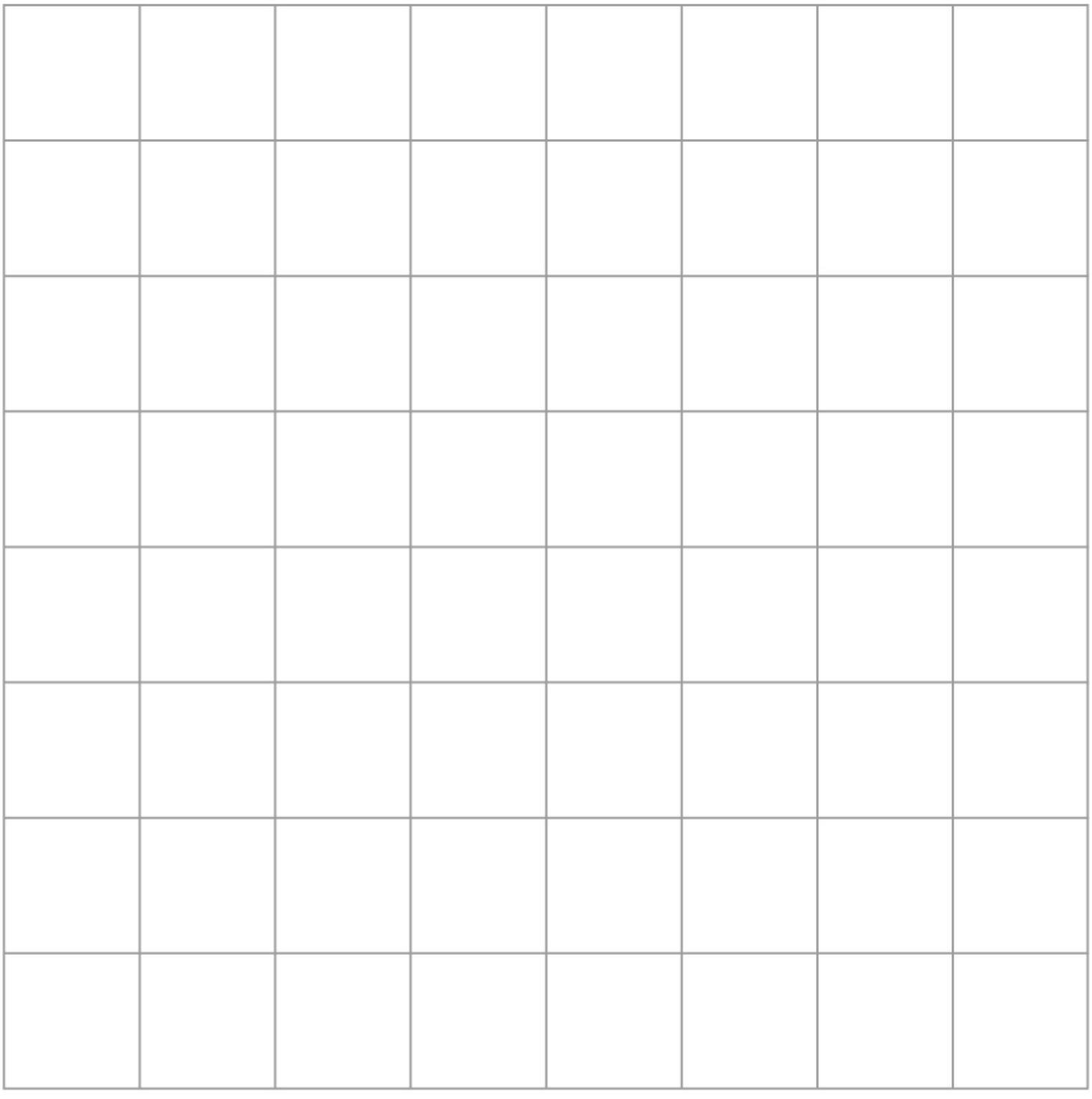
[Turn over]

REPEAT OF DIAGRAM



29(b) **On the grid below, draw a plan of the shape.**

The side of each square on the grid represents 1 centimetre. [1 mark]



[Turn over]

30 Erik thinks of a prime number between 20 and 30

His number is x% of 125

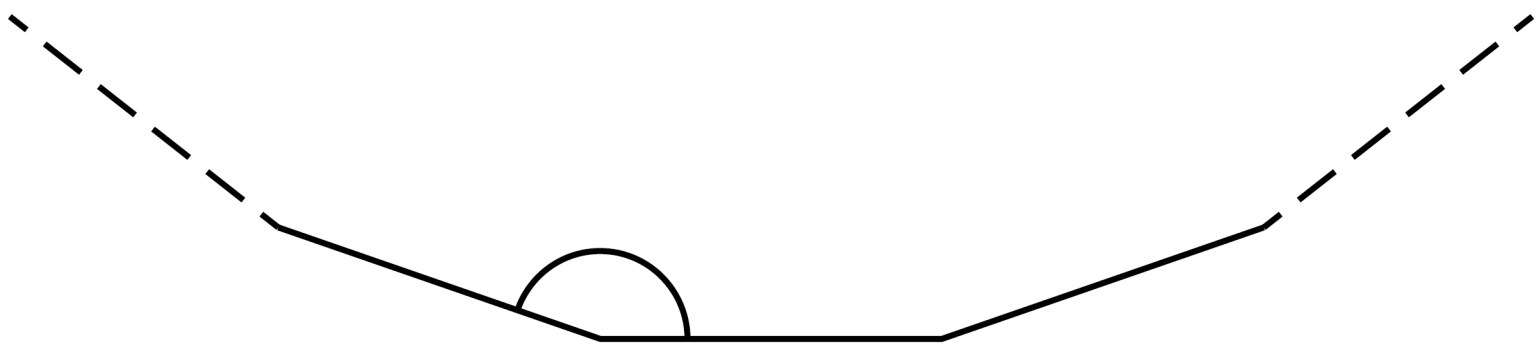
Work out ONE possible value of x.
[3 marks]

Answer

5

31 **Part of a regular polygon with 15 sides is shown.**

The diagram is not drawn accurately.



Work out the size of an INTERIOR angle. [2 marks]

Answer _____ degrees

END OF QUESTIONS

2

Additional page, if required.

Write the question numbers in the left-hand margin.

Additional page, if required.

Write the question numbers in the left-hand margin.

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For Examiner's Use	
Pages	Mark
4–6	
8–11	
12–13	
14–17	
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22–25	
26–29	
30–33	
34–36	
38–41	
42–45	
46–48	
50–53	
54–59	
60–61	
TOTAL	