AQA

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE MATHEMATICS

F

Foundation Tier

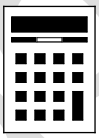
Paper 3 Calculator

Shadow paper based on November 2021 question paper

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.



Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or 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.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24–25	
26–27	
28–29	
30	
TOTAL	

Answer **all** questions in the spaces provided.

Do not write outside the box

1 Solve $5 + x = 12$

Circle your answer.

[1 mark]

$x = -17$ $x = -7$ $x = 7$ $x = 17$

2 Circle the largest number.

[1 mark]

8.6 8.62 8.605 8.5999

3 Circle the expression that means x divided by three.

[1 mark]

$\frac{x}{3}$ $\frac{3}{x}$ $\frac{1}{3} - x$ $x - \frac{1}{3}$

Do not write outside the box

4 Circle the value of 10^3

[1 mark]

one hundred | one thousand | ten thousand | one million

5 Complete the bank statement.

[3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/05/2020	Starting balance			670.43
08/05/2020	Wages	1673.25		
11/05/2020	Gas bill		58.26	
18/05/2020	Rent			1564.52

Turn over for the next question

7

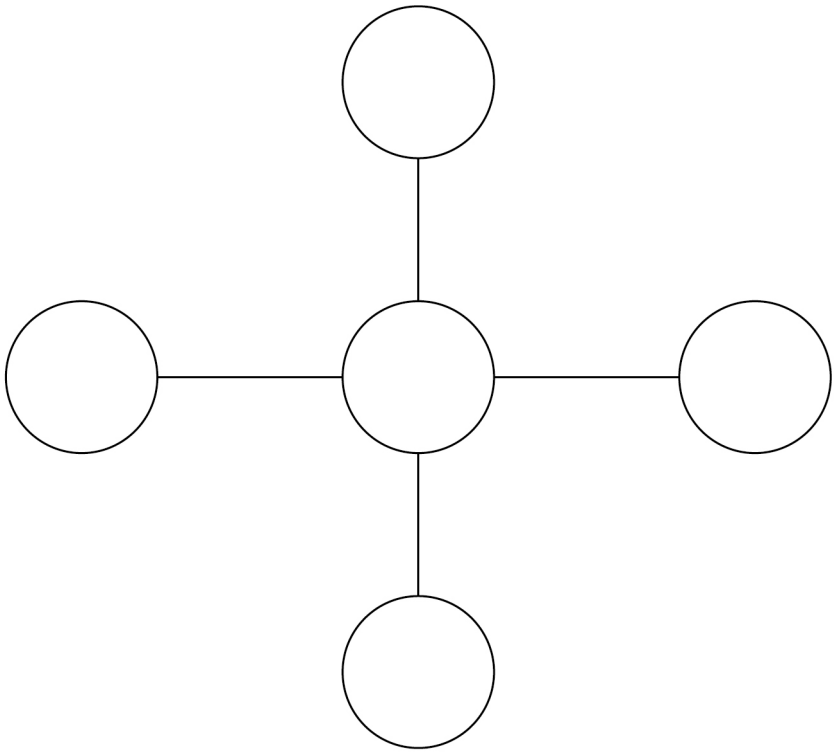
Turn over ►

Do not write outside the box

6 Put the numbers 1, 3, 4, 7 and 8 into the circles so that each line of three numbers adds up to 12

Use each number once.

[2 marks]



Do not write outside the box

7 Point A is 50 metres **below** sea level.

Point B is 75 metres **higher** than point A.

Point C is 60 metres **above** sea level.

How much **higher** is point C than point B?

[3 marks]

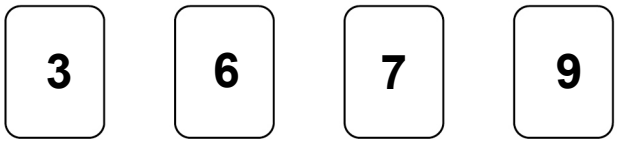
Answer _____ metres

5

Turn over ►

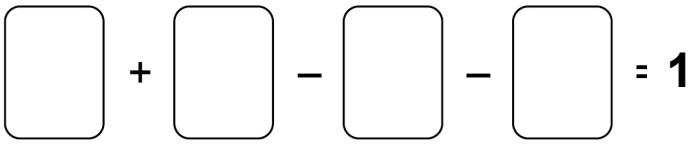
Do not write outside the box

8 Here are four number cards.



8 (a) Use each card once to make this calculation correct.

[1 mark]



Do not write outside the box

Two of the cards are chosen at random.

8 (b) List all the possible pairs of cards.

Two have been done for you.

[2 marks]

First card	Second card
3	6
6	3

8 (c) Write down the probability that the first card is an odd number.

[1 mark]

Answer _____

4

Turn over ►

Do not write outside the box

9 Packet of biscuits A costs 64p.

A shop has 33 packets in stock.

Packet of biscuits B costs 88p.

The shop has 12 packets in stock .

Show that $\frac{\text{value of biscuits A}}{\text{value of biscuits B}}$ is an even number.

[2 marks]

Do not write outside the box

10 Packets of batteries each contain 25 batteries.

One packet costs £17.50

A shop has a special offer.

Two packets for £30

How much cheaper is **one** battery with the special offer?

[3 marks]

Answer _____ pence

Turn over for the next question

5

Do not write outside the box

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 Anna's turn to put a cross on the grid.
She wins if she puts a cross in C3

Write down **two** other squares where she could put a cross to win the game.

[2 marks]

Answer _____

Do not write outside the box

Anna goes first in the next game.

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

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

Write down the probability that she will put her first cross in square A1

[1 mark]

Answer _____

11 (c) In fact, Anna decides to put her first cross in row 1.

What does this mean about the probability that she will put her first cross in square A1?
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]

_____

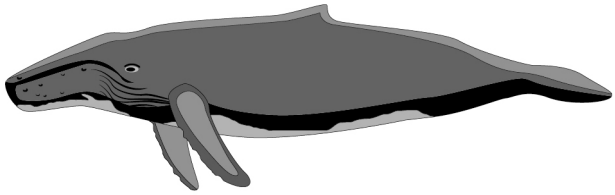
_____

4

Do not write outside the box

12 A dolphin and a whale are drawn to scale.

Dolphin



Whale

The actual length of the whale is 12 metres.

Estimate the actual length of the dolphin.

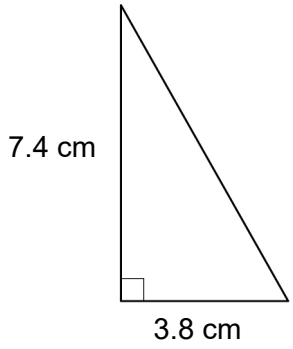
You **must** show your working.

[2 marks]

Answer _____ metres

Do not write outside the box

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

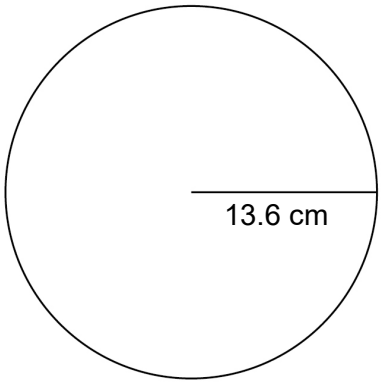


Not drawn accurately

[2 marks]

Answer _____ cm^2

13 (b) A circle has a radius of 13.6 cm



Not drawn accurately

Work out the circumference of the circle.

[2 marks]

Answer _____ cm

6

Turn over ►

Do not write outside the box

14 A machine takes 12 seconds to fill a bottle of orange squash.

14 (a) In total, how many bottles can 45 of these machines fill in 6 hours?

[4 marks]

Answer _____

14 (b) Each bottle of orange squash contains 750 ml of squash.

At what rate does a machine put the squash into the bottles?

Give your answer in ml per second.

[2 marks]

Answer _____ ml per second

Do not write outside the box

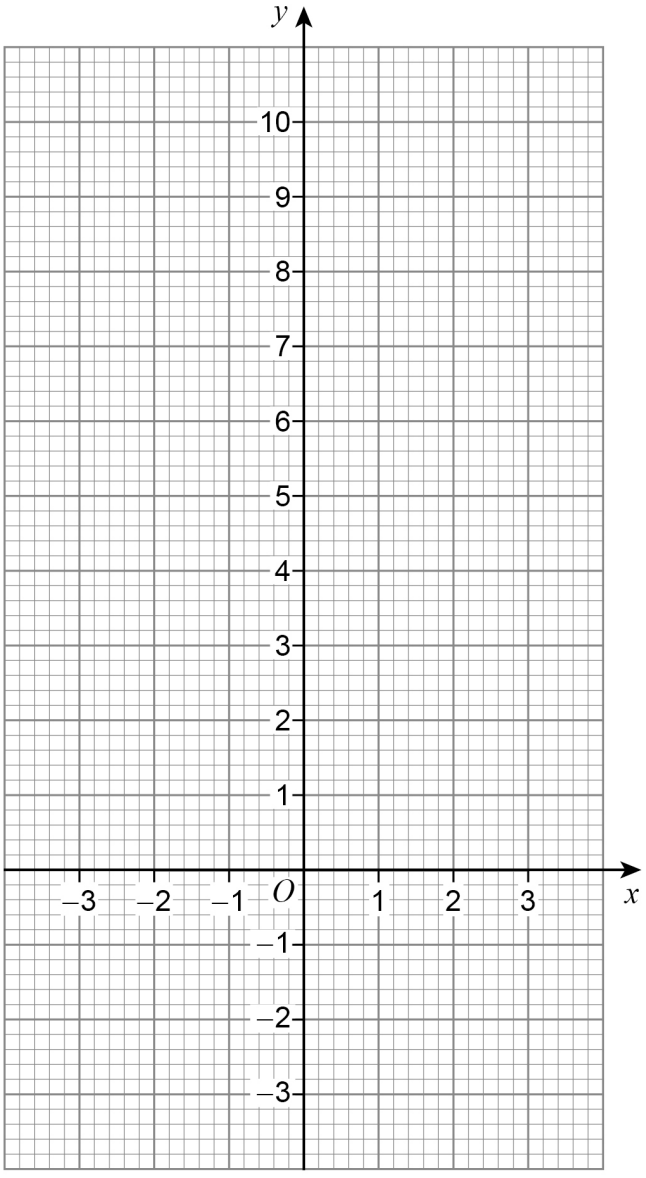
15 (a) Complete the table of values for $y = x^2 - 3$

[1 mark]

x	–3	–2	–1	0	1	2	3
y	6		–2	–3	–2		

15 (b) Draw the graph of $y = x^2 - 3$ for values of x from –3 to 3

[2 marks]



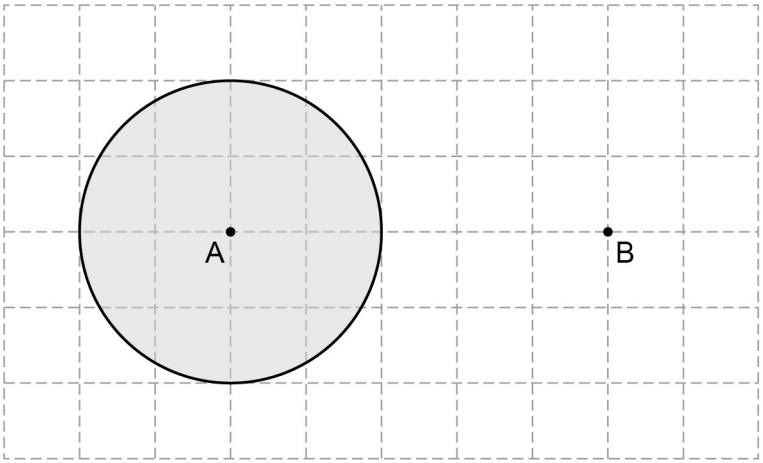
9

Turn over ►

Do not write outside the box

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

Scale: 1 cm represents 20 km



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 60 km from B
- ☐ All the points within 40 km of A
- ☐ All the points halfway between A and B

Do not write outside the box

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

angle *QPR* is 38°

the length of side *PR* is 8.6 cm

[2 marks]

P *Q*

17 Multiply out $6x(2x - 7)$

[2 marks]

Answer _____

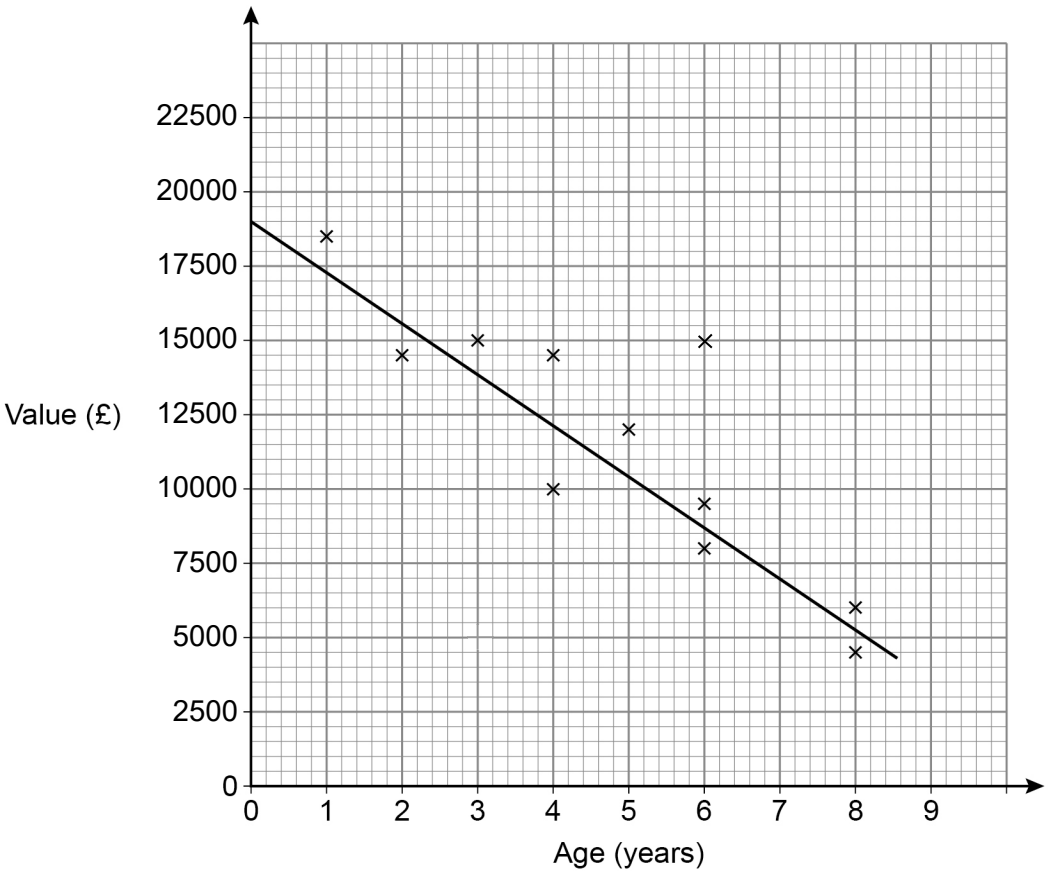
Turn over for the next question

5

Turn over ►

Do not write outside the box

18 The scatter diagram shows the age and value of some motorbikes in 2021.
All the motorbikes were of the same make and model.



18 (a) What type of correlation does the scatter graph show?

[1 mark]

Answer _____

Do not write outside the box

18 (b) Write down the value of the motorbike that was an outlier.

[1 mark]

Answer £ _____

18 (c) Use the graph to estimate the value of a new motorbike of this make and model in 2021.

[1 mark]

Answer £ _____

18 (d) A motorbike of this make and model had a value of £12 000 in 2021.

Use the graph to estimate the year in which it was made.

[2 marks]

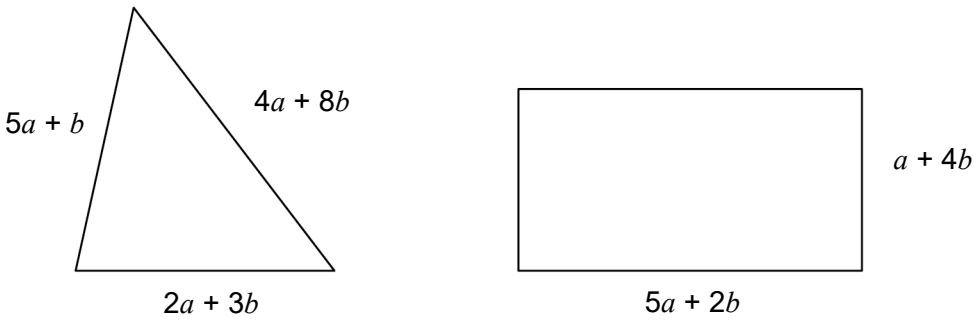
Answer _____

Turn over for the next question

5

Do not write outside the box

19 Here are a triangle and a rectangle.



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

Do not write outside the box

20 The nth term of a sequence is $7n - 40$

What is the **smallest** value of n that gives a positive term?

[2 marks]

Answer _____

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

Circle your answer.

[1 mark]

tangent diameter radius segment

Turn over for the next question

6

Do not write outside the box

22 The number of people living in a town is 58 000 to the nearest 1000

Which **one** of these is a possible number of people living in the town?
Circle your answer.

[1 mark]

57 000 57 750 58 500 60 000

23 Adam and Kitty share £312 in the ratio Adam : Kitty = 3.8 : 1

How much **more** than Kitty does Adam get?

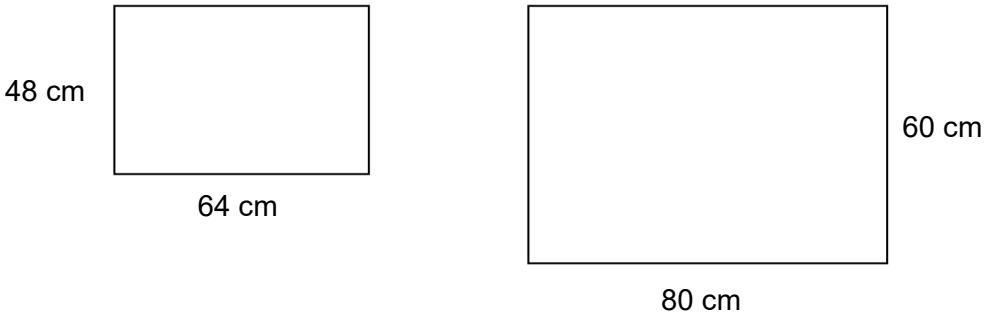
[3 marks]

Answer £ _____

Do not write outside the box

24 Here are two rectangles.

Not drawn accurately



Show that the rectangles are similar.

[1 mark]

25 The equation of a straight line is $2y = 8x + 6$

Circle the gradient of the line.

[1 mark]

6 8 3 4

6

Turn over ►

Do not write outside the box

26 At an adventure park there is a zoo, a fair and a cafe.

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

	Price per person
Cafe only	Free
Zoo and fair	£27.50
Zoo only	£18
Fair only	£17

One day, 4200 people visit the adventure park.

67 visit the cafe **only**.

45% visit the zoo **and** the fair.

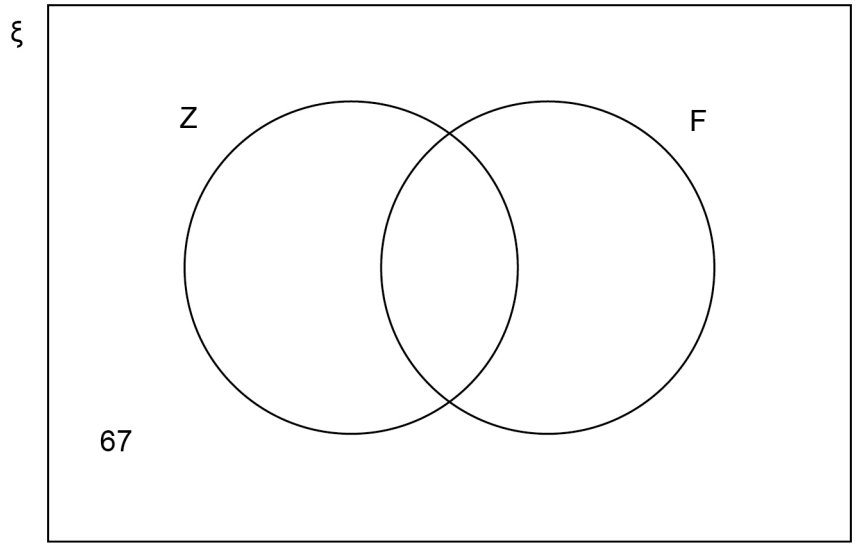
$\frac{2}{7}$ visit the zoo **only**.

The rest visit the fair **only**.

In total, how much do the 4200 people pay to visit the adventure park?

You may use the Venn diagram to help you.

[5 marks]



Do not write outside the box

Answer £ _____

Turn over for the next question

5

Do not write outside the box

27 A widget compressor exerts a pressure of 258 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

Do not write outside the box

28 Five positive numbers have

a mean of 8

a range of 10

Three of the numbers are 3 7 12

Work out the other two numbers.

[3 marks]

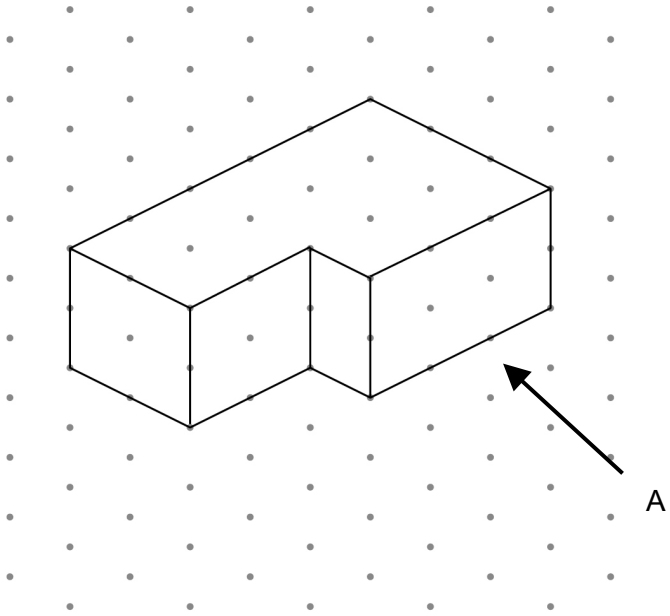
Answer _____ and _____

Turn over for the next question

6

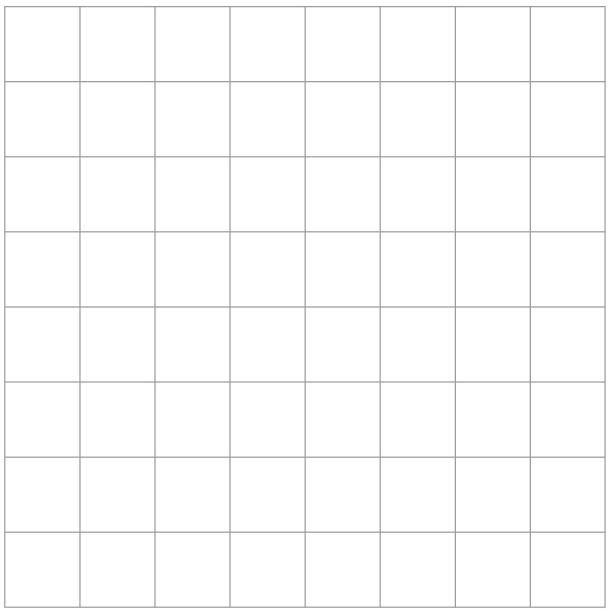
Do not write outside the box

29 A solid shape is drawn on isometric paper.



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

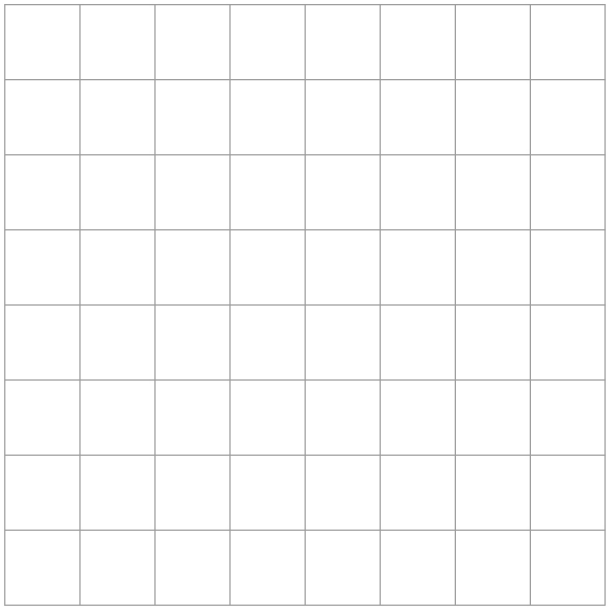
[1 mark]



Do not write outside the box

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

[1 mark]



30 Eloise thinks of a prime number between 30 and 40

Her number is x% of 121

Work out **one** possible value of x.

[3 marks]

Answer _____

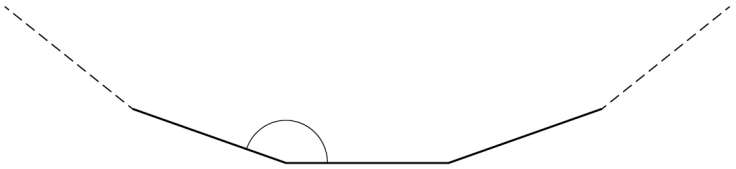
5

Turn over ►

Do not write outside the box

31 Part of a regular polygon with 20 sides is shown.

Not drawn accurately



Work out the size of an **interior** angle.

[2 marks]

Answer _____ degrees

END OF QUESTIONS

2

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