AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____
I declare this is my own work.

GCSE
MATHEMATICS

F

Foundation Tier Paper 3 Calculator

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	

Do not write outside the box

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]

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

Do not write outside the box

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

Turn over for the next question

7

Do not write outside the box

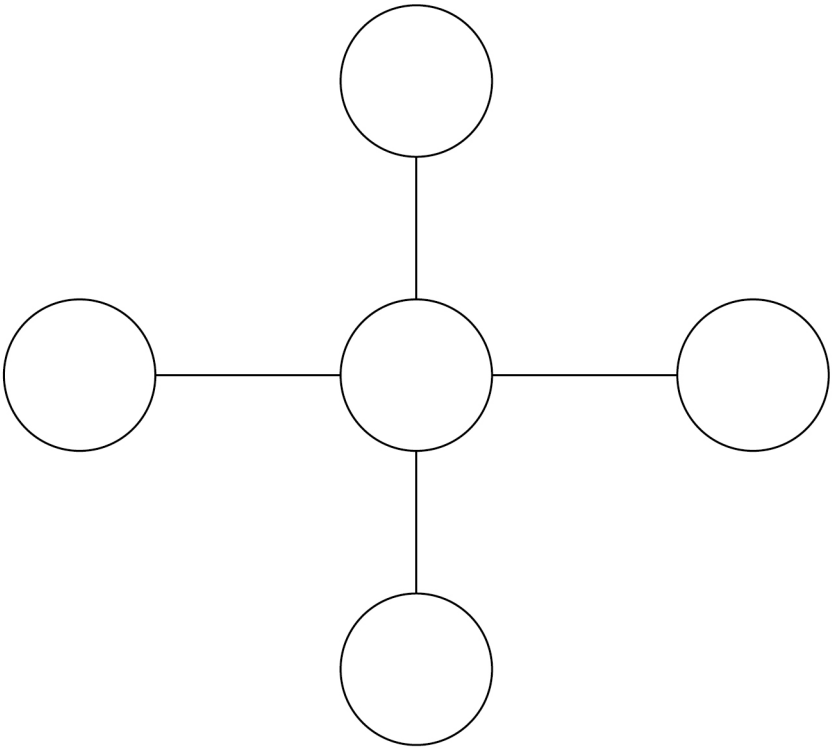
6 Put the numbers 1, 2, 3, 4 and 6 into the circles so that

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]



Do not write outside the box

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

5

Turn over ►

Do not write outside the box

8 Here are four number cards.

2	5	6	8

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

[1 mark]

$\square + \square - \square - \square = 1$

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
2	5
5	2

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

[1 mark]

Answer _____

4

Turn over ►

Do not write outside the box

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 $\dfrac{\text{number of students at school A}}{\text{number of students at school B}}$ is a whole number.

[2 marks]

Do not write outside the box

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

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 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 _____

Do not write outside the box

Amy 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 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]

_____

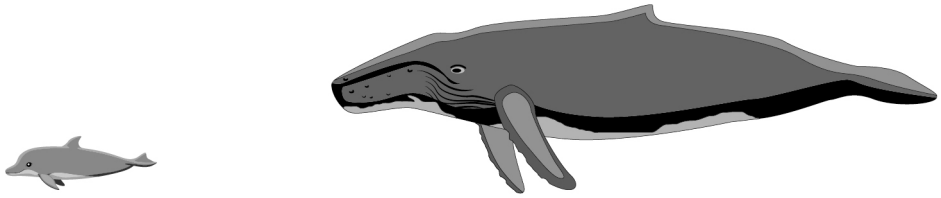
_____

4

Turn over ►

Do not write outside the box

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.

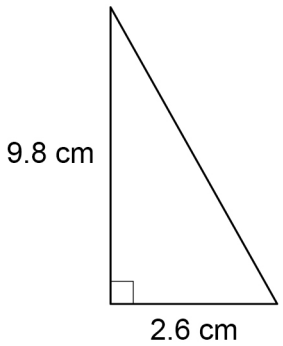
You **must** show your working.

[2 marks]

Answer _____ metres

Do not write outside the box

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

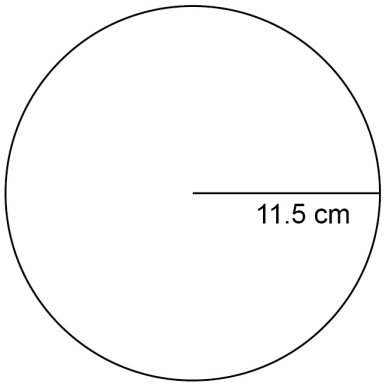


Not drawn accurately

[2 marks]

Answer _____ cm^2

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



Not drawn accurately

Work out the area of the circle.

[2 marks]

Answer _____ cm^2

6

Turn over ►

Do not write outside the box

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

Do not write outside the box

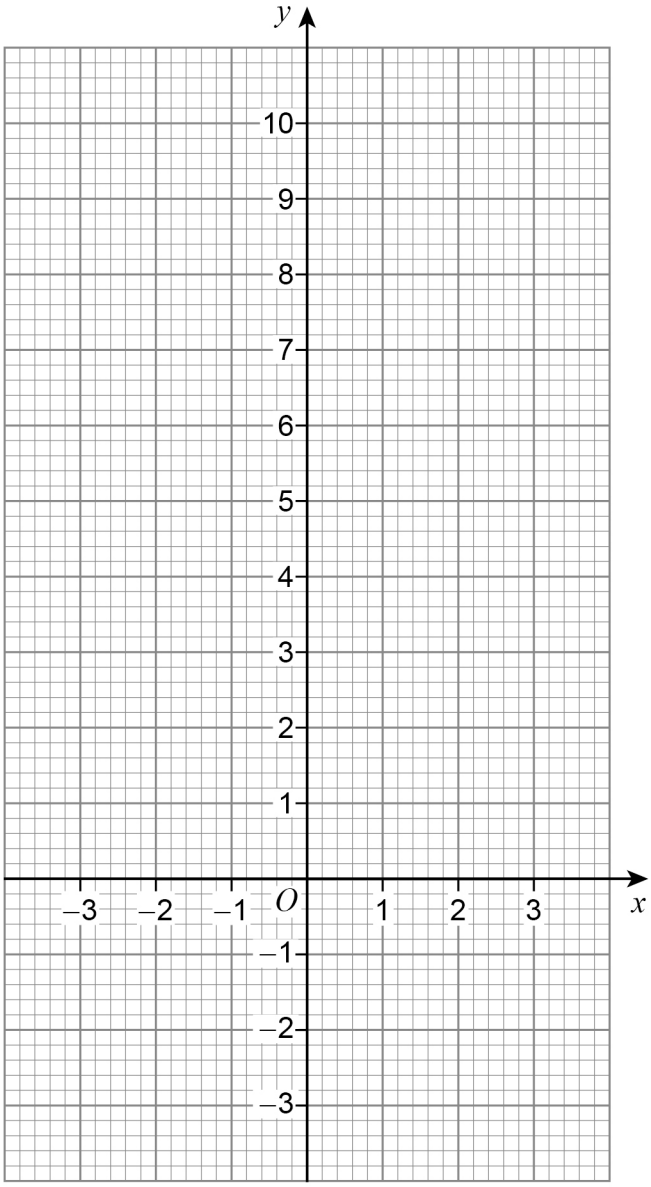
15 (a) Complete the table of values for $y = x^2 - 2$

[1 mark]

x	–3	–2	–1	0	1	2	3
y		2	–1	–2	–1		

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

[2 marks]



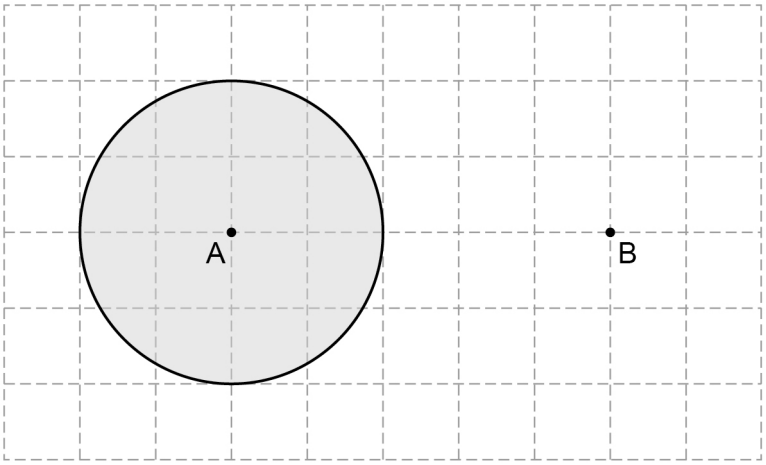
9

Turn over ►

Do not write outside the box

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

Scale: 1 cm represents 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

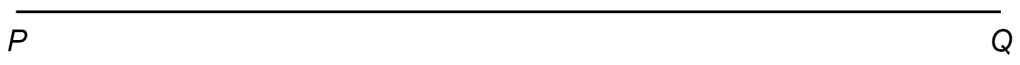
Do not write outside the box

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 _____

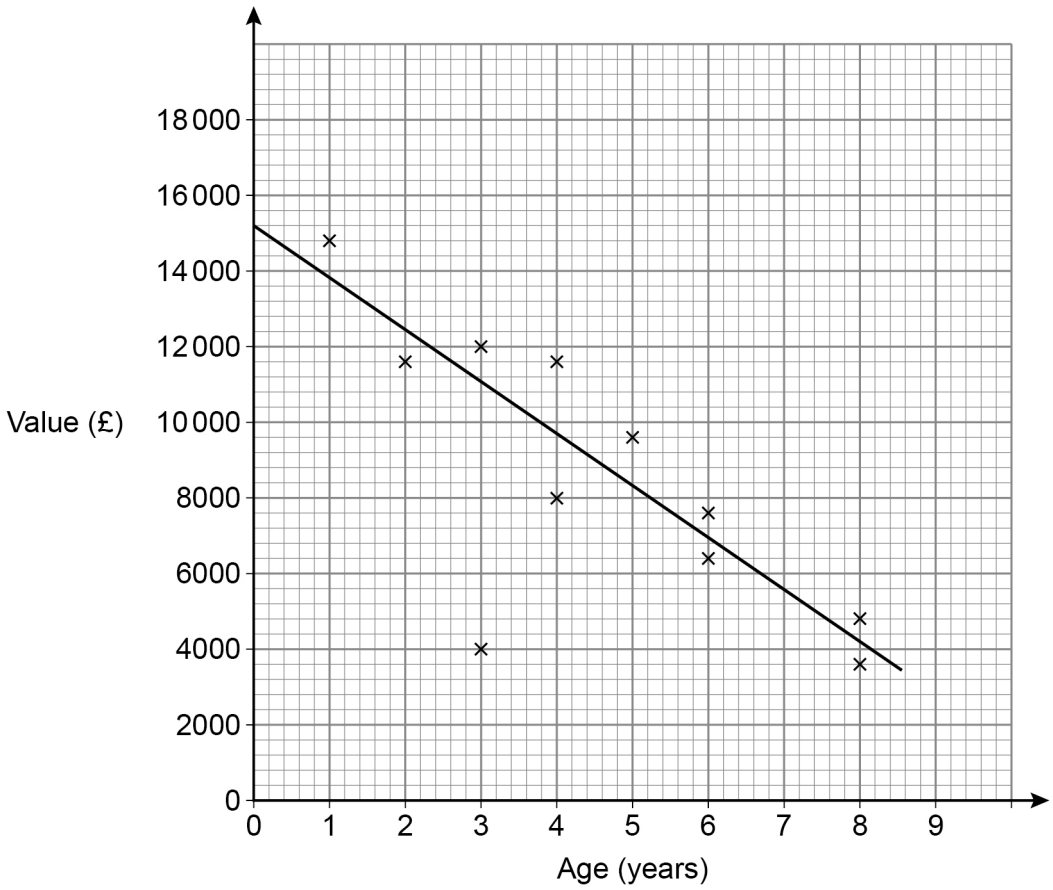
Turn over for the next question

5

Do not write outside the box

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 _____

Do not write outside the box

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 to estimate the year in which it was made.

[2 marks]

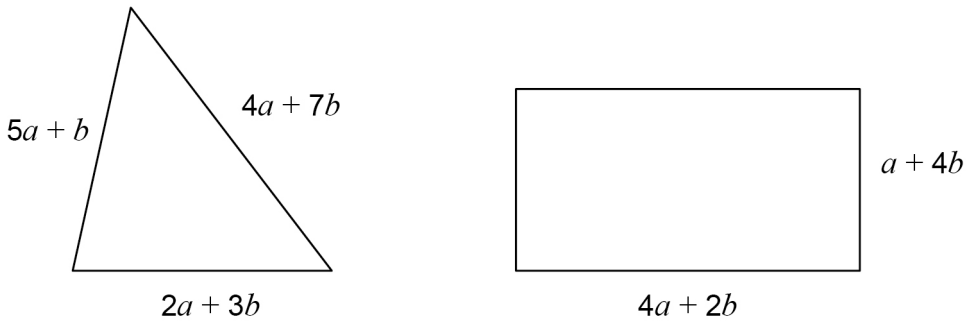
Answer _____

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 $19 - 4n$

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 for the next question

6

Do not write outside the box

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?

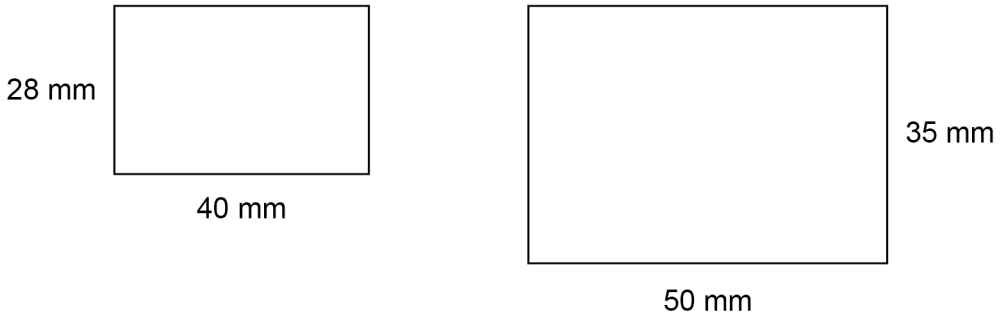
[3 marks]

Answer £ _____

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 $2y = 6x + 8$

Circle the gradient of the line.

[1 mark]

6 8 3 4

6

Turn over ►

Do not write outside the box

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.

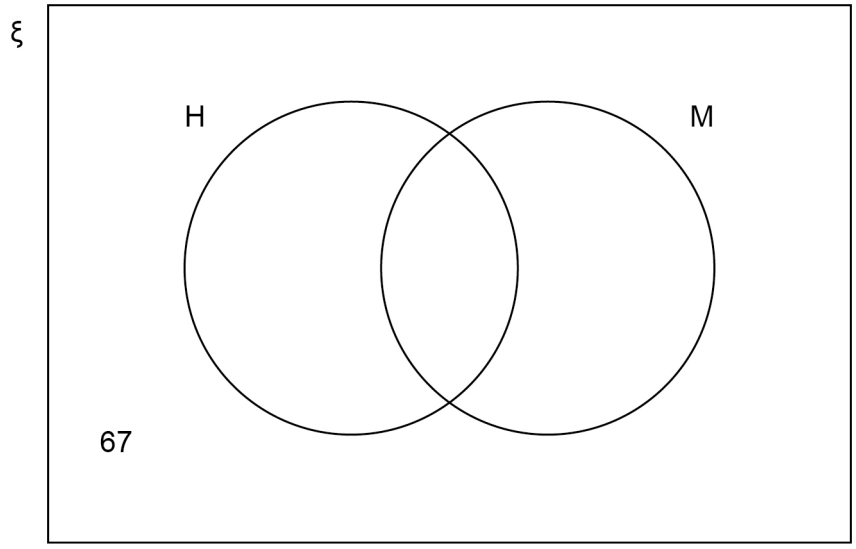
$\frac{3}{8}$ visit the house **only**.

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]



Do not write outside the box

Answer £ _____

Turn over for the next question

5

Do not write outside the box

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

Do not write outside the box

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]

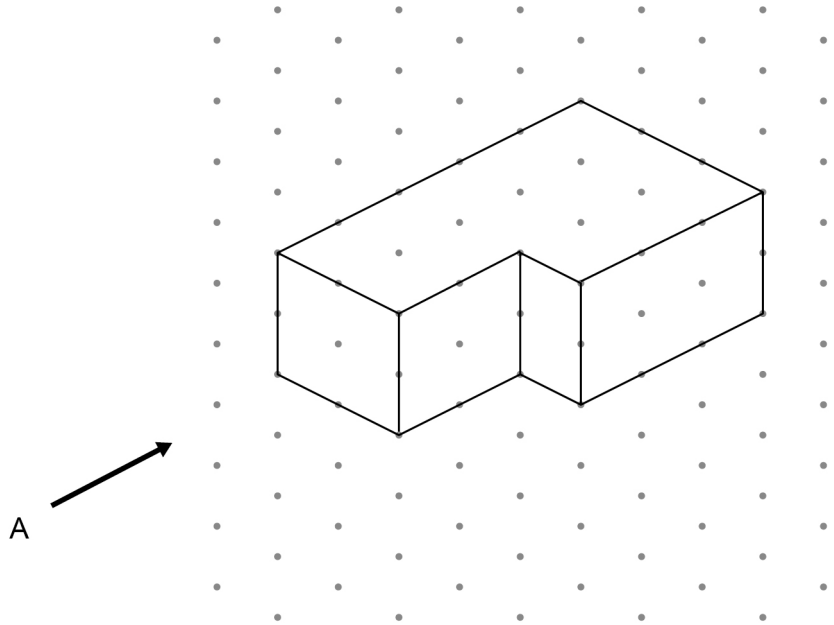
Answer _____ and _____

Turn over for the next question

6

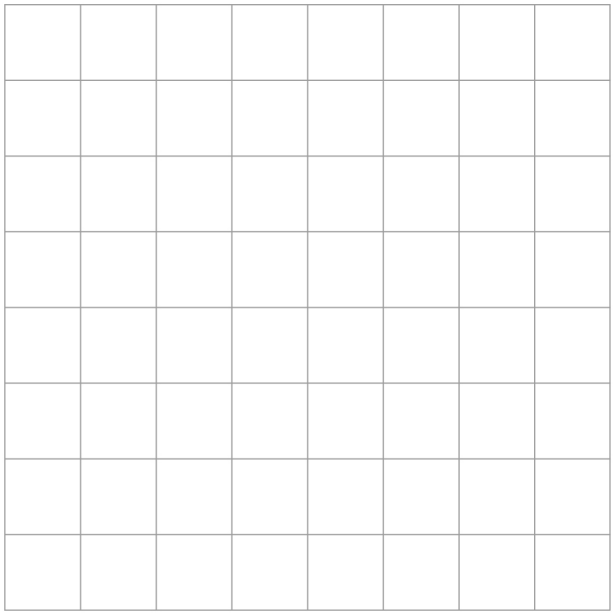
Do not write outside the box

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]



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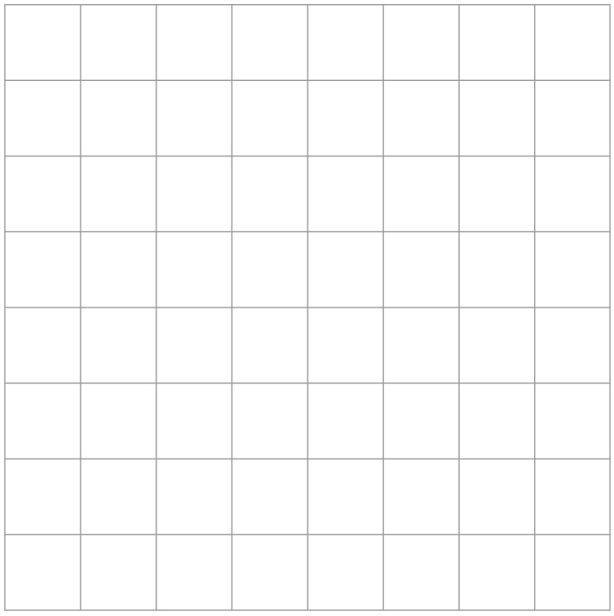
29 (b) On the centimetre grid, draw a plan of the shape.

[1 mark]



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 _____

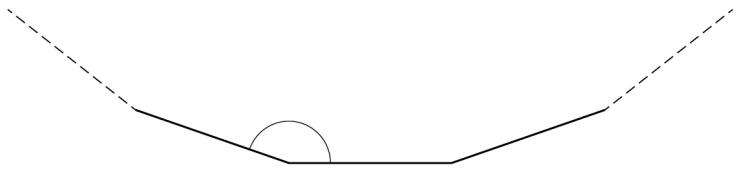
5

Turn over ►

Do not write outside the box

31 Part of a regular polygon with 15 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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