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Candidate surname

Other names

Centre Number

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Candidate Number

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Mathematics



**FOR FULL VIDEO SOLUTIONS
SCAN THE QR CODE**

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Higher Tier

Best Guess Paper 3H – 11th June 2025

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used where indicated, but not otherwise.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



****Disclaimer:** No-one can ever be sure what will definitely appear on the GCSE Maths Papers. I have put this paper together based on common topics we often see on Paper 3, now that we've seen Paper 1&2. I hope you find it helpful!**

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Answer ALL questions.

Write your answers in the spaces provided.

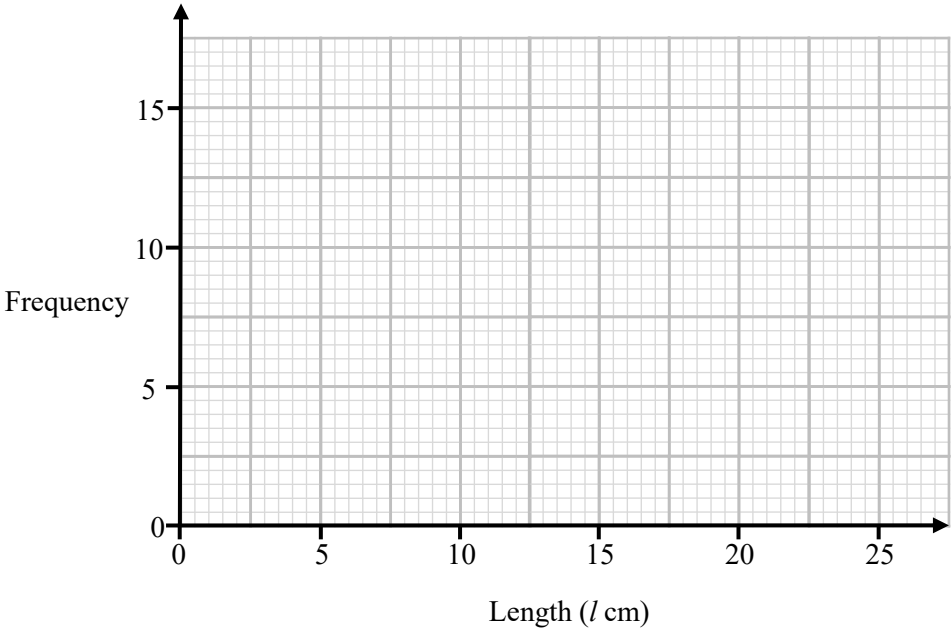
You must write down all the stages in your working.



1 The frequency table gives information about the length of 45 small sharks.

Length (l cm)	Frequency
$0 < l \leq 5$	3
$5 < l \leq 10$	9
$10 < l \leq 15$	12
$15 < l \leq 20$	15
$20 < l \leq 25$	6

On the grid, draw a frequency polygon for the information in the table.



(Total for Question 1 is 2 marks)



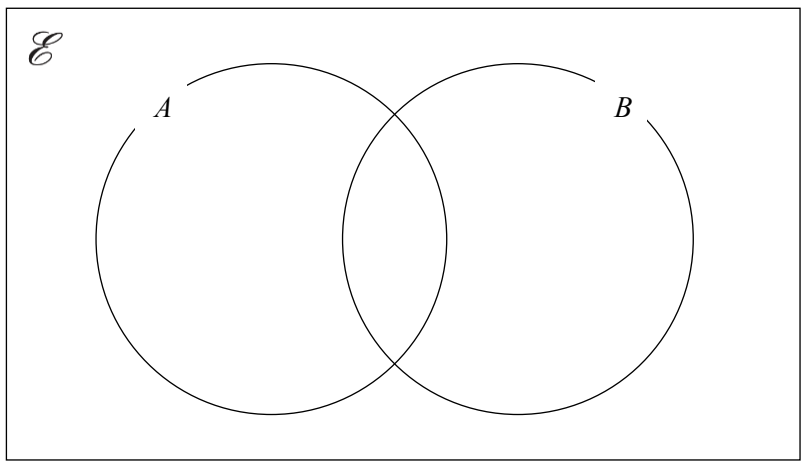
- 2 Laura runs for 25 minutes at an average speed of 12 km/h.
Tami runs for 40 minutes.

At what speed would Tami need to run to complete the exact same distance as Laura?

.....km/h

(Total for Question 2 is 3 marks)

- 3 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16\}$
 $A = \{1, 3, 7, 9, 15\}$
 $B = \{\text{square numbers}\}$



- (a) Complete the Venn diagram for this information. (3)

A number is chosen at random from the universal set
(b) Find the probability that the number is in the set $A \cup B$

.....
(2)
(Total for Question 3 is 5 marks)



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- 4 Manon invests £3000 in a savings account for 5 years.
The savings account pays compound interest at a rate of 2.4% per annum.

Calculate the total amount of interest Manon will have after 5 years?

.....
(Total for Question 4 is 3 marks)

- 5 Austin is planning a holiday to Thailand for 10 nights.

The flights will cost £685 for a return journey.
The hotel costs 900 Thai Baht per night.
The exchange rate is £1 = 40.92 Thai Baht

Calculate the total cost of the flight and hotel.
Give your answer in pounds.

£.....

(Total for Question 5 is 3 marks)



6 A number h is written correct to 2 significant figures.

The result is 4.2

Complete the error interval for x .

..... $\leq h <$

(Total for Question 6 is 2 marks)

7 An exam is out of 80 marks.
40% of the paper covers Geometry and Statistics.
The rest of the marks in the paper cover Number, Algebra and Ratio in the ratio 6 : 5 : 5

How many marks were allocated to Number?

.....
(Total for Question 7 is 3 marks)

8 It takes 3 builders 12 days to build a wall.
(a) How many days would it take 4 builders to build the same wall?

.....
(2)

(b) State one assumption you made in working out your answer to part (a).

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

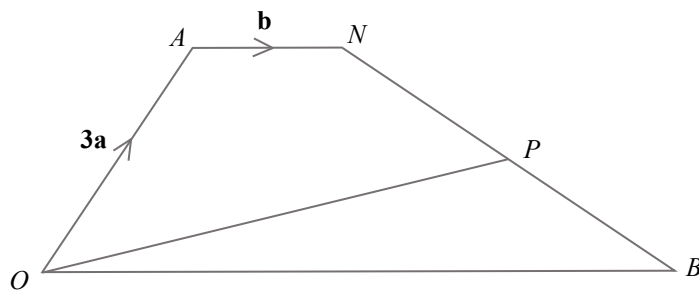
(1)
(Total for Question 8 is 3 marks)

9 Make x the subject of $t = \frac{3(x+7)}{x-1}$



(Total for Question 9 is 3 marks)

10



The diagram shows trapezium $OANB$.

$$\vec{OA} = 3\mathbf{a}$$

$$\vec{AN} = \mathbf{b}$$

$$\vec{OB} = 4\vec{AN}$$

$$NP : PB = 5 : 4$$

Find $\vec{OP}$ in terms of $\mathbf{a}$ and $\mathbf{b}$.

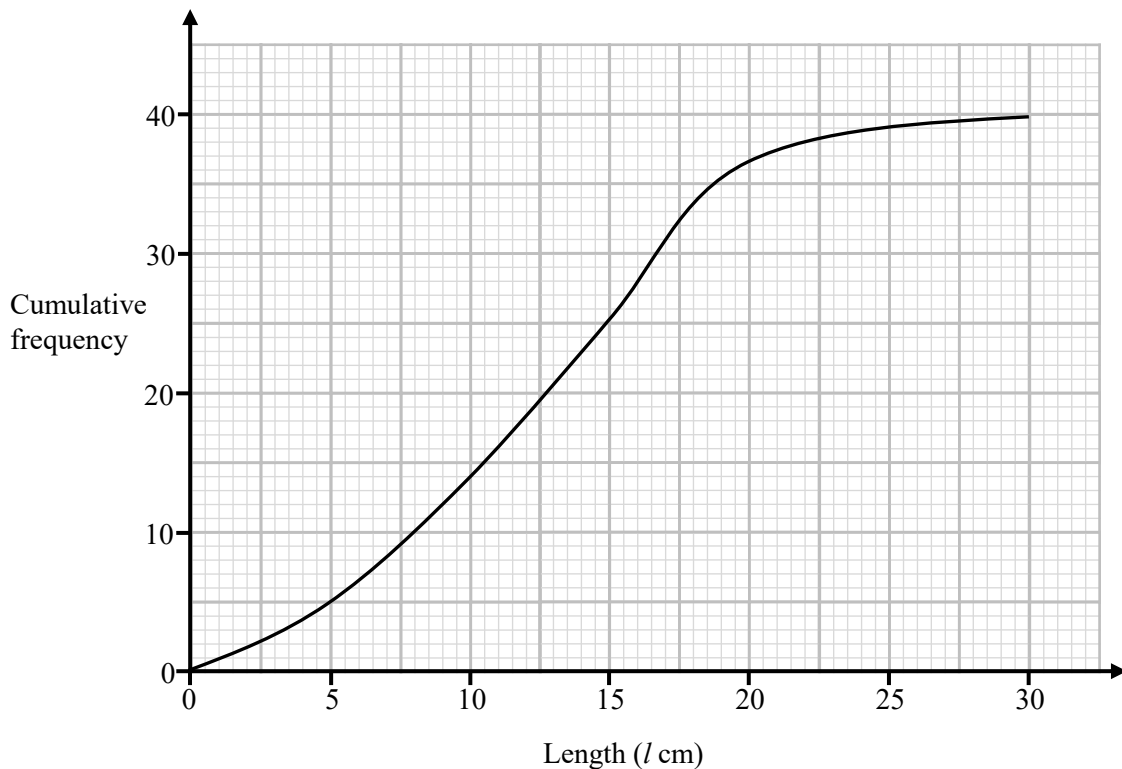
Give your answer in its simplest form.

(Total for Question 10 is 4 marks)



11 Fido collects 40 sticks of different lengths.

The cumulative frequency graph shows information about the lengths, in cm, of these sticks.



Find an estimate for the percentage of sticks that are longer than 17cm in length.

.....
(Total for Question 11 is 2 marks)

12 Simplify fully $\frac{3x^2 - 17x + 10}{2x^2 - 50} \div \frac{1}{4x + 20}$

.....
(Total for Question 12 is 4 marks)



13 Here are the first terms of a sequence.

0 3 10 21 36

(a) Find an expression, in terms of n , for the n th term of this sequence.

.....
(3)

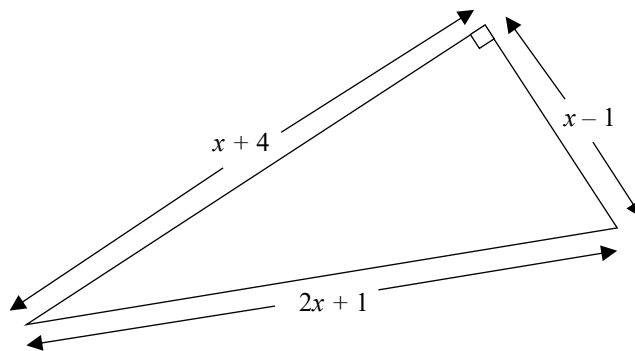
(b) Find the 14th term of this sequence.

.....
(1)

(Total for Question 13 is 4 marks)



- 14 The diagram shows a right angled triangle.
All the measurements are in centimetres.



- (a) Show that $x^2 - x - 8 = 0$

(3)

- (b) Find the value of x .
Give your answer to 2 decimal places.

(2)

(Total for Question 14 is 5 marks)



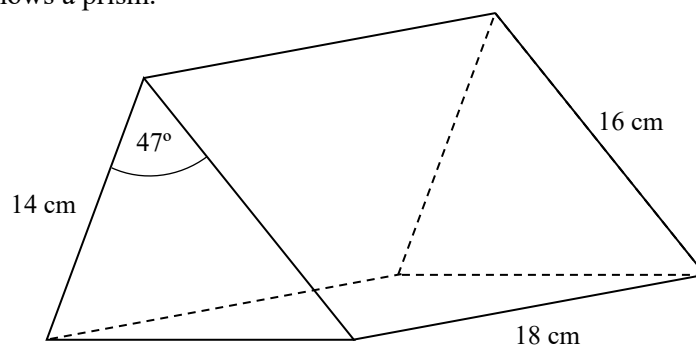
15 The line L_1 goes through the points $(-3, 5)$ and $(1, 4)$.

The line L_2 is perpendicular to line L_1 and goes through the point $(8, -2)$

Find the equation of the line L_2

.....
(Total for Question 15 is 3 marks)

16 The diagram shows a prism.



Calculate the volume of the prism.
State the units with your answer.

.....
(Total for Question 16 is 5 marks)

17



$$t = \frac{a - 2b}{b^2}$$

$a = 42.1$ correct to 1 decimal place

$b = 7.52$ correct to 2 decimal places

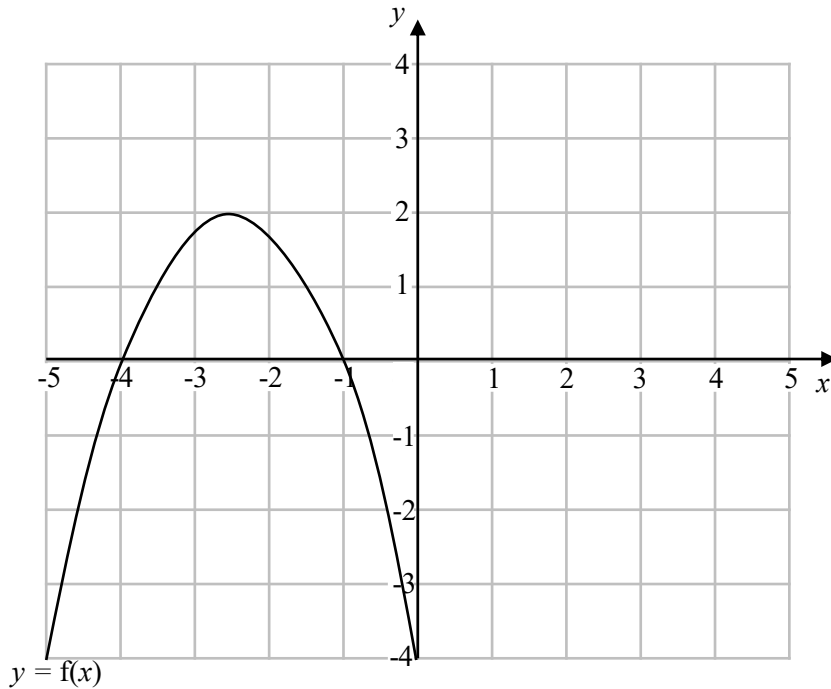
By considering bounds, work out the value of t to a suitable degree of accuracy.
Give a reason for your answer.

(Total for Question 17 is 5 marks)



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18 The graph of $y = f(x)$ is shown on the grid below.



On the grid above, sketch the graph of $y = -f(x)$

(Total for Question 18 is 1 mark)

19 Show algebraically that the straight line with equation $y = 2x - 1$ is a tangent to the curve $y = x^2$

.....
(Total for Question 19 is 4 marks)

- 20 Find the coordinates of the turning point on the curve with equation $y = 3x^2 + 12x - 20$
You must show all your working.

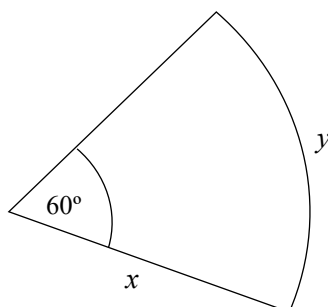


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(..... ,)

(Total for Question 20 is 4 marks)

- 21 The diagram shows a sector with radius x and arc length y .



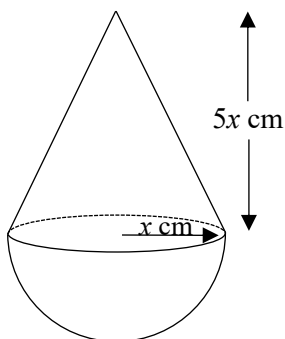
The ratio $x : y$ can be written in the form $k : \pi$
Find the value of k

.....
(Total for Question 21 is 3 marks)

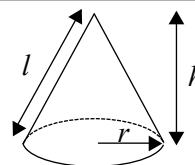
22 The shape below is made up of a cone and hemisphere.



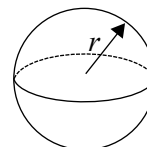
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$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$



$$\text{Volume of a Sphere} = \frac{4}{3} \pi r^3$$



x is the radius of the cone and the radius of the hemisphere.

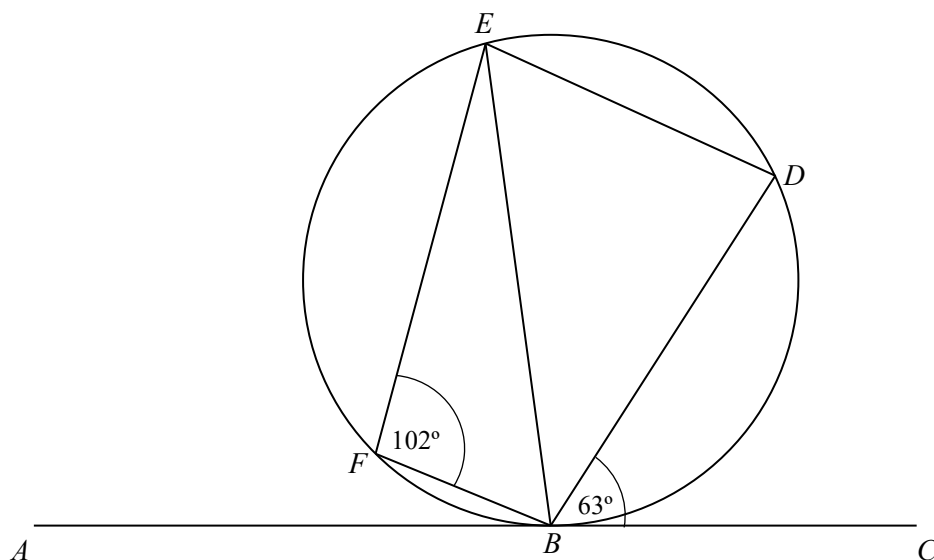
The total volume of the shape is 540 cm^3

Calculate the value of x .

Give your answer to 3 significant figures.

..... cm

(Total for Question 22 is 4 marks)



The points B , F , E and D lie on the circumference of a circle.

ABC is a tangent to the circle at the point B .

Angle $DBC = 63^\circ$

Angle $BFE = 102^\circ$

the size of angle EBD : the size of angle $BEF = 3 : 2$

Calculate the size of angle FBE

.....
(Total for Question 23 is 5 marks)