



General Certificate of Secondary Education
November 2025

Centre Number

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Candidate Number

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Mathematics

Unit M7 Paper 2
(With calculator)
Higher Tier



[GMC72]

GMC72

THURSDAY 20 NOVEMBER, 10.45am–12 NOON

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page, on blank pages or tracing paper.

Complete in black ink only. **Do not write with a gel pen.**

Questions which require drawing or sketching should be completed using an HB pencil. All working **must** be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.

You **may** use a calculator for this paper.

Answer **all sixteen** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 50.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 2.

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Formula Sheet

Volume of prism = area of cross section \times length



Area of trapezium = $\frac{1}{2}(a+b)h$



Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$

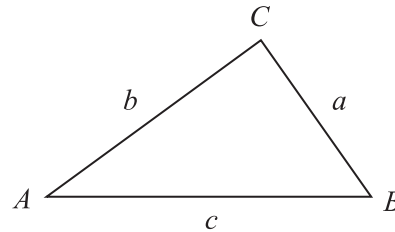


Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



In any triangle ABC



Quadratic Equation

The solutions of $ax^2 + bx + c = 0$
where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Sine Rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule: $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} ab \sin C$



1



Buy 1
Cupcake
for 75p

Special Offer
Buy 3
Cupcakes
for £2.10

Carla is buying cupcakes.

Show that **the greatest** number of cupcakes she can buy with £10 is 14

Show your working out clearly.

[3]

[Turn over

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2 Here are two exchange rates:

£1 = 1.33 U.S. dollars

£1 = 1.85 Canadian dollars

How many **more** Canadian dollars than U.S. dollars can be bought with £500?

Answer _____ Canadian dollars [3]



3 Pam is making stew.

1 kg of potatoes makes enough stew for 3 people.

She plans to feed 15 people.

Potatoes cost 65p per lb.

Work out the cost of the potatoes for the stew.

Answer £ _____ [3]



4 Pete has 2 bags of sweets.

In the first bag there are 10 sweets of which 4 are toffee.

In the second bag 6 sweets are toffee.

The probability of taking a toffee sweet from each bag is the same.

How many sweets are there in the second bag?

Answer _____ [3]



5 A sofa costs £1680

Abbie and Barry share the cost in the ratio 3 : 5

How much less does Abbie pay than Barry?

Answer £ _____ [3]



6

$$1, \frac{8}{5}, \frac{11}{5}, \frac{14}{5}, \frac{17}{5}, \dots$$

Olivia says that the next term in the sequence must be 4

Explain why Olivia is correct.

[2]

7 A rectangle has length $3x$

The rectangle is enlarged by scale factor 4

Write down the new length.

Answer _____ [1]

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8 A spinner has the colours red, blue, pink, yellow and green.

The table shows the probability of the spinner landing on some of the colours.

Colour	red	blue	pink	yellow	green
Probability		0.08		0.4	0.23

The probability of landing on red is twice the probability of landing on blue.

(a) Complete the table for red and pink. [3]

(b) The spinner is spun 400 times.

How many **more** times do you expect it to land on yellow than green?

Answer _____ [3]

[Turn over



9 Two regular pentagons are placed together.

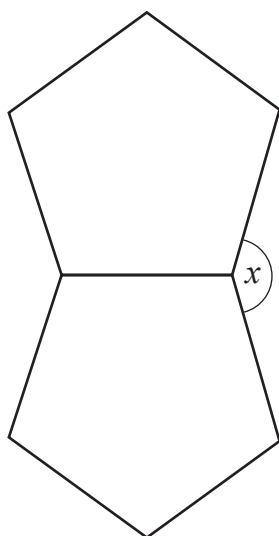


diagram not drawn accurately

Work out the size of angle x .

Answer _____ ° [4]



10 Simplify

(a) $(m^3)^4$

Answer _____ [1]

(b) $\frac{e^{15}}{e^3}$

Answer _____ [1]

11 Solve $4x - 1 < 2$

Answer _____ [2]

[Turn over

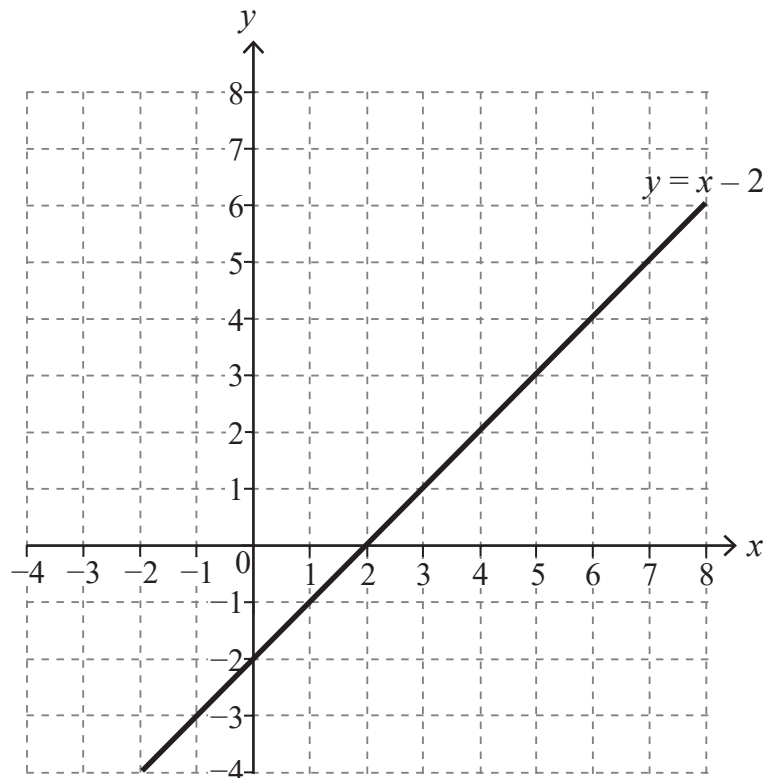


12 Grace is trying to solve the simultaneous equations

$$y = x - 2$$

$$y = 6 - x$$

Grace begins by drawing the line $y = x - 2$ as shown.



(a) Draw the other line needed to solve the simultaneous equations.

[2]

(b) Write down the solution to these simultaneous equations.

Answer $x =$ _____ $y =$ _____ [1]



13 Jack owns a shop.

He offers a special deal when a customer buys a drink, a sandwich and a cookie.

There are 9 different drinks and 6 different sandwiches to choose from.

There are 270 different combinations in this special deal.

How many different cookies are there to choose from?

Answer _____ [2]

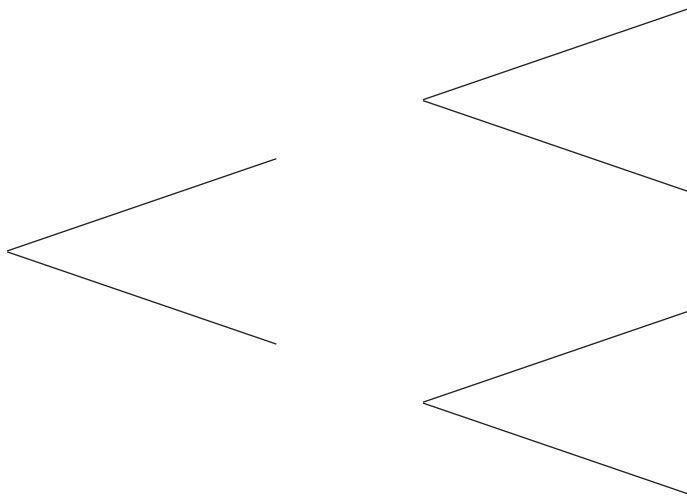


14 A dice is biased.

The probability of getting a six is $\frac{2}{9}$

The dice is rolled twice.

(a) Complete the tree diagram to show this information.



[2]

(b) What is the probability of getting no sixes?

Answer _____ [2]





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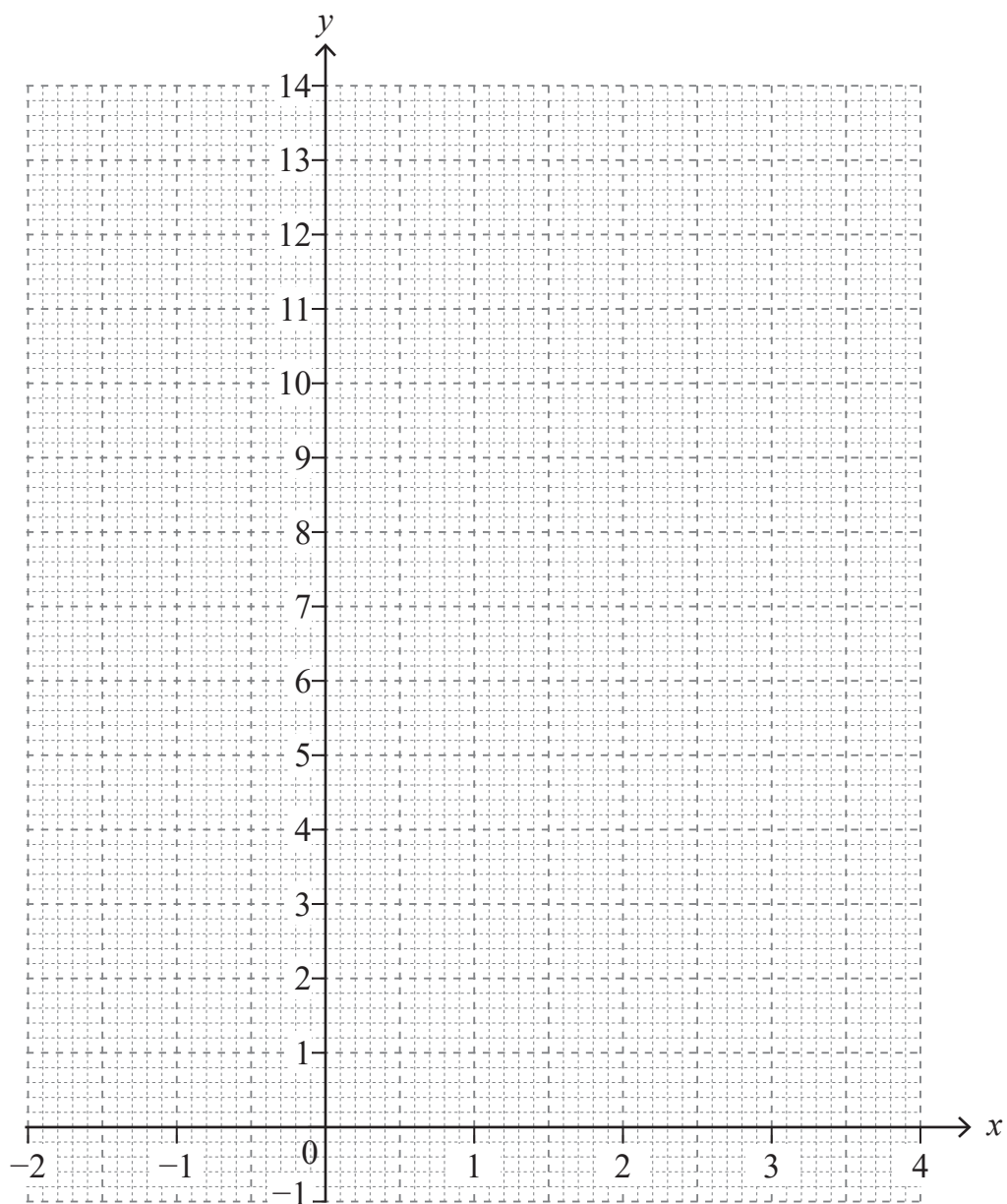
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15 (a) Draw the graph of $y = x^2 - 3x + 2$ from $x = -2$ to $x = 4$

[3]



(b) Use your graph to estimate the value of y for $x = 2.6$

Answer _____ [1]

(c) Use your graph to estimate the minimum value of y .

Answer _____ [1]



16 A and B are similar shapes.

The area of A is 10 cm^2 and the area of B is 160 cm^2

The height of A is $x \text{ cm}$ and the height of B is $(x + 9) \text{ cm}$.

Work out the value of x .

Show your working out clearly.

Answer $x =$ _____ [4]

THIS IS THE END OF THE QUESTION PAPER





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Question Number	Marks
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Total Marks	
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