



Rewarding Learning

General Certificate of Secondary Education
2025

Centre Number

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Candidate Number

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Mathematics

Unit M7 Paper 1
(Non-Calculator)

Higher Tier

[GMC71]



GMC71

WEDNESDAY 4 JUNE, 9.15am – 10.30am

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 **must not** use a calculator for this paper.

Answer **all seventeen** 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 ruler, compasses and a protractor.

The Formula Sheet is on page 2.

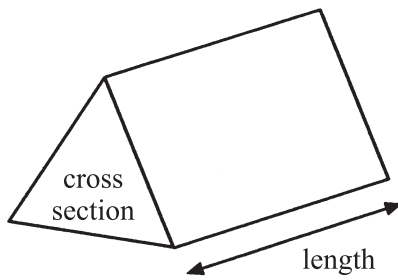
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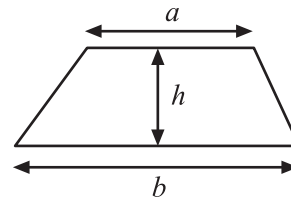
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Formula Sheet

Volume of prism = area of cross section \times length

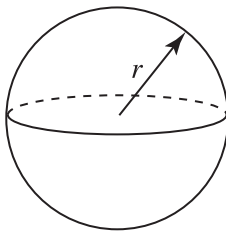


Area of trapezium = $\frac{1}{2}(a+b)h$



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

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

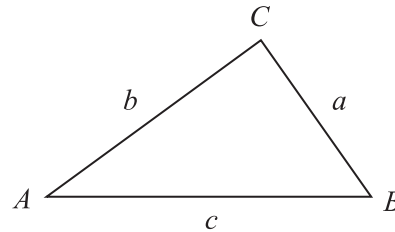


Volume of cone = $\frac{1}{3}\pi r^2 h$

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 A rectangular wall measures 4.7 metres by 2.9 metres.

Tiles cost £29.75 per square metre.

Estimate the cost to tile the wall.

Show your working out clearly.

Answer £ _____ [3]

[Turn over



- 2 (a) A square number and a cube number add together to give a total of 52

Write down the two numbers.

Answer _____ and _____ [1]

- (b) Write down the triangular number between 40 and 50

Answer _____ [1]



3 How much bigger is 35% of £120 than $\frac{1}{3}$ of £120?

Answer £ _____ [3]



4 Jackie chooses chips or mash or baby boiled potatoes for a side order.

The probability she chooses chips is 0.65

The probability she chooses mash is 0.2

What is the probability that Jackie chooses baby boiled potatoes?

Answer _____ [2]



5 (a) 2 cm represents 15 km on a map.

How many kilometres are represented by 12 cm on the map?

Answer _____ km [2]

(b) A different map has a scale of 1: 25 000

John measures the distance between two points on this map to be 8 cm.

Is the actual distance, in km, between these two points greater than 10 km?

Show your working out clearly.

Answer _____ [2]

[Turn over



6 The ratio of girls to boys in an athletics club is 3:5

There are 45 **boys** in the club.

$\frac{1}{4}$ of the children are sprinters.

How many children are sprinters?

Answer _____ [3]



7 Hilary is ordering T-shirts for a school trip.

She has to pay a £60 design fee and an amount for each T-shirt.

The total cost of 40 T-shirts is £380

What is the **total** cost of 30 T-shirts?

Answer £ _____ [4]

[Turn over



8 (a) A bag contains 20 coloured marbles.

The marbles are coloured red, green, blue and orange.

Rosie says



When I take a marble from the bag at random, I think that, because there are four colours, the probability of it being red is $\frac{1}{4}$

Explain why Rosie **might not** be correct in what she thinks.

Answer _____
_____ [1]



(b) A different bag contains 20 coloured marbles.

The marbles are coloured red, green, blue and orange.

The bag has 2 red marbles and 7 green marbles.

The probability of choosing a blue marble is $\frac{2}{5}$

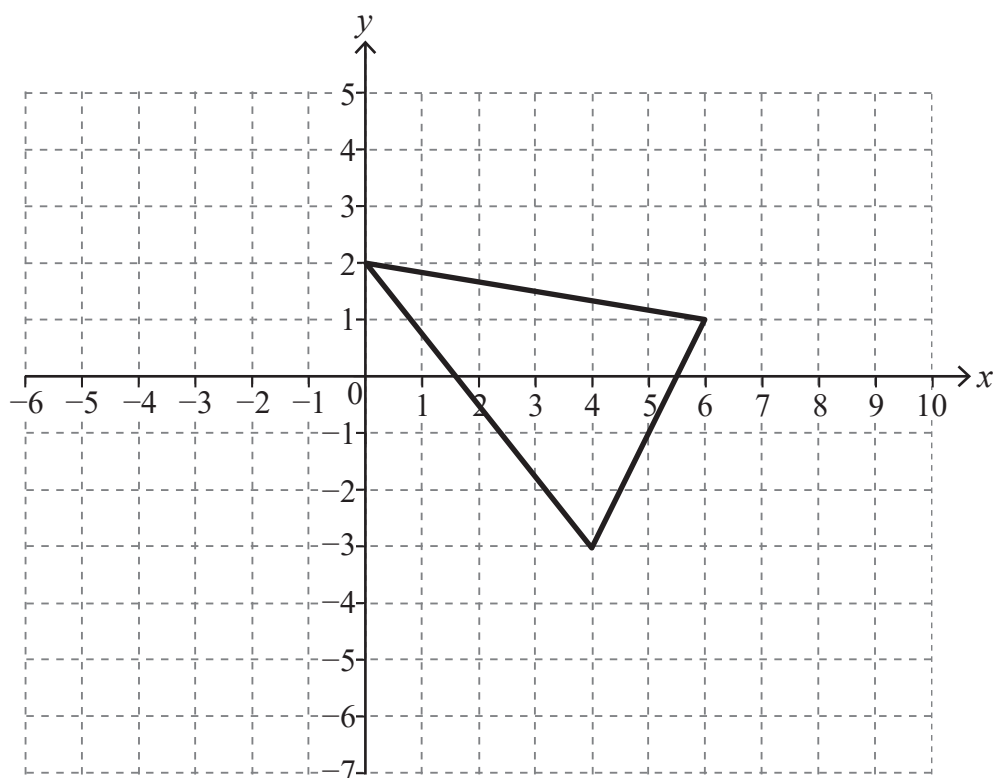
How many orange marbles are there in the bag?

Answer _____ [2]

[Turn over



- 9 (a) Draw the image of the triangle shown after a translation of 3 units left and 4 units down.



[2]

- (b) A different triangle, PQR, was translated 4 units right and 6 units down.

The **image** of the point P **after** this different translation is $(8, -4)$

What were the coordinates of the original point P?

Answer (_____ , _____) [2]



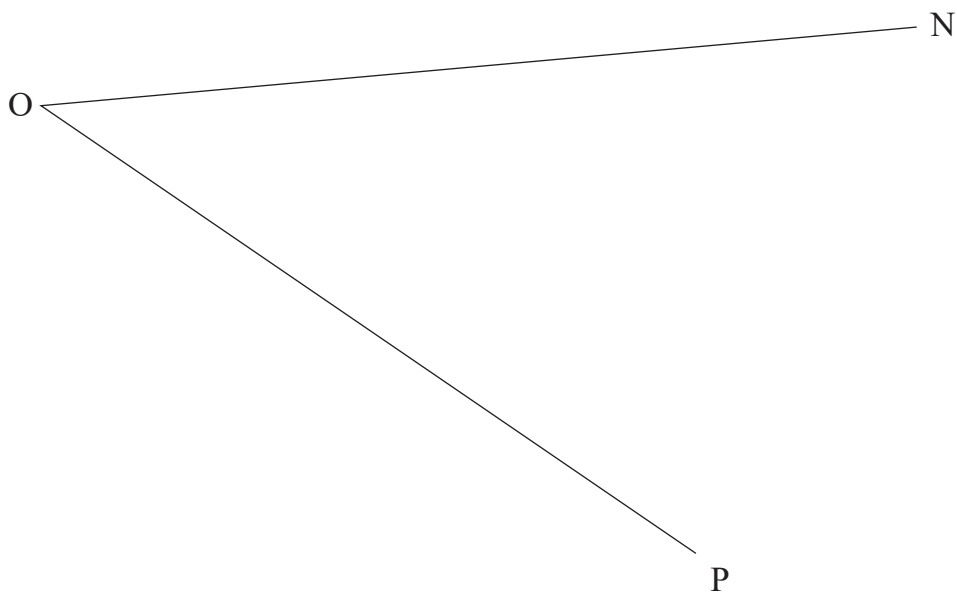
10 The exterior angle of a regular polygon is 9°

How many sides has the polygon?

Answer _____ [2]

11 Using a ruler and compasses only, construct the bisector of the angle NOP below.

Do not rub out your construction arcs.



[2]

[Turn over



12 Jacqui and Gil each flip a coin a number of times.

Jacqui says, "The coin was 'Heads' 6 times out of 13, so I think it is a fair coin."

Gil says, "The coin was 'Heads' 15 times out of 32, so I think it is a fair coin."

Whose conclusion is more reliable?

Explain your answer clearly.

Answer _____ because _____
_____ [2]



13 (a) Write the binary number 10111 as a decimal number.

Answer _____ [1]

(b) Write the decimal number 34 as a binary number.

Answer _____ [1]

[Turn over



14 A parallelogram is enlarged by scale factor 5

- (a) How many times bigger is the perimeter of the enlargement than the perimeter of the original?

Answer _____ [1]

- (b) How many times bigger is the area of the enlargement than the area of the original?

Answer _____ [1]



15 Given that

$$2x + 3y = 10$$

$$5x - 2y = 44$$

work out the value of $9x + 5y$

A solution by trial and improvement will not be accepted.

Answer _____ [5]

[Turn over



16 The volume of water in a reservoir was 9×10^8 cubic metres.

The volume increased by 30%

Work out the new volume.

Give your answer in **standard form**.

Answer _____ cubic metres [3]



17 Write down the value of

(a) 3^0

Answer _____ [1]

(b) 5^{-1}

Answer _____ [1]

(c) 10^{-3}

Answer _____ [1]

(d) $1^y + y^0$

Answer _____ [1]

THIS IS THE END OF THE QUESTION PAPER



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For Examiner's use only	
Question Number	Marks
1	
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Total Marks	
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Examiner Number

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