



General Certificate of Secondary Education
2010

Mathematics



Module N4 Paper 1
(Non-calculator)
Higher Tier
[GMN41]

TUESDAY 1 JUNE
9.15 am – 10.15 am



GMN41

StudentBounty.com

71	er
Candidate Number	
<input type="text"/>	

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all ten** questions.
Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
You **must not** use a calculator for this paper.

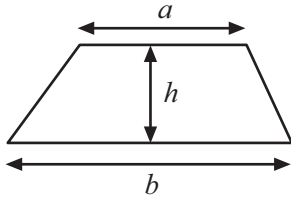
INFORMATION FOR CANDIDATES

The total mark for this paper is 44.
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, set-square and protractor.
The Formula Sheet is on page 2.

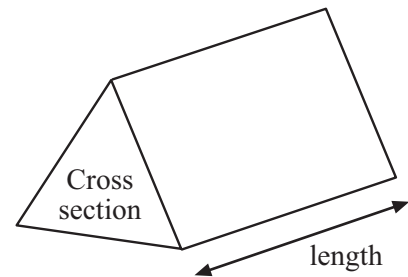
For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
Total Marks	

Formula Sheet

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



Volume of prism = area of cross section \times length

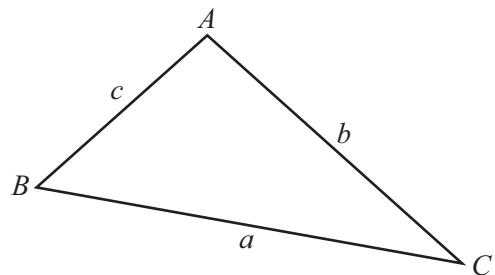


In any triangle ABC

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

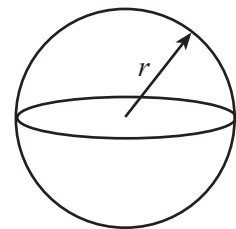
Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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



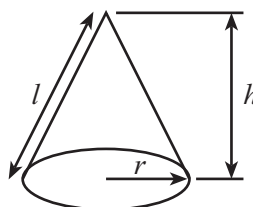
Volume of sphere = $\frac{4}{3} \pi r^3$

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



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

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



Quadratic equation:

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

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

1 Solve the equation $\frac{4x + 3}{10} + \frac{6x - 5}{5} = \frac{13}{2}$

Examiner Only

Marks Remark

Answer $x =$ _____ [4]

- 2 (a) Find the equation of the line passing through the points (0, 1) and (2, 9).

Answer _____ [3]

- (b) Find the exact length of the line from (4, -7) to (-1, 5).

Answer _____ [3]

- (c) Find the equation of the line through (0, 2) perpendicular to the line $y = 5x$.

Answer _____ [2]

3 (a) Solve

(i) $2^x = 1$

Answer $x =$ _____ [1]

(ii) $2^y = \frac{1}{16}$

Answer $y =$ _____ [1]

(b) Evaluate $16^{\frac{3}{4}}$

Answer _____ [2]

Examiner Only

Marks Remark

- 4 (a) Draw the lines $y = 2x + 4$, $y = 8 - x$ and $y = 2$ on the grid below. Indicate clearly, using shading, the region R where

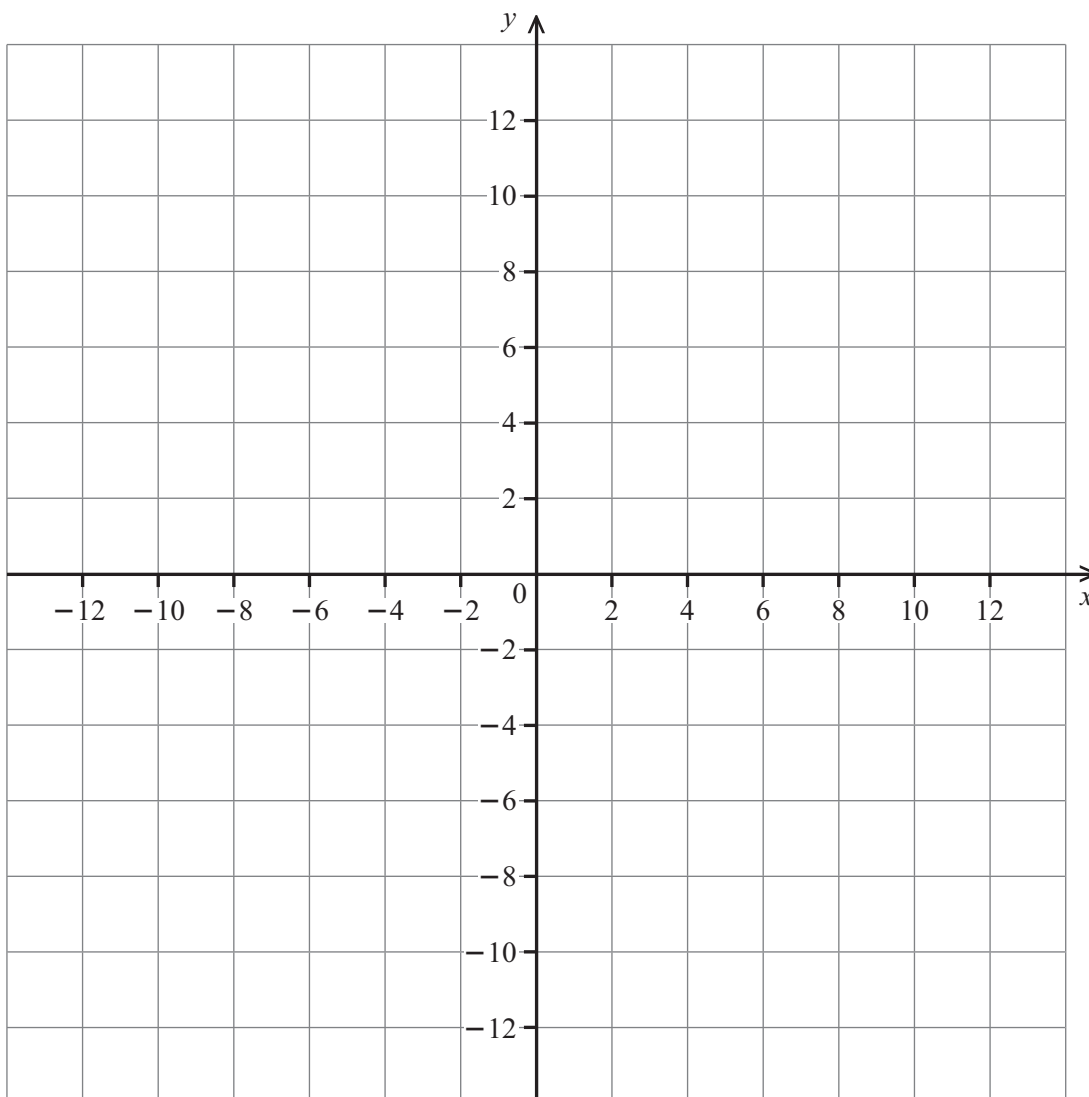
$$y \leq 2x + 4, y \leq 8 - x \text{ and } y \geq 2 \quad [3]$$

- (b) (i) Find the least value of x for which (x, y) satisfies all the inequalities.

Answer _____ [1]

- (ii) Find the greatest value of $2y + 3x$ for which (x, y) satisfies all the inequalities.

Answer _____ [2]



Examiner Only	
Marks	Remark

- 5 Twenty planks of wood are purchased at a local shop.
Each plank is 2.6 m long, measured to the nearest 0.1 of a metre.
Find the least and greatest possible **total** length of all the planks.

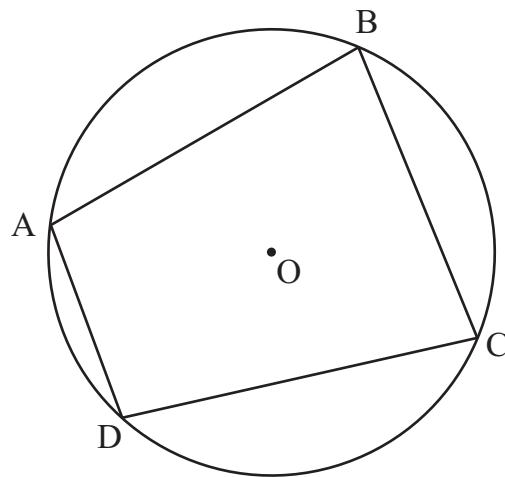
Examiner Only

Marks Remark

Answer Least _____ m [1]

Greatest _____ m [1]

6



Prove that the opposite angles of a cyclic quadrilateral add up to 180° .

[3]

7 (a) Write down a rational number between $\frac{1}{9}$ and $\frac{1}{10}$

Examiner Only

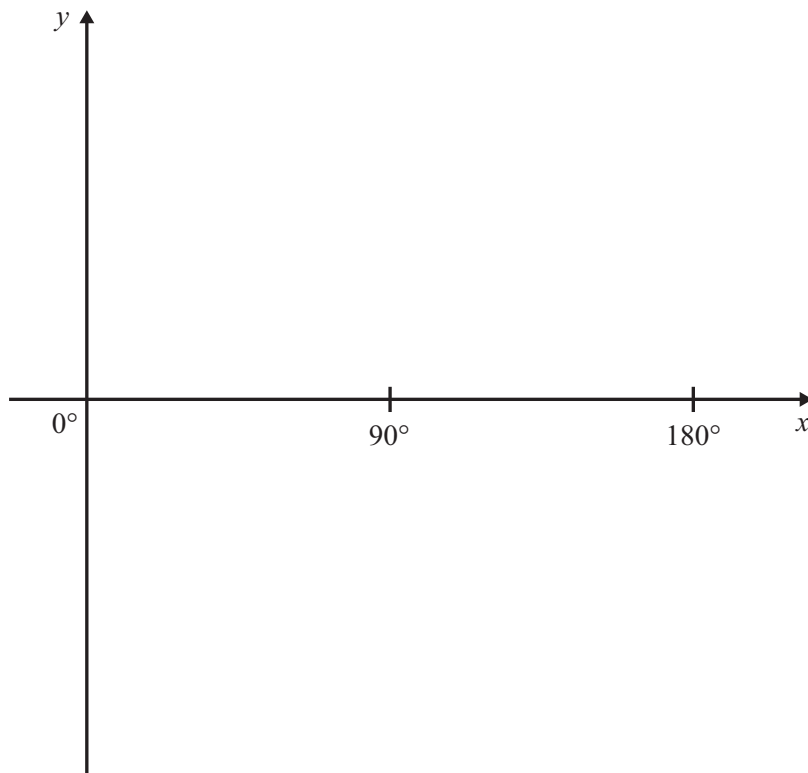
Marks Remark

Answer _____ [1]

(b) Write down an irrational number between 9 and 10

Answer _____ [1]

8 Sketch the graph of $y = \tan x$ on the axes provided.



[2]

10 Solve the simultaneous equations $y = 2x - 9$
 $x^2 + 2y^2 = 243$

Examiner Only	
Marks	Remark

Answer _____ [7]

THIS IS THE END OF THE QUESTION PAPER
