



Rewarding Learning

General Certificate of Secondary Education
2011

Centre Number

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Candidate Number

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Mathematics

Module N6 Paper 2

(With calculator)

Higher Tier

[GMN62]

MONDAY 6 JUNE

3.00 pm – 4.15 pm



GMN62

For Examiner's
use only

Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

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.

Write your answers in the spaces provided in this question paper.

Answer **all fifteen** questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 56.

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, set-square and protractor.

The Formula Sheet is on page 2.

Total Marks	
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6396

Examiner Number

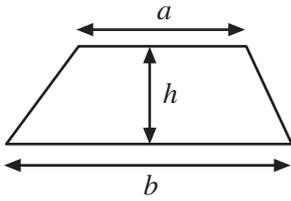
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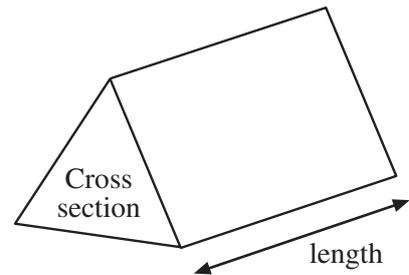
J U N E 1 1 G M N 6 2

Formula Sheet

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



Volume of prism = area of cross section \times length

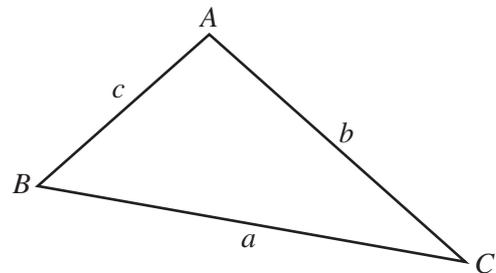


In any triangle ABC

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

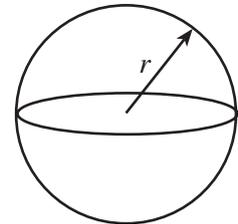
Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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



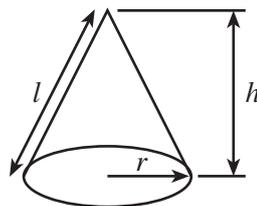
Volume of sphere = $\frac{4}{3}\pi r^3$

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

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

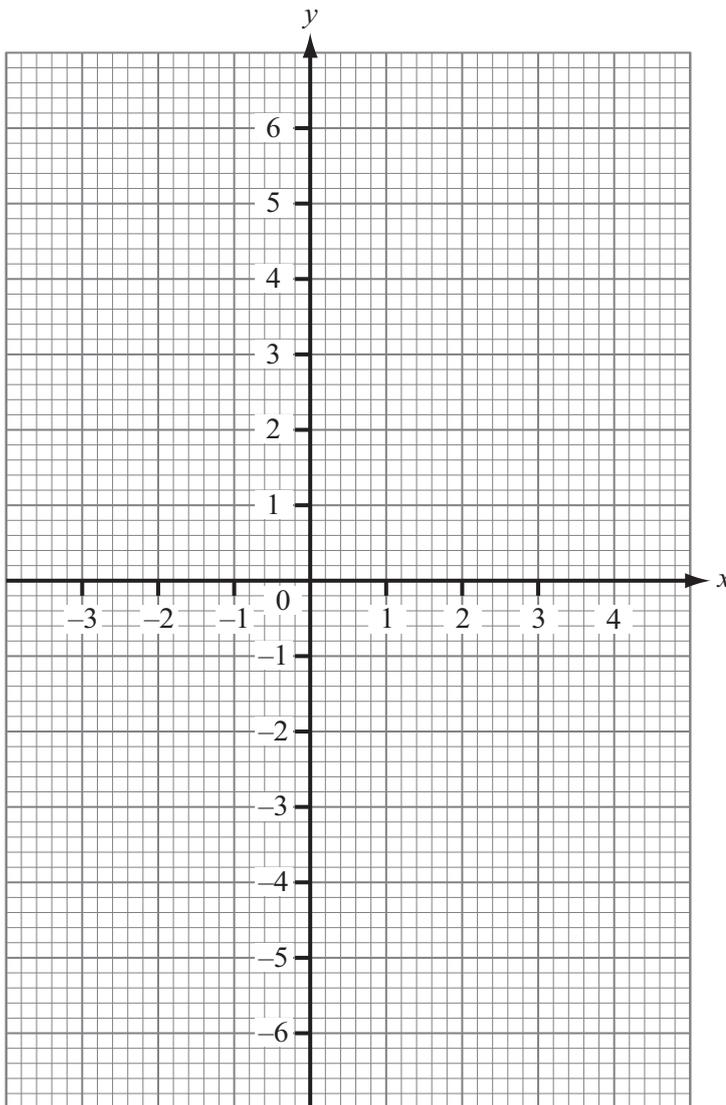


2 (a) Complete the table below for the curve $y = x^2 + x$

x	-3	-2	-1	0	1	2
y	6		0	0	2	6

[1]

(b) Hence draw the graph of $y = x^2 + x$ on the graph paper. [2]



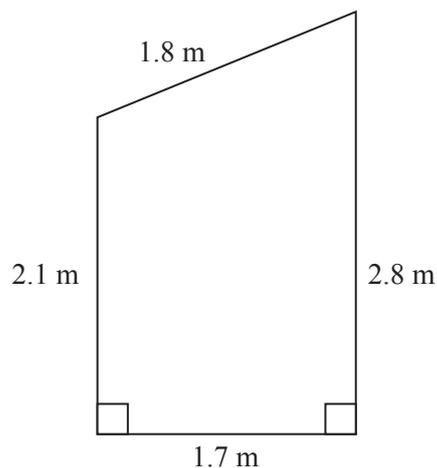
Examiner Only

Marks	Remark

Total Question 2



5 (a)



The diagram represents the side view of a garden shed with a sloping roof.
Calculate the area of the side view of the shed.
Give your answer to an appropriate degree of accuracy.

Answer _____ m² [3]

- (b) The base for a statue is a prism with a cross-section whose area is 1.23 m².
The base is 1 metre in height and weighs 2268 kg.
Calculate the density of the prism.

Answer _____ kg/m³ [3]

Examiner Only

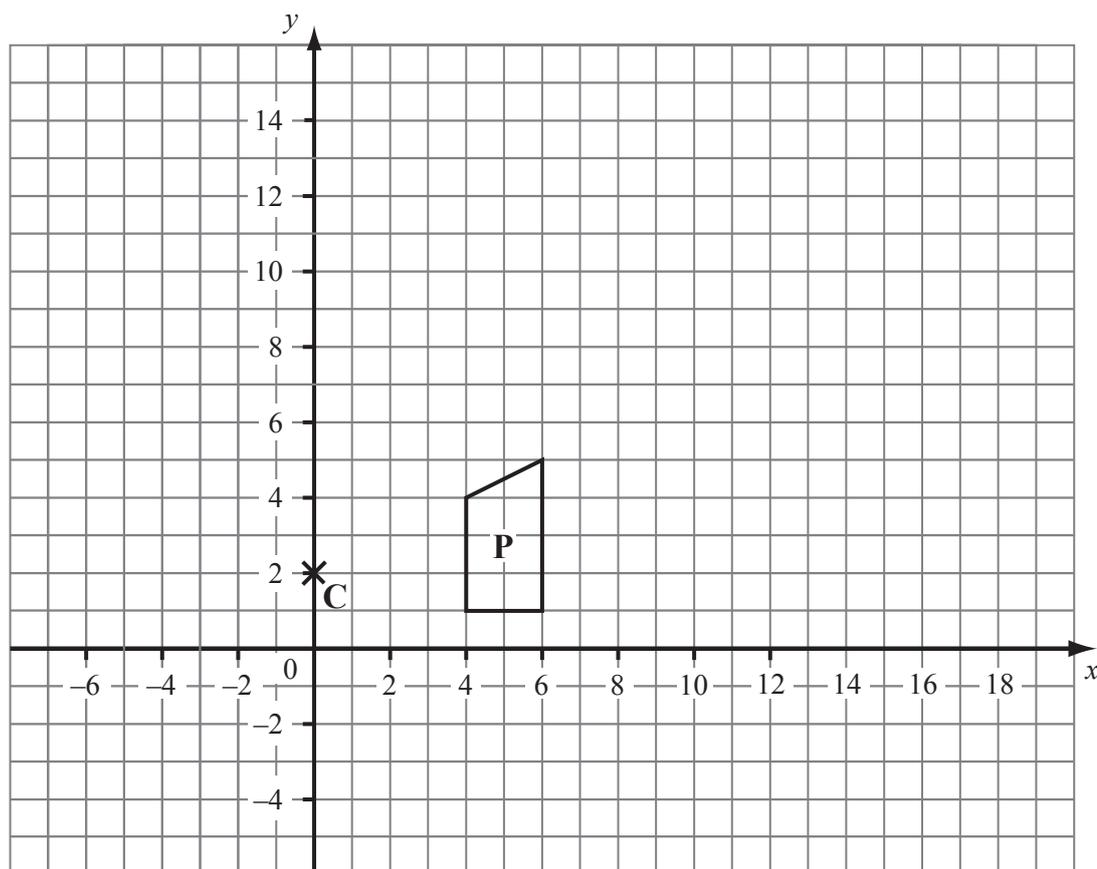
Marks	Remark

Total Question 5

[Turn over]



6



Shape P is shown on the grid.

(a) Draw the image of shape P under a translation $\begin{pmatrix} -3 \\ 5 \end{pmatrix}$. [2]

(b) Enlarge shape P by a scale factor of 3 using the point C as the centre of enlargement. [3]

Examiner Only

Marks	Remark

Total Question 6

6396



0 8

7 Solve $-7 < 3n - 1 \leq 8$ where n is an integer.

Answer _____ [3]

Examiner Only	
Marks	Remark
Total Question 7	

8 110 pupils audition for the school musical. 80 are girls.
The probability that a girl succeeds in getting a part is 0.45 and the probability that a boy succeeds is 0.7

How many pupils are in the school musical?

Answer _____ [4]

Total Question 8	

9 Find, in standard form, the value of

$$(3.58 \times 10^{-2}) \times (7.82 \times 10^{-3})$$

Answer _____ [2]

Total Question 9	



10 (a) Prove that $(n + 2)(n - 3) \equiv (n - 2)(n + 1) - 4$

[2]

(b) Rearrange the formula $W = \frac{\sqrt{X}}{Y}$

to make X the subject.

Answer X = _____ [2]

11 Find the radius of a sphere which has a surface area of 1000 cm^2 .

Answer _____ cm [2]

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Examiner Only	
Marks	Remark
Total Question 10	
Total Question 11	



12 Simplify $\sqrt{x} \times \sqrt{x^3}$

Answer _____ [2]

Examiner Only	
Marks	Remark
Total Question 12	
Total Question 13	

13 A magnet is at a distance, d cm from a metal object.
The force, F newtons, exerted by the magnet on the metal object is
inversely proportional to the square of the distance d .
When $d = 5$, $F = 8$

(a) Express F in terms of d .

Answer _____ [3]

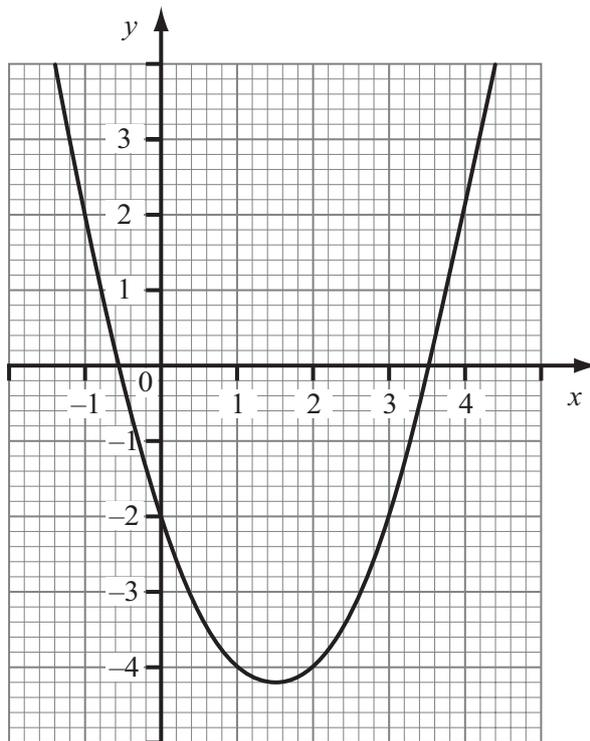
(b) Explain what happens to F when d is doubled.

Answer _____ [1]

[Turn over



14 The grid shows the graph of $y = x^2 - 3x - 2$



By drawing an appropriate straight line, solve the equation $x^2 - 4x + 1 = 0$

Answer $x =$ _____ [3]

Examiner Only	
Marks	Remark

Total Question 14	



THIS IS THE END OF THE QUESTION PAPER



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