

Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

B278A

**MATHEMATICS C
(GRADUATED ASSESSMENT)**

MODULE M8 (SECTION A)

THURSDAY 20 JANUARY 2011: Morning

DURATION: 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the question paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments

Tracing paper (optional)

WARNING

**No calculator can be used for
Section A of this paper.**

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

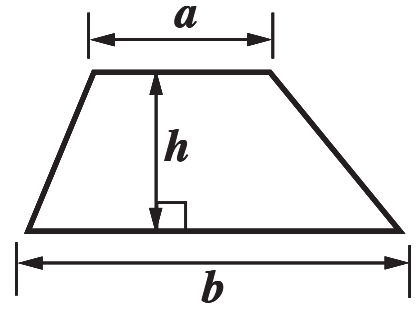
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).**
- **Answer ALL the questions.**

INFORMATION FOR CANDIDATES

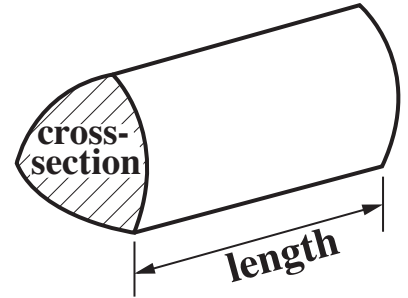
- **The number of marks is given in brackets [] at the end of each question or part question.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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

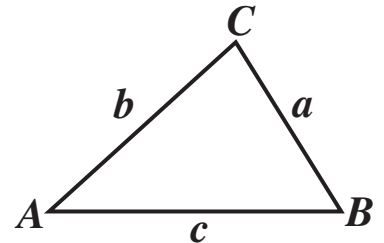


Volume of prism = (area of cross-section) \times length



In any triangle ABC

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

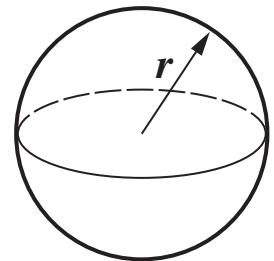


Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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

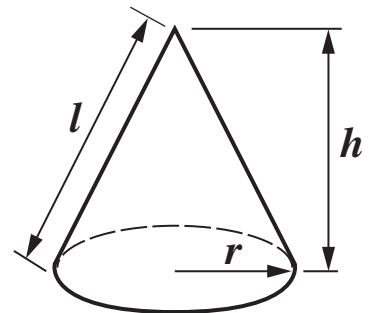
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

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



The 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.

(a) $5(x + 4) = 2(x + 1)$

(a) _____ [3]

(b) $\frac{x+5}{4} < 2$

(b) _____ [2]

2 Helen drops a coin and an ordinary 6-sided dice.

Helen says:

The probability that the coin lands on a head and the dice lands on a 6 is $\frac{1}{12}$.

Explain why Helen is correct.

Helen is correct because _____

_____ [2]

3 (a) Arrange these numbers in order, smallest to largest.

$$4.54 \times 10^{-2} \quad 4.37 \times 10^2 \quad 3.47 \times 10^{-3} \quad 2.78 \times 10^{-2}$$

_____ [1]
smallest

(b) You are given that $x = 3 \times 10^3$ and $y = 6 \times 10^5$.

Work out the following, giving your answers in standard form.

(i) xy

(b)(i) _____ [2]

(ii) $x + y$

(ii) _____ **[2]**

4 Rearrange this formula to make x the subject.

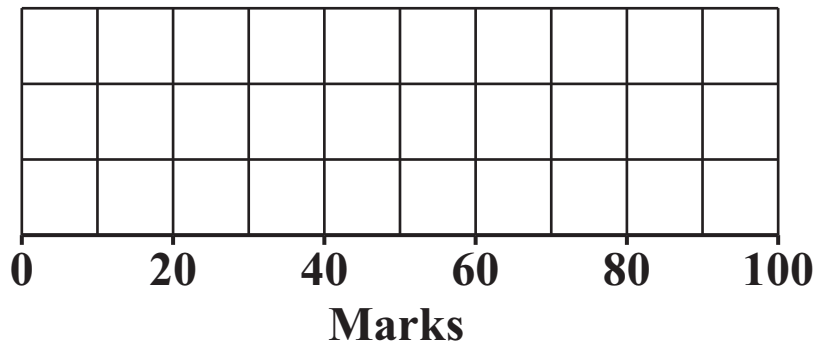
$$y = 5x^2 - 3$$

_____ [3]

5 This table shows information about the test results for a class.

Minimum mark	15
Lower quartile	32
Median	56
Interquartile range	47
Range	80

Draw a box plot to represent these results.



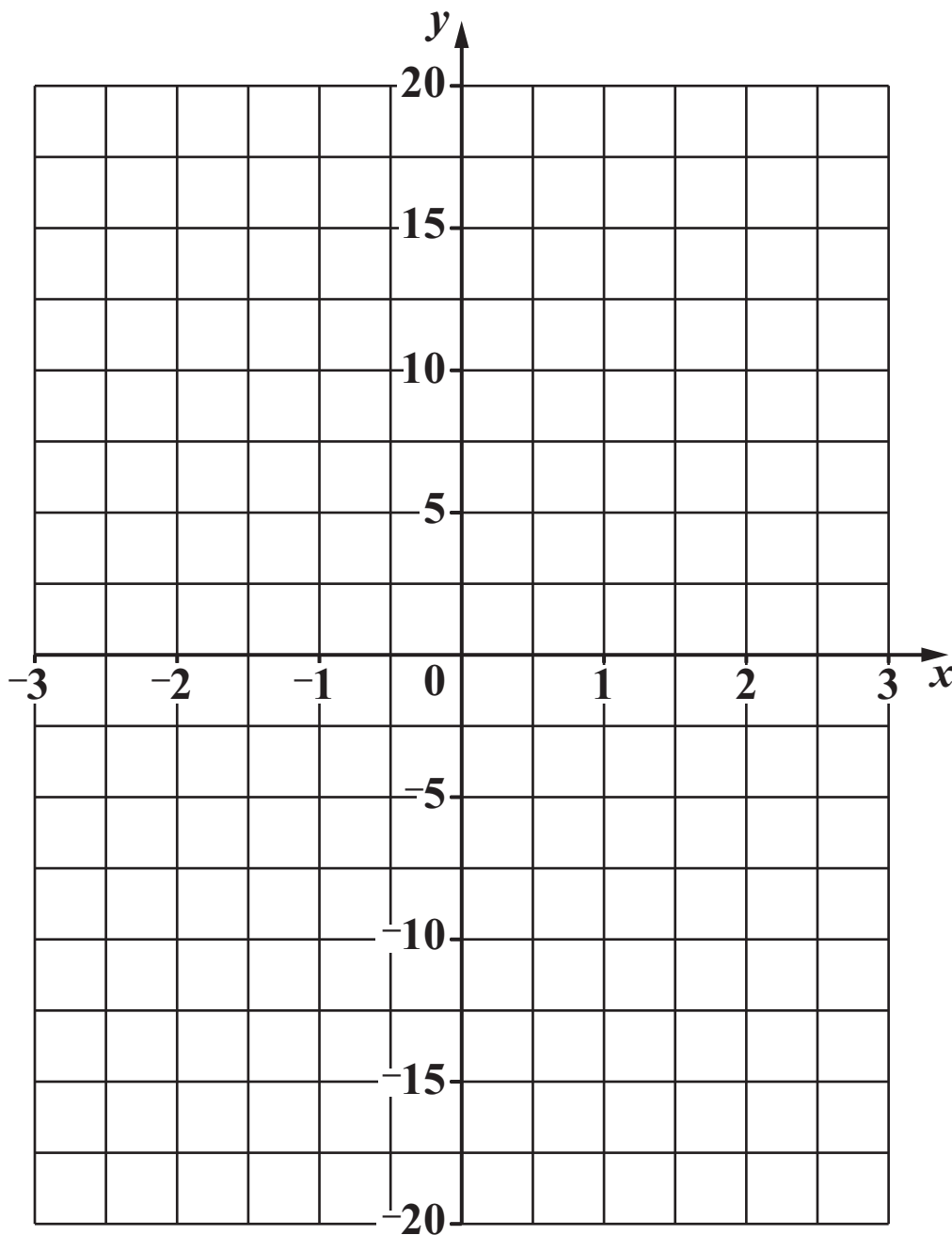
[3]

6 (a) Complete the table of values for $y = x^3 - 4x$.

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

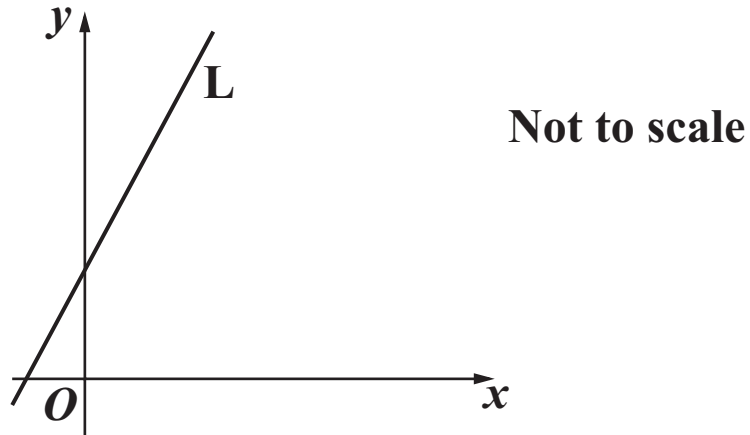
[1]

(b) Draw the graph of $y = x^3 - 4x$ for $-3 \leq x \leq 3$.



[2]

7 Line L passes through points (0, 2) and (6, 20).



(a) Find the gradient of line L.

(a) _____ [2]

(b) The equations of four other lines are given below.

For each of these lines, decide whether it is parallel to line L.

Write Yes or No under each equation.

$$y = 3x$$

$$y = -3x + 2$$

$$y = 2x + 3$$

$$y = 3x + 7$$

_____ [2]

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