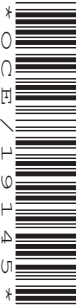




M8

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)
 MODULE M8 – SECTION A

B278A



Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:

- Geometrical instruments
- Tracing paper (optional)

Thursday 20 January 2011
Morning

Duration: 30 minutes



Candidate forename		Candidate surname	
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Centre number							Candidate number				
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INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. 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.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

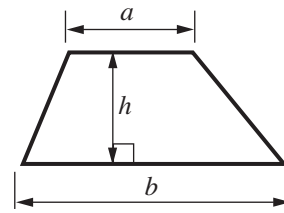
- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

WARNING

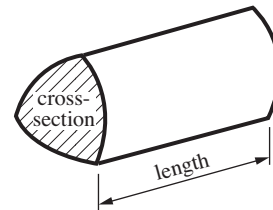
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

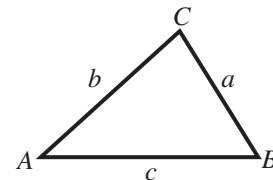


In any triangle ABC

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

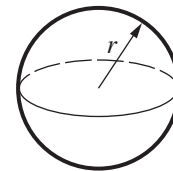
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



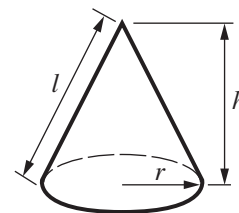
Volume of sphere = $\frac{4}{3}\pi r^3$

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

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

PLEASE DO NOT WRITE ON THIS PAGE

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.

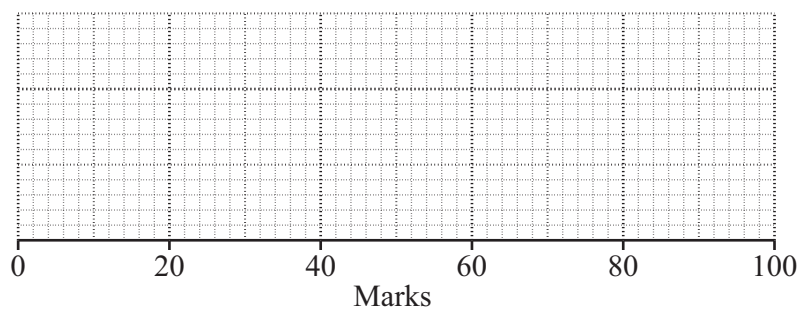
$$y = 5x^2 - 3$$

..... [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.



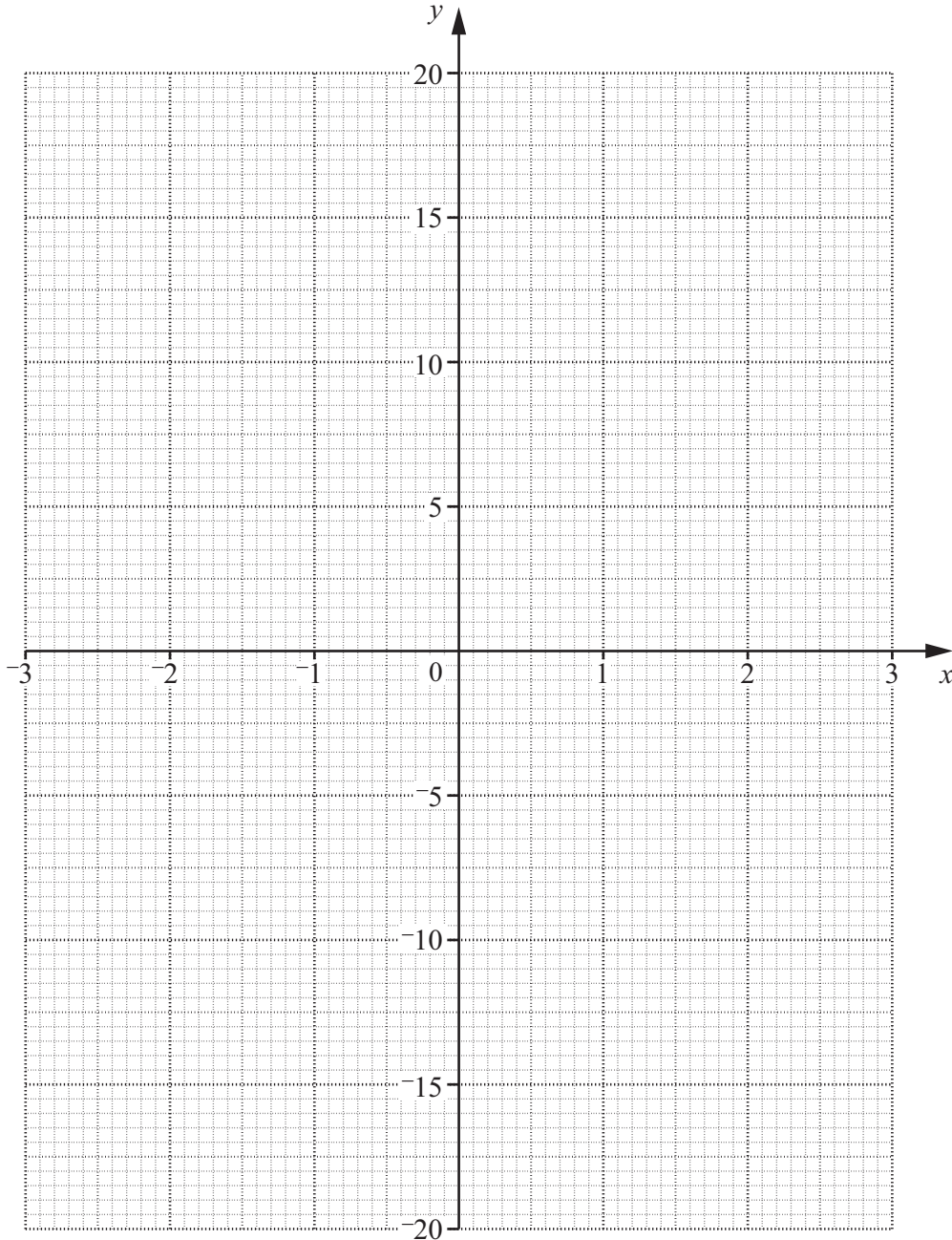
[3]

- 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]

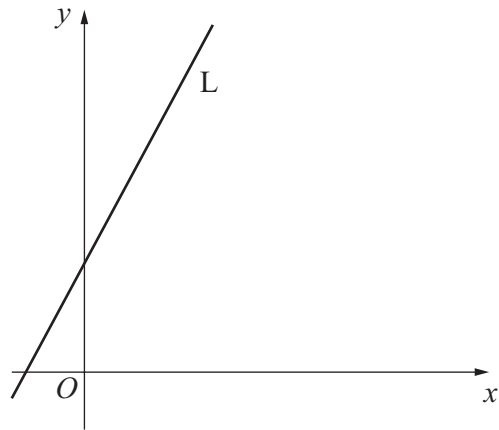
- (b) Draw the graph of $y = x^3 - 4x$ for $-3 \leq x \leq 3$.



[2]

TURN OVER FOR QUESTION 7

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



Not to scale

(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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