

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)
MODULE M9 (SECTION A)

B279A

Candidates answer on the Question Paper

OCR Supplied Materials:
None

Other Materials Required:

- Geometrical instruments
- Tracing paper (optional)

Monday 21 June 2010
Afternoon

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 clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that 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.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- 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).

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.

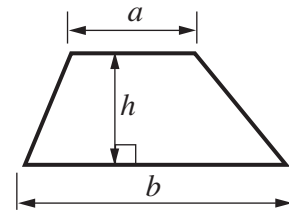
WARNING



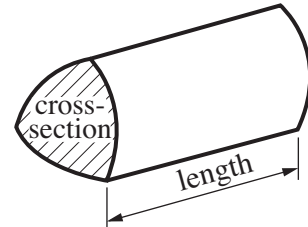
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

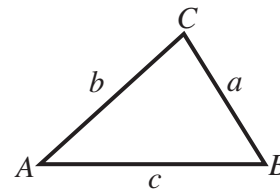


In any triangle ABC

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

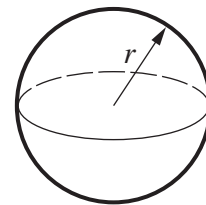
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



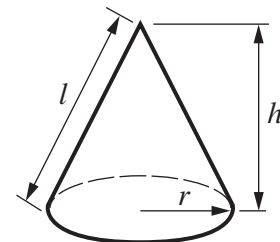
Volume of sphere = $\frac{4}{3}\pi r^3$

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

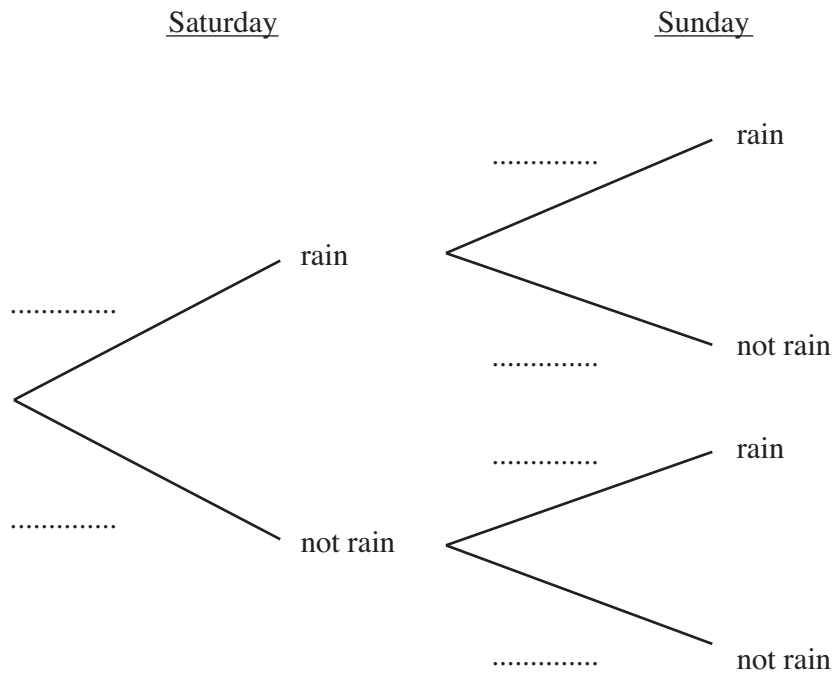
The solutions of $ax^2 + bx + c = 0$, where $a \neq 0$, are given by

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

PLEASE DO NOT WRITE ON THIS PAGE

1 A weather forecast states the probability of rain for Saturday as 0.4 and for Sunday as 0.3. These probabilities are independent.

(a) Complete the tree diagram.



[1]

(b) Calculate the probability that it rains on **just one** of the two days.

(b) [3]

2 Work out.

(a) $5^2 \times 5^{-2}$

(a) [2]

(b) $\left(\frac{5^9}{5^5}\right)^{\frac{1}{2}}$

(b) [2]

3 The cost of a circular lace mat, C euros, is proportional to the square of the radius, r cm.

$C = 80$ when $r = 4$.

(a) Find an equation connecting C and r .

(a) [2]

(b) Find the cost of a mat with radius 7 cm.

(b)euros [1]

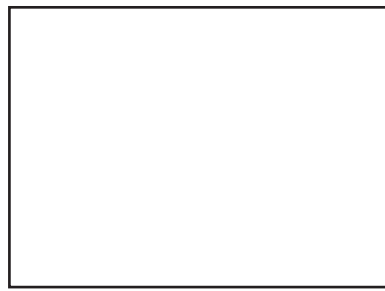
5

- 4** The total world land area is 5.8×10^7 square miles, correct to 2 significant figures.
The land area of Australia is 2.9×10^6 square miles, correct to 2 significant figures.

Estimate the percentage of the total world land area covered by Australia.
Show your working clearly.

.....% [3]

- 5 The length and width of this rectangle are in centimetres.
The length is $2x + 1$ and the width is $3x - 2$.



Not to scale

- (a) Expand and simplify.

$$(2x + 1)(3x - 2)$$

(a) [2]

- (b) The area of the rectangle is 33 cm^2 .

- (i) Show that $6x^2 - x - 35 = 0$.

.....
..... [1]

(ii) Solve, by factorising.

$$6x^2 - x - 35 = 0$$

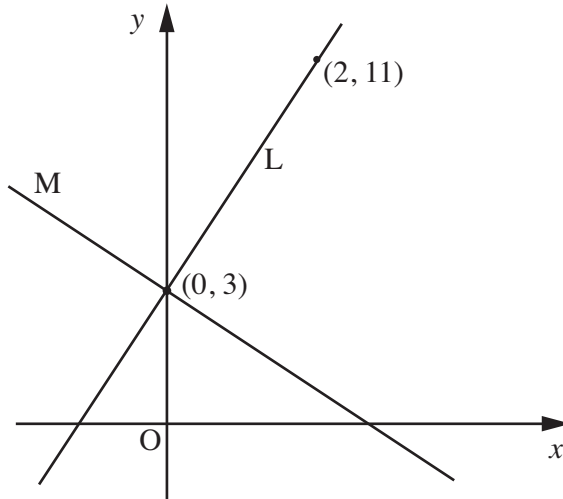
(b)(ii) [3]

(iii) Hence find the length and width of the rectangle.

(iii) lengthcm

width cm [1]

TURN OVER FOR QUESTION 6



Not to scale

(a) Explain why the equation of line L is $y = 4x + 3$.

.....

.....

..... [2]

(b) Line M is perpendicular to line L and passes through (0, 3).

Find the equation of line M.

(b) [2]



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