

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**

B279A

**MATHEMATICS C
(GRADUATED ASSESSMENT)**

MODULE M9 – SECTION A

MONDAY 21 JUNE 2010: Afternoon

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

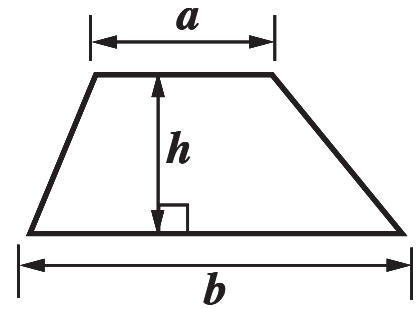
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Answer ALL the questions.**
- **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

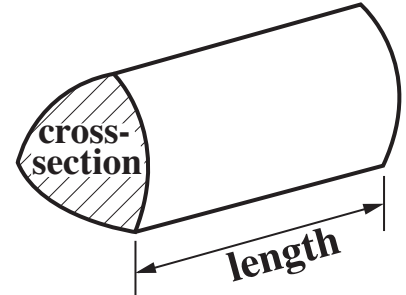
- **The number of marks is given in brackets [] at the end of each question or part question.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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



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

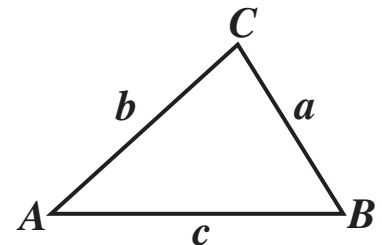


In any triangle ABC

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

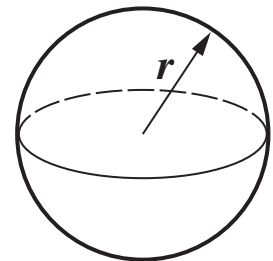
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



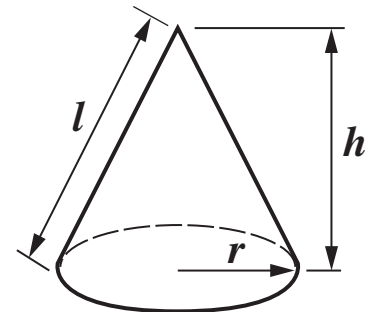
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

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



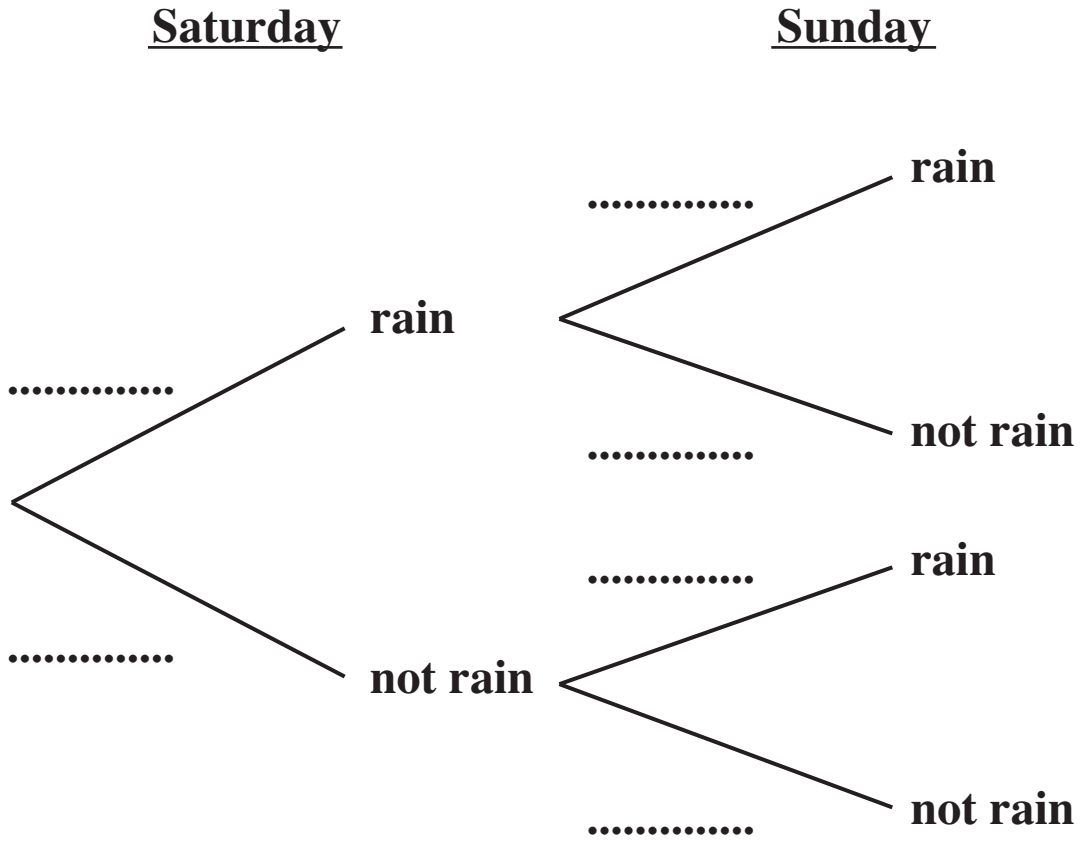
The Quadratic Equation

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 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 mark]



**(b) Calculate the probability that it rains on JUST ONE of the two days.
[3 marks]**

(b) _____

2 Work out.

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

[2 marks]

(a) _____

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

[2 marks]

(b) _____

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 .
[2 marks]**

(a) _____

**(b) Find the cost of a mat with radius 7 cm.
[1 mark]**

(b) _____ euros

- 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.**

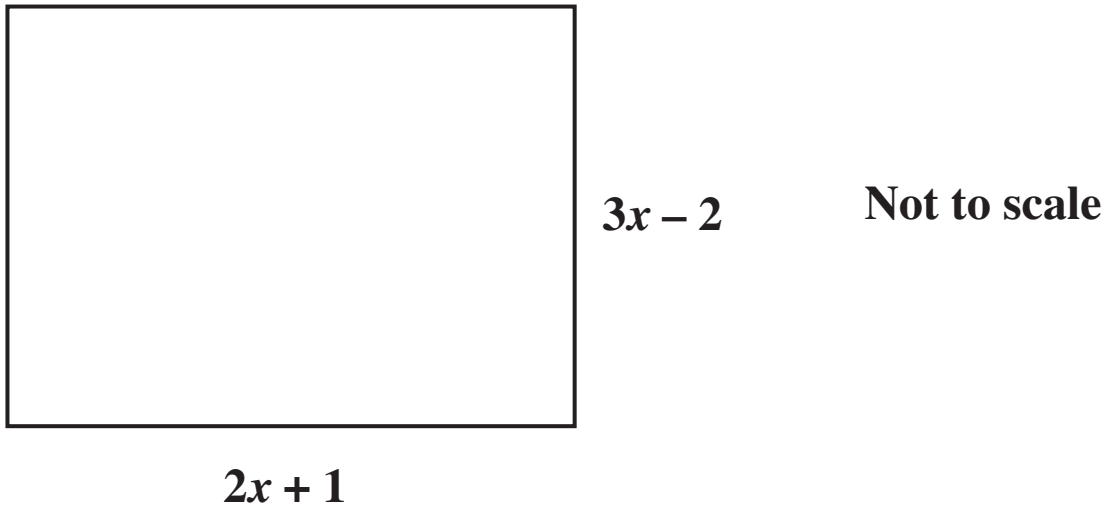
Estimate the percentage of the total world land area covered by Australia.

Show your working clearly.

[3 marks]

_____ %

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



- (a)** Expand and simplify.

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

[2 marks]

(a) _____

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

(i) Show that $6x^2 - x - 35 = 0$.
[1 mark]

(ii) Solve, by factorising.

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

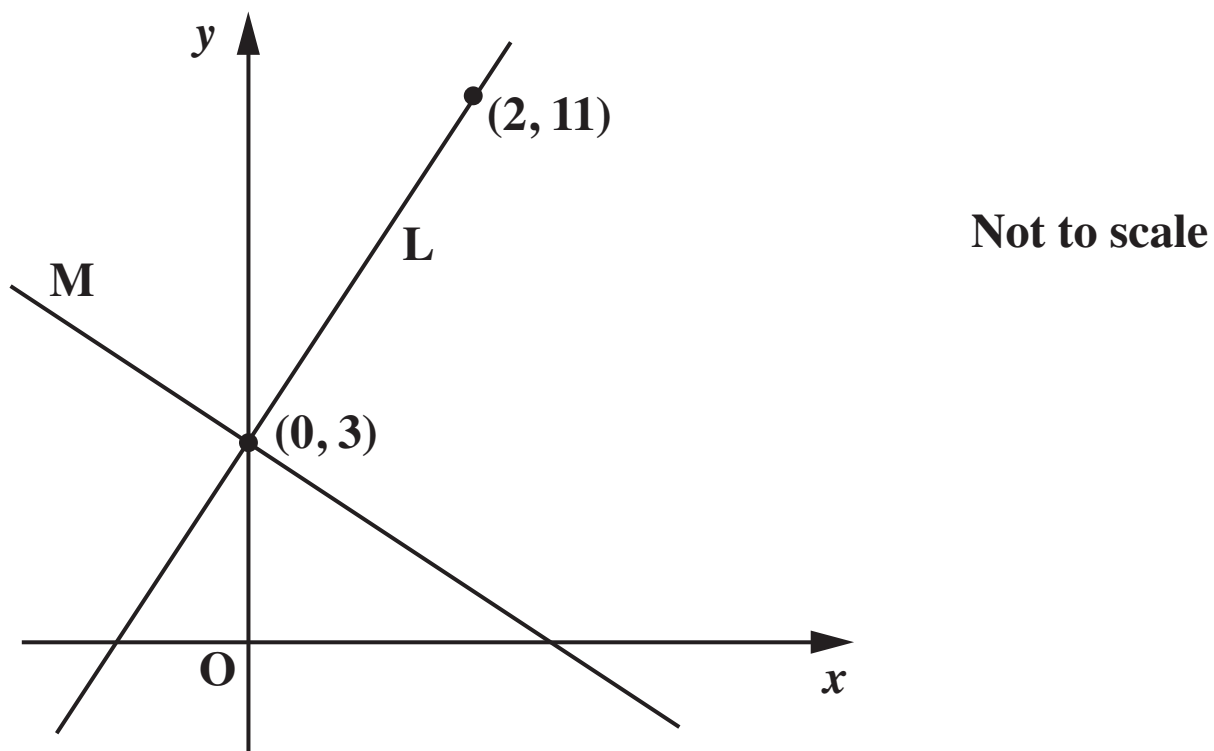
[3 marks] **(b)(ii)** _____

(iii) Hence find the length and width of the rectangle.
[1 mark]

(iii) length _____ **cm**

width _____ **cm**

6 Use the diagram below to answer the questions that follow.



- (a) Explain why the equation of line L is $y = 4x + 3$.
[2 marks]

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

Find the equation of line M.
[2 marks]

(b) _____



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