



M9

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)

Tuesday 1 March 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.
- 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).
- 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.

INFORMATION FOR CANDIDATES

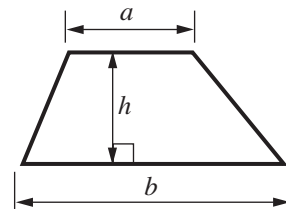
- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

WARNING

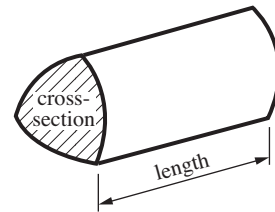
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

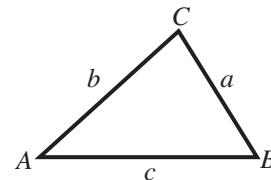


In any triangle ABC

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

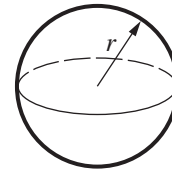
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



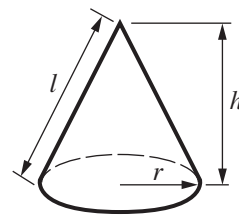
Volume of sphere = $\frac{4}{3}\pi r^3$

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) Work out.

(i) 9^0

(a)(i)..... [1]

(ii) $64^{\frac{1}{2}}$

(ii)..... [1]

(iii) $(9 \times 10^{-8}) \times (2 \times 10^3)$

Give your answer in standard form.

(iii)..... [2]

(b) What is the value of n in this equation?

$$3^n \div 3^{-2} = 3^6$$

(b)..... [1]

3 (a) Factorise fully.

$$12xy - 9y^2$$

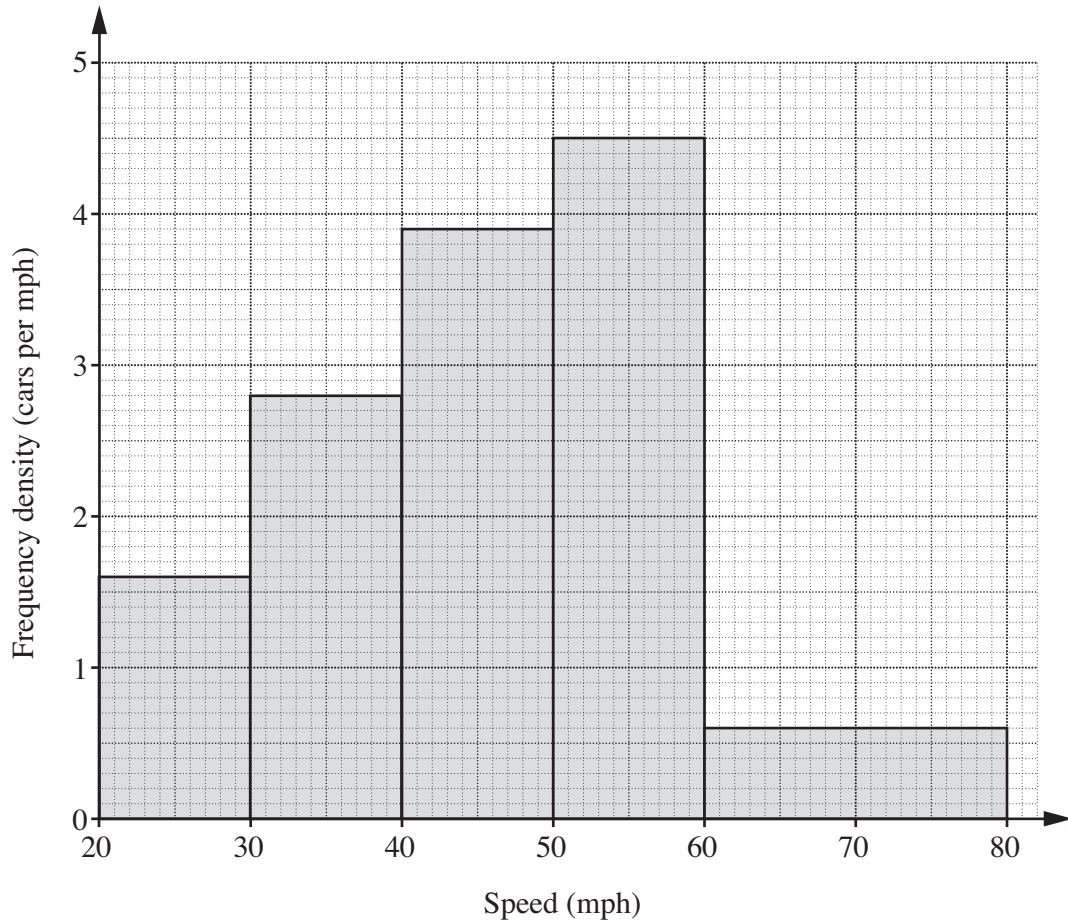
(a)..... [2]

(b) Solve by factorising.

$$2x^2 + 7x - 15 = 0$$

(b)..... [3]

- 4 The histogram shows the distribution of the speeds, in miles per hour, of cars as they travel along a road in a one-hour period.



How many cars travelled along the road in this time?

..... [3]

- 5 The change in energy of a body is given by this formula.

$$E = \frac{mv^2 - mu^2}{2}$$

Rearrange the formula to make v the subject.

..... [3]

TURN OVER FOR QUESTION 6

6 (a) Expand and simplify.

$$(3x + 2)(5x - 2)$$

(a)..... [3]

(b) Factorise.

$$9x^2 - 25y^2$$

(b) [2]



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