



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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MODIFIED LANGUAGE

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

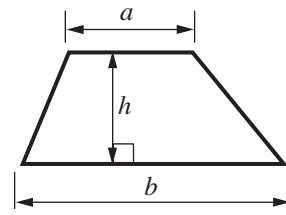
- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

WARNING

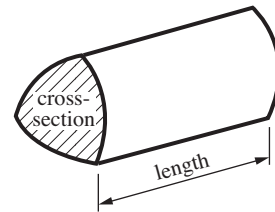
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

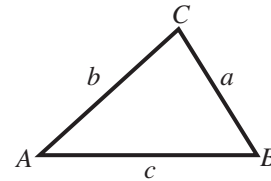


In any triangle ABC

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

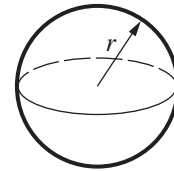
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



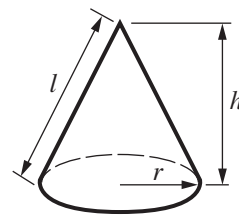
Volume of sphere = $\frac{4}{3}\pi r^3$

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]

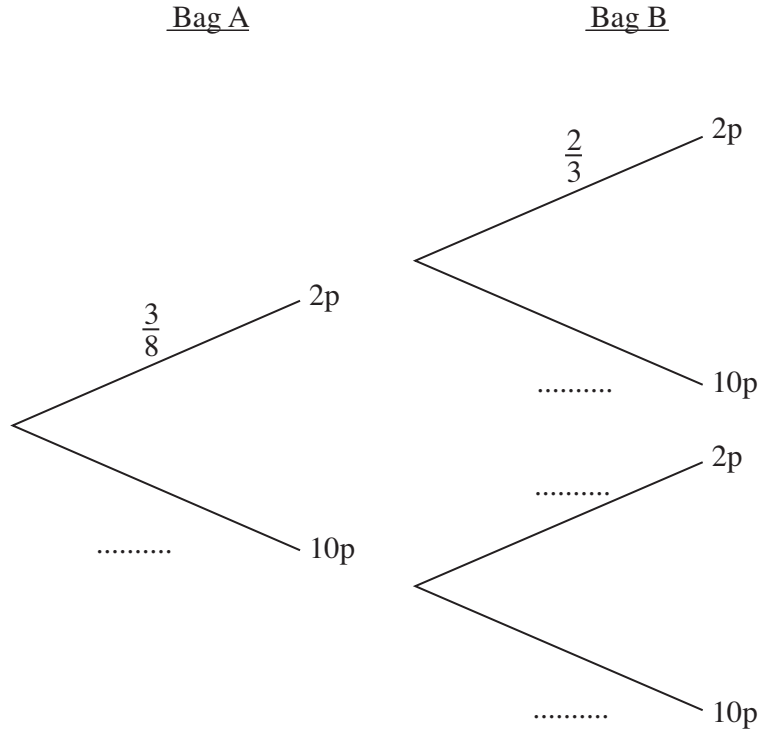
(b) What is the value of n in this equation?

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

(b)..... [1]

- 2 Kevin has two bags of coins.
 Bag A contains three 2p coins and five 10p coins.
 Bag B contains two 2p coins and one 10p coin.
 Kevin picks one coin at random from bag A. He then picks one coin at random from bag B.

(a) Complete the tree diagram.



[1]

(b) Calculate the probability that he has picked a total of 12p.

(b) [3]

3 (a) Factorise fully.

$$12xy - 9y^2$$

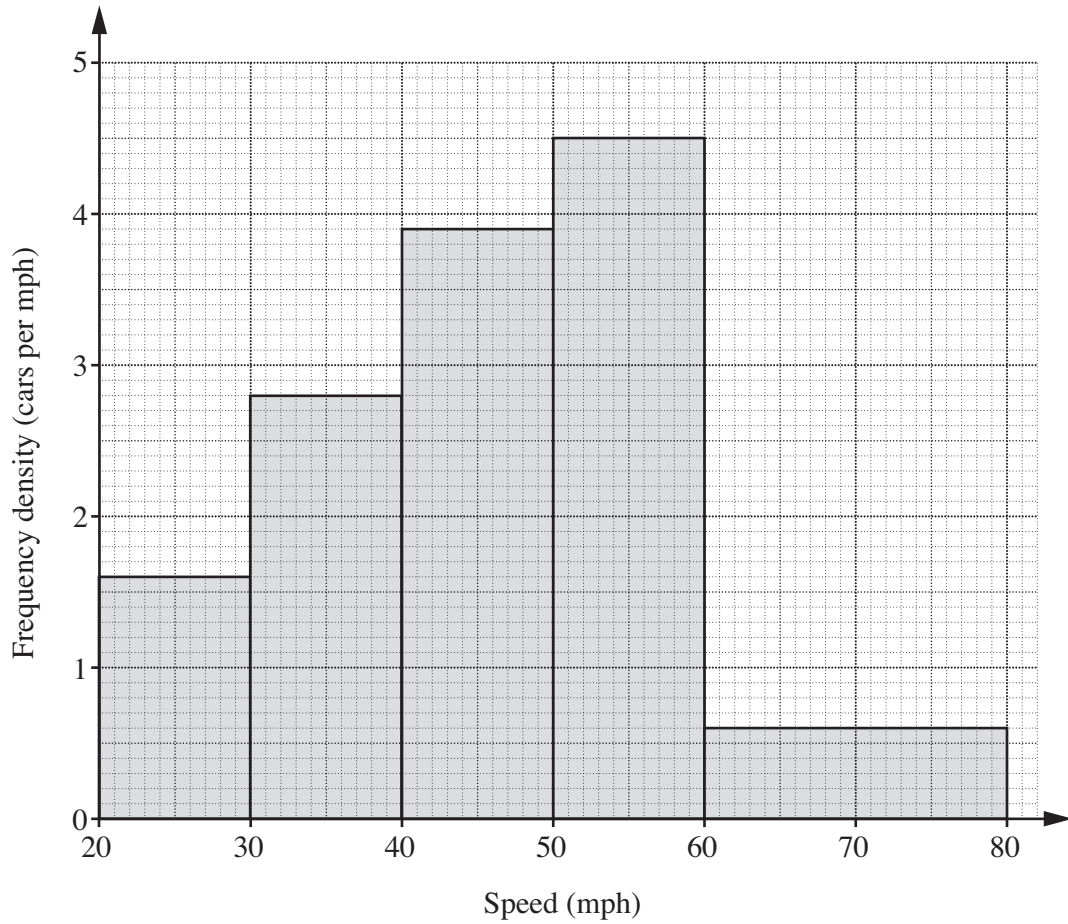
(a)..... [2]

(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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