



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)

Tuesday 21 June 2011
Afternoon

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.
- 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

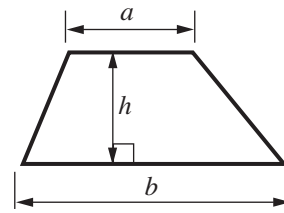
- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

WARNING

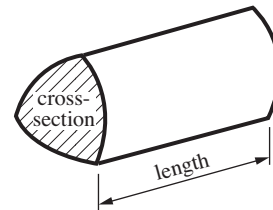
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

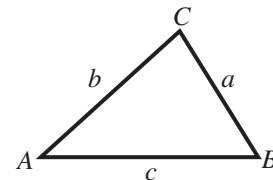


In any triangle ABC

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

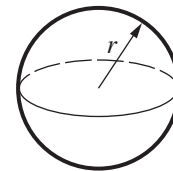
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



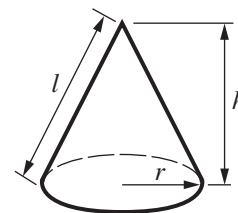
Volume of sphere = $\frac{4}{3}\pi r^3$

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

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

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- 1 (a) Rearrange this equation to make x the subject.

$$6x - y = 4x + 1$$

(a) [2]

- (b) (i) Solve this equation.

$$\frac{7x + 3}{2} = 2x + 1$$

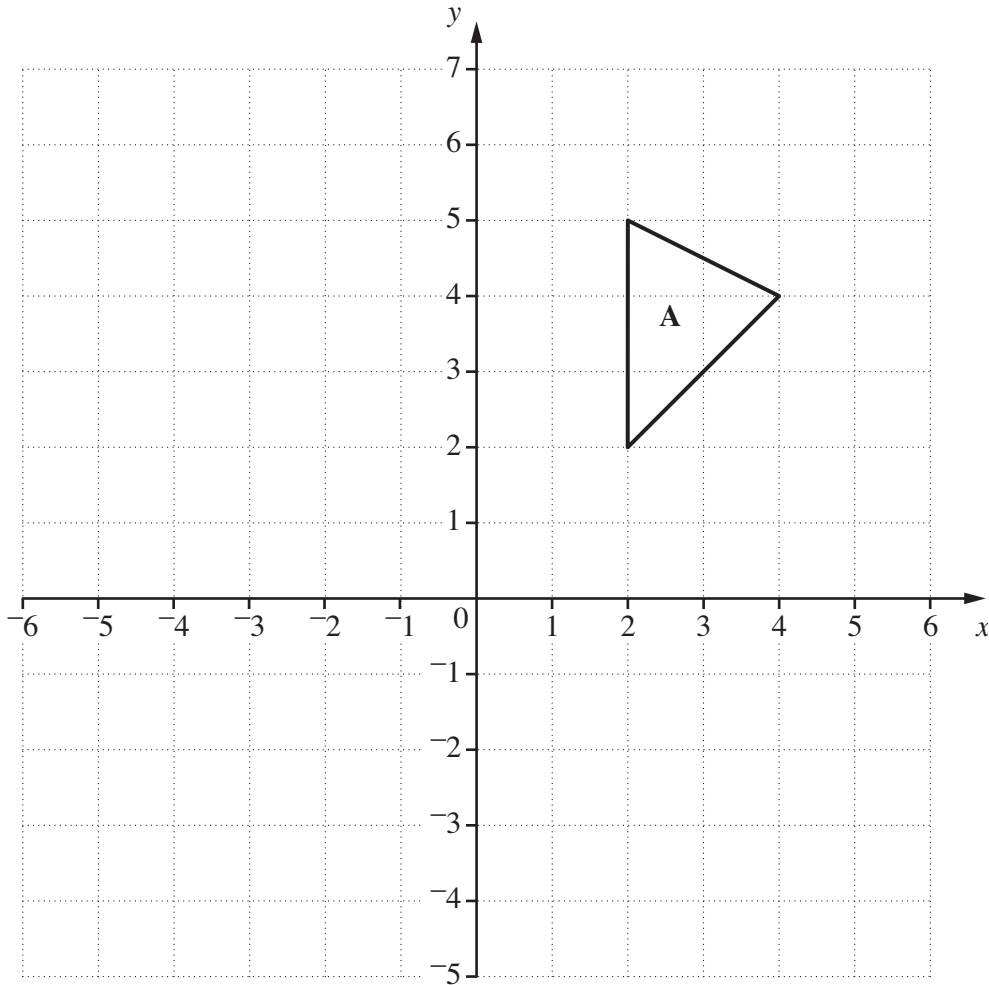
(b)(i) [3]

- (ii) Factorise and solve this equation.

$$x^2 + 4x - 21 = 0$$

(ii) [3]

2



(a) Rotate triangle **A** through 90° anti-clockwise about (1, 1).
Label the image **B**. [2]

(b) Translate triangle **B** using the vector $\begin{pmatrix} -1 \\ -5 \end{pmatrix}$.
Label the image **C**. [2]

(c) Complete this description.

The **single** transformation that maps triangle **C** onto triangle **A** is
a rotation 90° clockwise about (..... ,). [1]

3 Work out.

$$2\frac{1}{2} \times 3\frac{2}{3}$$

..... [3]

4 Solve algebraically.

$$\begin{aligned} 5x + 2y &= 4 \\ 3x - 5y &= 21 \end{aligned}$$

$x =$

$y =$ [4]

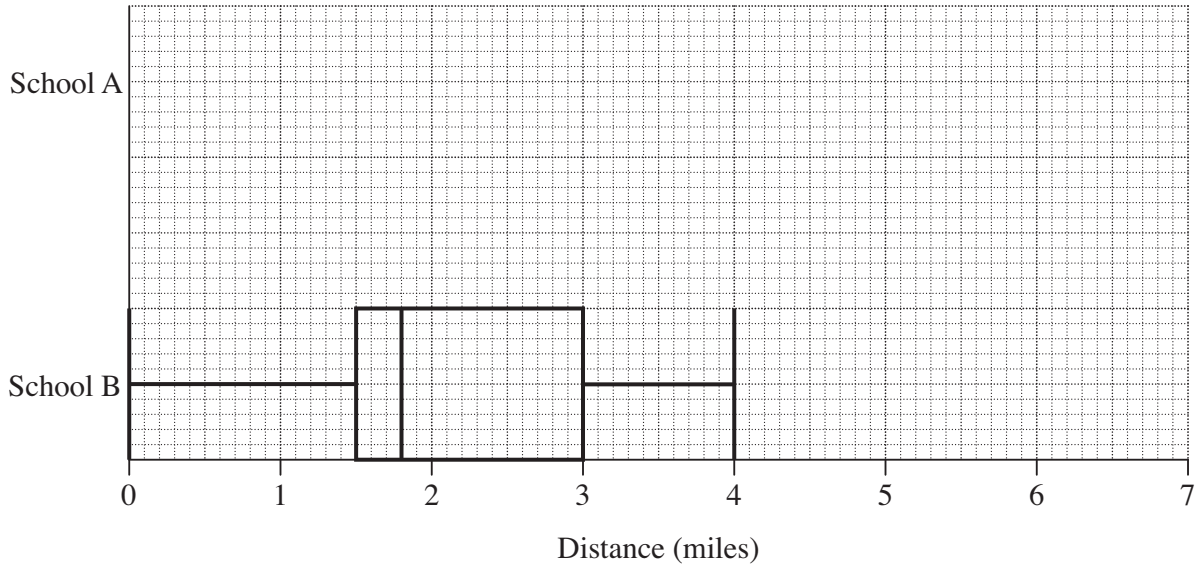
TURN OVER FOR QUESTION 5

- 5 Jim carries out a survey in two schools.
He records the distance each pupil travels to school, in miles.

The results for school A are summarised in this table.

Minimum	Lower quartile	Median	Upper quartile	Range
0.5	1.5	2.5	4.2	5.5

- (a) Draw the box plot for school A.



[2]

The results for school B are shown in the box plot.

- (b) Write down the median distance for school B.

(b) miles [1]

- (c) Compare the distributions of the distances travelled by pupils in schools A and B.
Write two comments explaining the comparisons of the distribution.

1

.....

.....

2

.....

..... [2]

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