

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**

**B278A**

**MATHEMATICS C  
(GRADUATED ASSESSMENT)**

**MODULE M8 (SECTION A)**

**TUESDAY 21 JUNE 2011: 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**

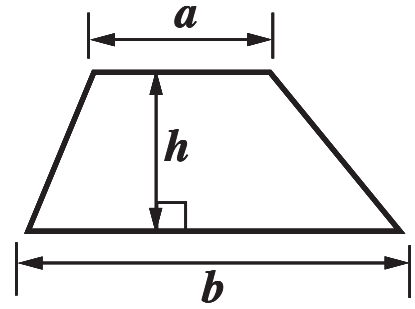
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **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.**

## **INFORMATION FOR CANDIDATES**

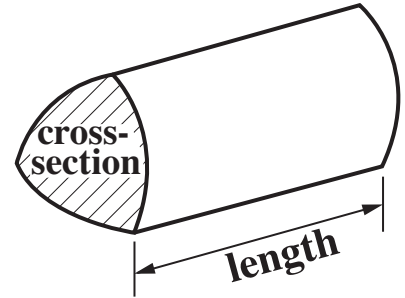
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **The total number of marks for this Section is 25.**

# FORMULAE SHEET

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

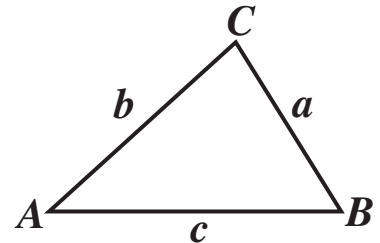


**Volume of prism** = (area of cross-section)  $\times$  length



**In any triangle ABC**

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

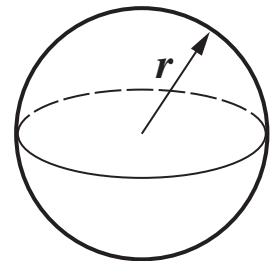


**Cosine rule**  $a^2 = b^2 + c^2 - 2bc \cos A$

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

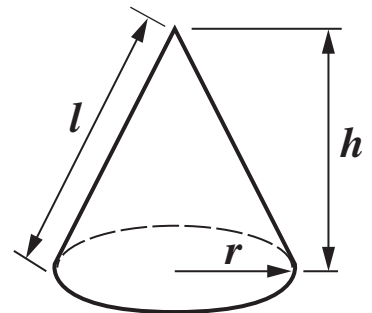
**Volume of sphere** =  $\frac{4}{3}\pi r^3$

**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) Rearrange this equation to make  $x$  the subject.**

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

**(a)** \_\_\_\_\_ [2]

**(b) (i) Solve this equation.**

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

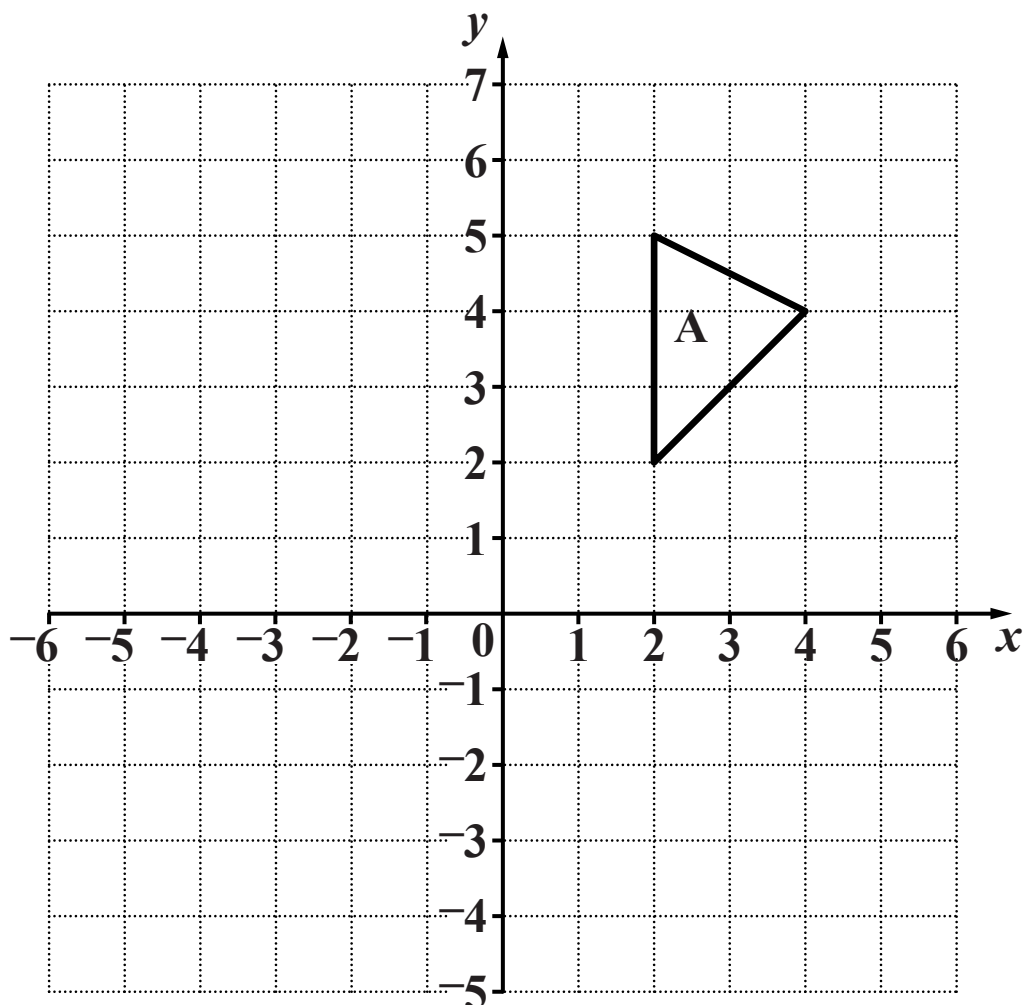
**(b)(i)** \_\_\_\_\_ [3]

**(ii) Factorise and solve this equation.**

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

**(ii) \_\_\_\_\_ [3]**

2 Triangle A is drawn on the grid below.



- (a) Rotate triangle A through  $90^\circ$  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  $90^\circ$  clockwise about

( \_\_\_\_\_ , \_\_\_\_\_ ). [1]

**3 Work out.**

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

\_\_\_\_\_ [3]

**4 Solve algebraically.**

$$5x + 2y = 4$$

$$3x - 5y = 21$$

$$x = \underline{\hspace{10em}}$$

$$y = \underline{\hspace{10em}} \quad [4]$$



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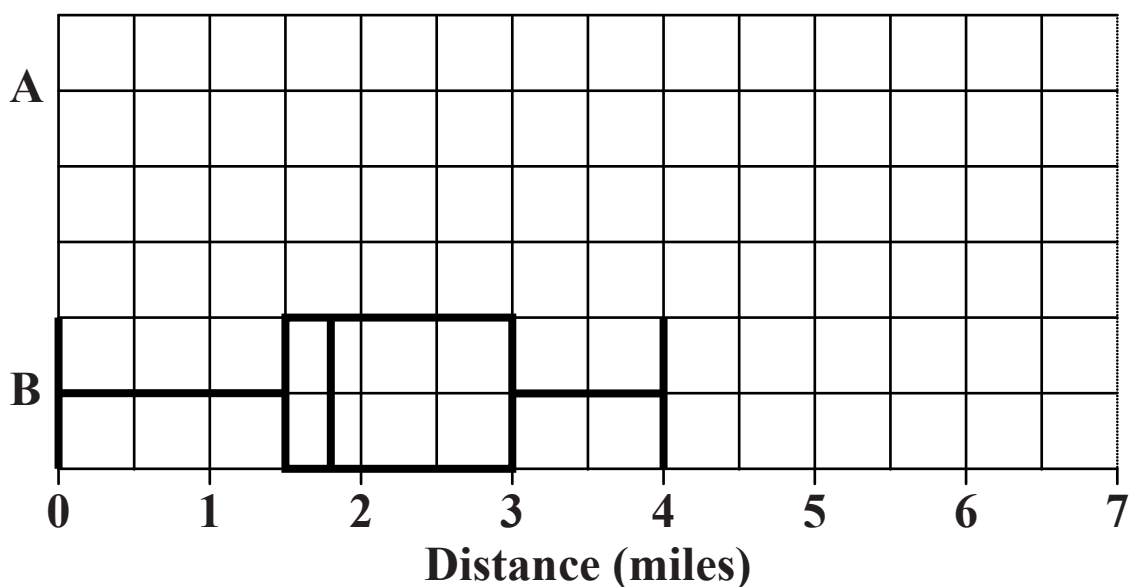
**TURN OVER FOR QUESTION 5**

- 5 Jim conducts a survey in two schools.  
He records the distance, in miles, each pupil travels to school.  
The results for school A are summarised in this table.**

<b>Minimum</b>	<b>Lower quartile</b>	<b>Median</b>	<b>Upper quartile</b>	<b>Range</b>
<b>0.5</b>	<b>1.5</b>	<b>2.5</b>	<b>4.2</b>	<b>5.5</b>

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

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



**[2]**

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

**(b) \_\_\_\_\_ miles [1]**

**(c) Write two comments comparing the distributions of the distances travelled by pupils in these two schools.**

**1** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ **[2]**



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