

**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)

**Monday 8 March 2010**  
**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 clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- 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.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

**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.

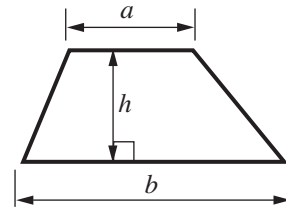
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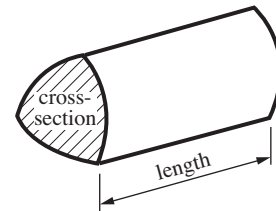
No calculator can be used for Section A of this paper

## Formulae Sheet

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



$$\text{Volume of prism} = (\text{area of cross-section}) \times \text{length}$$

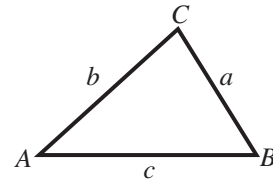


In any triangle  $ABC$

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

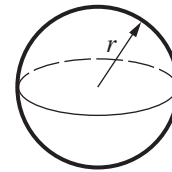
$$\text{Cosine rule} \quad a^2 = b^2 + c^2 - 2bc \cos A$$

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



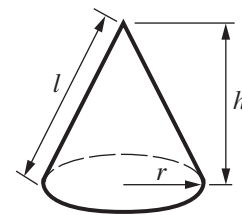
$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

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



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

$$\text{Curved surface area of cone} = \pi r l$$



### 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 Write down the integer values of  $x$  that satisfy this inequality.

$$-20 \leq 5x < 12$$

..... [3]

2 Work out.

$$4\frac{1}{3} - 1\frac{3}{4}$$

Give your answer as a mixed number.

..... [3]

3 (a) Solve.

$$\frac{6x}{7} - 1 = 2$$

(a)..... [3]

(b) Rearrange this equation to make  $x$  the subject.

$$4(x - 2y) = x + 3$$

(b) ..... [3]

4 (a) Write 0.00062 in standard form.

(a)..... [1]

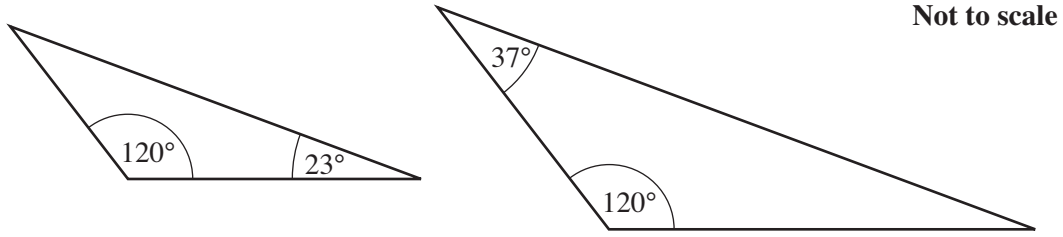
(b) Calculate.

$$(2.4 \times 10^2) + (1.6 \times 10^3)$$

Give your answer in standard form.

(b) ..... [2]

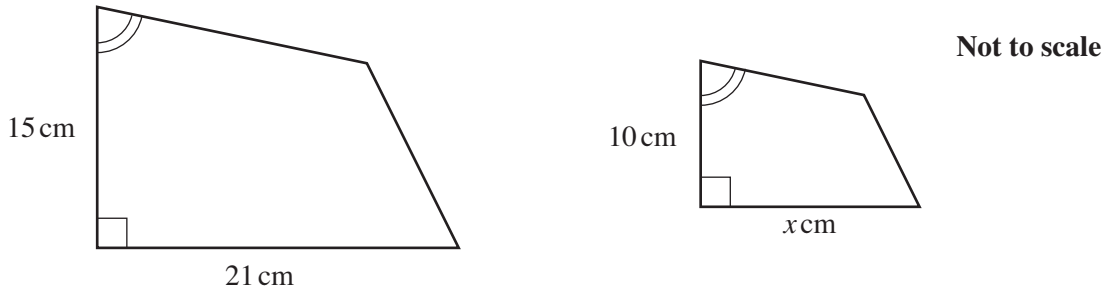
5 (a)



Explain why these two triangles are similar.

.....  
 ..... [1]

(b) These two quadrilaterals are similar.

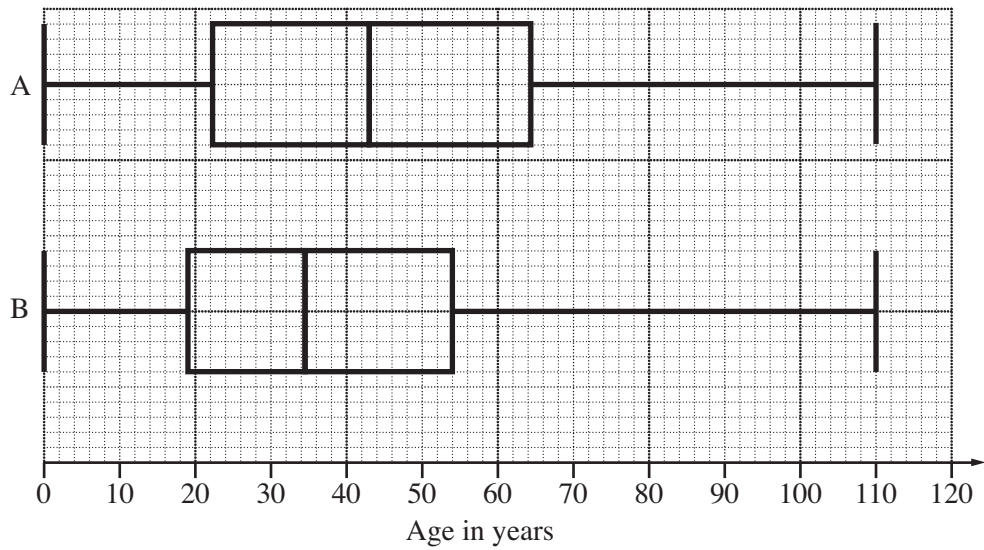


Calculate  $x$ .

(b) ..... [2]

6

6 These box plots show the distributions of the ages of the people living in two towns, A and B.



(a) Find the interquartile range for town B.

(a) .....years [2]

(b) Here are two statements comparing the ages of the people in town A and town B.

For each one, write whether you agree or disagree.

Give your reasons, stating clearly which statistic you use to make each decision.

Statement	Agree/Disagree	Reason
On average, people in town A are older than people in town B.		
There is a greater proportion of people over 60 in town B.		

[2]

7 Here are six equations.

$$y = x^2 - x$$

$$y = \frac{1}{x}$$

$$y = 2x - 1$$

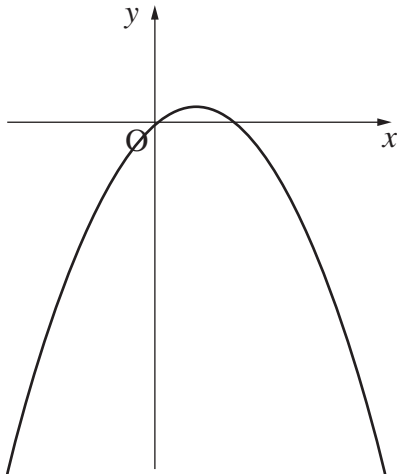
$$y = x - x^2$$

$$y = 2x + 1$$

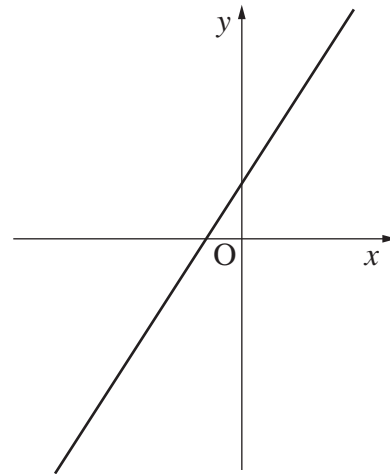
$$y = x^3 - x$$

The graphs of four of these equations are drawn below.

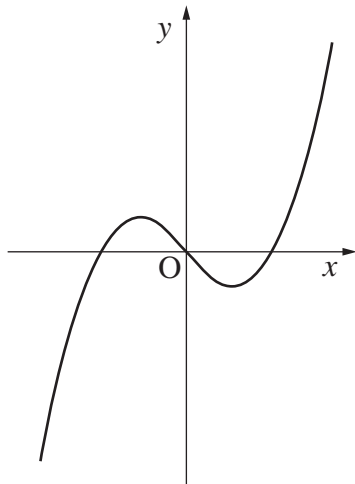
Write the correct equation below each graph.



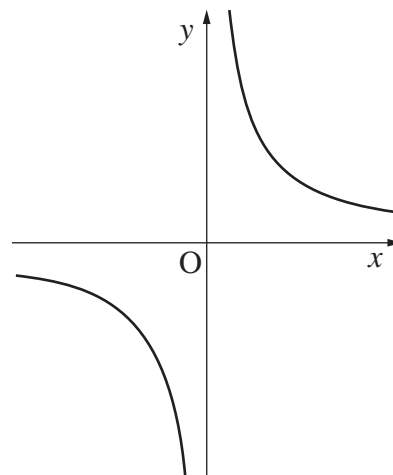
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[3]

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