

# GENERAL CERTIFICATE OF SECONDARY EDUCATION MATHEMATICS C (GRADUATED ASSESSMENT)

M8 B248A

MODULE M8 - SECTION A

**MONDAY 22 JANUARY 2007** 

Morning

Time: 30 minutes

Candidates answer on the question paper.

Additional materials: Geometrical instruments

Tracing paper (optional)



Candidate Name					
Centre Number			Candidate Number		

#### **INSTRUCTIONS TO CANDIDATES**

- Write your name, Centre Number and Candidate Number in the boxes above.
- Answer all the questions.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- In many questions marks will be given for a correct method even if the answer is incorrect.
- Do not write in the bar code.
- Do not write outside the box bordering each page.
- WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.

#### **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.

WARNING
You are not allowed to use a calculator in Section A of this paper.

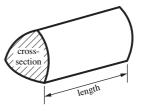
For Examiner's Use				
Section A				
Section B				
Total				

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### **Formulae Sheet**

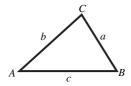
**Volume of prism** = (area of cross-section) ×length



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 =  $\frac{1}{2} ab \sin C$ 

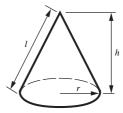
Volume of sphere = 
$$\frac{4}{3}\pi r^3$$

**Surface area of sphere** = 
$$4\pi r^2$$



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

Curved surface area of cone = 
$$\pi rl$$



#### The Quadratic Equation

The solutions of 
$$ax^2 + bx + c = 0$$
, where  $a \ne 0$ , are given by

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

## PLEASE DO NOT WRITE ON THIS PAGE

1	(a)	Simplify.
		$a^4 \times a^3$

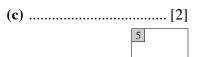
(a)	 [1	]

**(b)** Rearrange this formula to make *x* the subject.

$$y = 7 + 4x$$

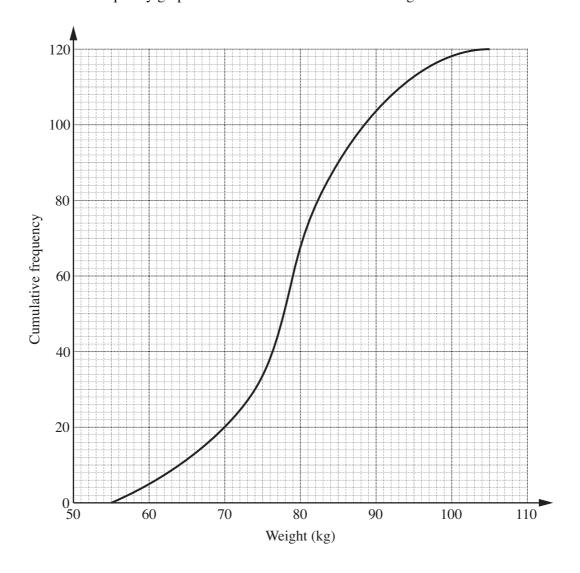
(c) Expand and simplify.

$$(x + 5)(x - 4)$$

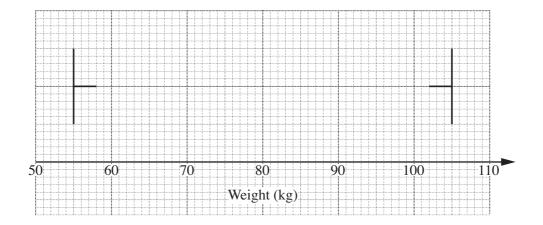


2 The weights of 120 students in year 11 of a school were recorded.

This cumulative frequency graph shows the distribution of their weights.



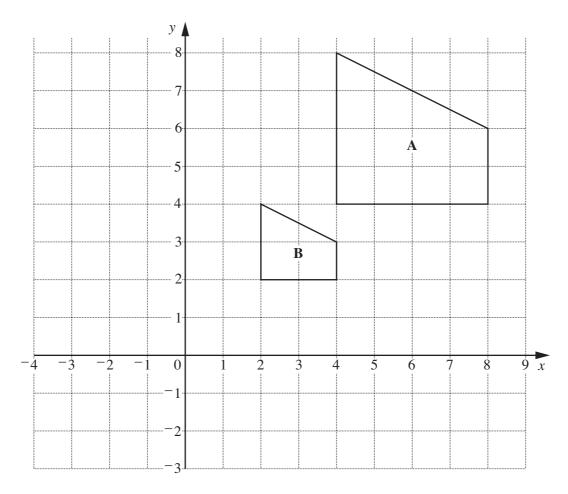
Complete the box plot to show this information.



[3]

3

3



(a) Translate shape **B** by  $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$ .

Label the image C. [2]

	- 4 044 4				
$(\mathbf{h})$	Describe fully the	e cinala trancf	ormation that	mane chane A	onto chane R
$(\mathbf{v})$	Describe fully the	z <b>Siligic</b> u alisi	ommanom mai	maps snape A	L Onto snape D.

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

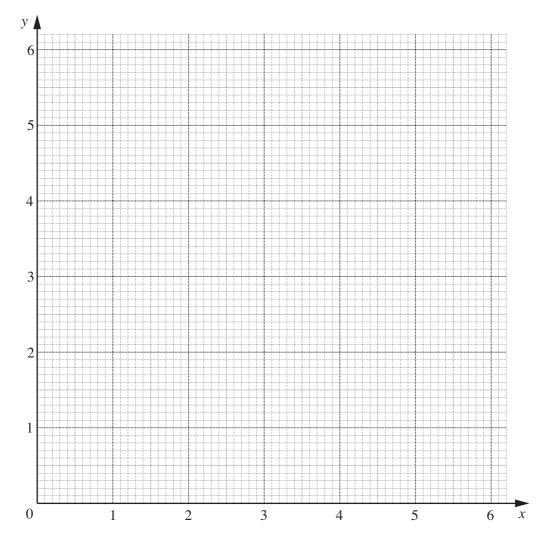


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4 (a) Complete the table below for  $y = \frac{6}{x}$ .

x	1	2	3	4	5	6
у	6		2		1.2	1

**(b)** Draw the graph of  $y = \frac{6}{x}$  on the grid below.



(c) Use your graph to solve the equation  $\frac{6}{x} = 2.2$ .

(c) .....[1]

[2]

[1]

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5	In these	expressions, $a$ , $b$ and $c$ re	epresent length	ıs.		
		a(ab + bc)	$a^2b$	c(a + b)	4(a + c)	
		<b>ne</b> of these expressions of how you decide.	could represent	an area?		
		because				••••
						[2]
					2	
6	(a) Wri	te 0·00027 in standard fo	orm.			
					(a)	[1]
	<b>(b)</b> Eva	luate.				
		$1.7 \times 10^5 + 3.4 \times$	: 10 <sup>4</sup>			
	Giv	e your answer in standar	d form.			

<b>(b)</b>	 [2	2]
	3	

# TURN OVER FOR QUESTION 7

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Work out.

$$3\frac{3}{4} + 1\frac{2}{5}$$

Write your answer as a mixed number.

.....[3]

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