

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**MATHEMATICS C**  
MODULE M7 – SECTION B

**B277/B**

**SPECIMEN**

Candidates answer on the question paper.

Time: 30 minutes

Additional Materials:

- Geometrical instruments
- Tracing paper (optional)
- Scientific or graphical calculator



Candidate  
Name

Centre  
Number

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Candidate  
Number

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**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**

- You are expected to use a calculator in Section B of this paper.
- 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.
- Section B starts with Question 8
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.

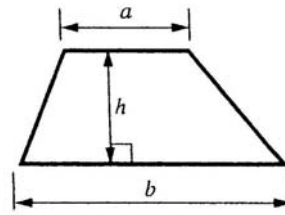
For Examiner's Use

Section B

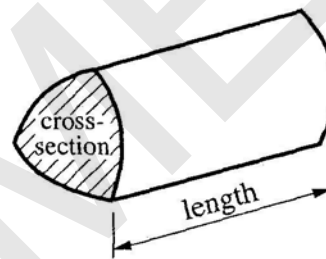
This document consists of **8** printed pages.

2  
FORMULAE SHEET

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



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



- 8 Janine, Carrie and Jay all buy the same type of ham from a supermarket.

Janine buys 400 g of ham for £2.56.

- (a) Carrie buys 350 g of ham.  
How much does she pay?

(a) £ \_\_\_\_\_ [2]

- (b) Jay pays £7.36 for his ham.

How much does his ham weigh?  
Give your answer in kilograms.

(b) \_\_\_\_\_ kg [3]

5

- 9 Alice and Ben share their winnings in the ratio 4 : 1.  
They win £72 000.

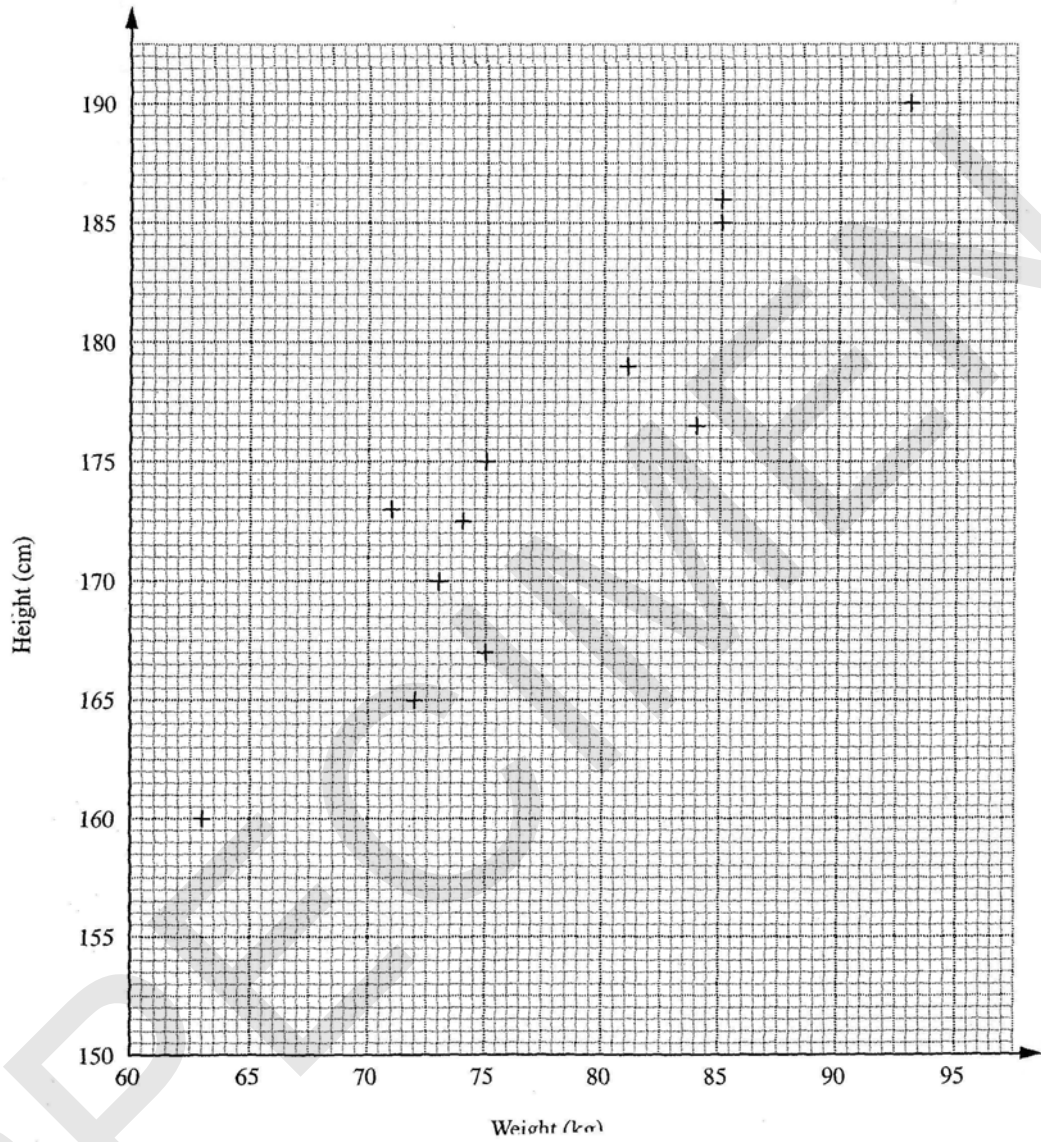
Calculate Alice's share.

£ \_\_\_\_\_ [2]

2

[Turn over

- 10 (a) The heights and weights of twelve sixth form boys were measured. The scatter diagram shows the results.



Another sixth form boy, Paul, is 172 cm tall.

Draw a line of best fit and use it to estimate Paul's weight.

(a)

[2]

- 10 (b)** There are eighty girls in sixth form.  
Their heights are summarised in the table below.

Height ( $h$ cm)	Frequency
$150 < h \leq 160$	12
$160 < h \leq 170$	29
$170 < h \leq 180$	32
$180 < h \leq 190$	7

- (i)** Calculate an estimate of the mean height of the girls.

**(b)(i)** \_\_\_\_\_ cm [4]

- (ii)** One of the eighty girls is picked at random.

What is the probability that she is more than 180 cm tall?

**(ii)** \_\_\_\_\_ [1]

7

**[Turn over**

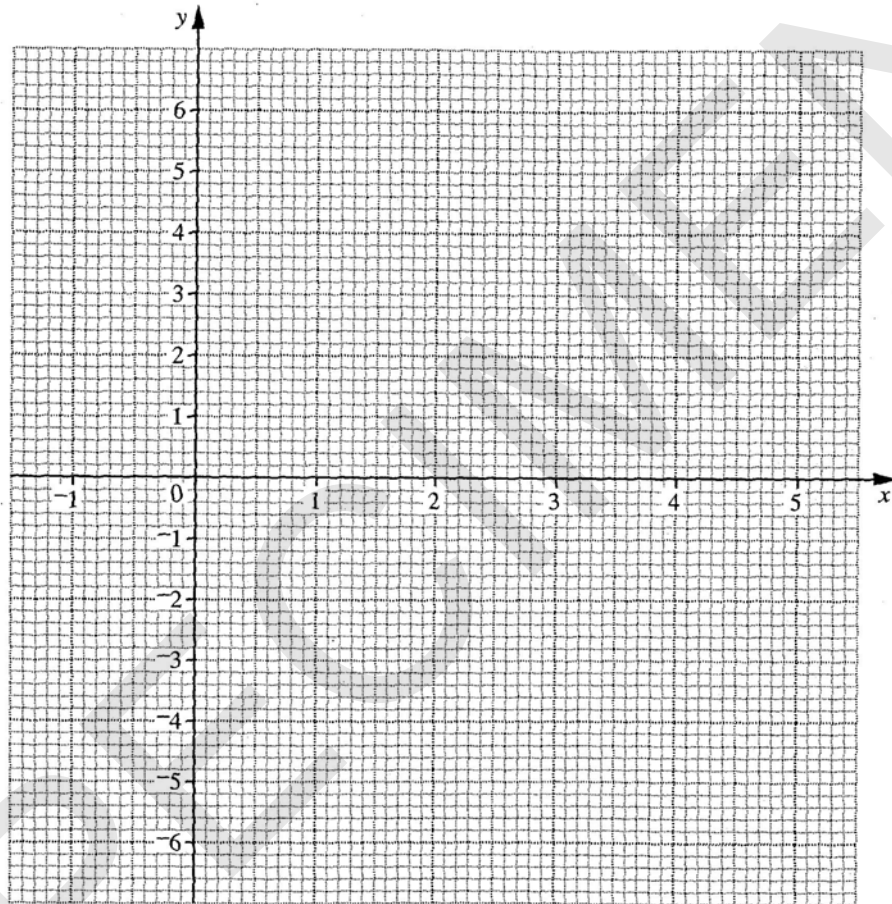
- 11 (a) Complete the table of values for  $y = 4x - x^2$ .

[1]

$x$	-1	0	1	2	3	4	5
$y$	-5	0	3	4	3	0	

- (b) Draw the graph of  $y = 4x - x^2$  on the grid below.

[2]



- (c) Use your graph to solve the equation  $4x - x^2 = 2$ .

(c) \_\_\_\_\_ [2]

5

12 Smita took part in a sponsored walk.

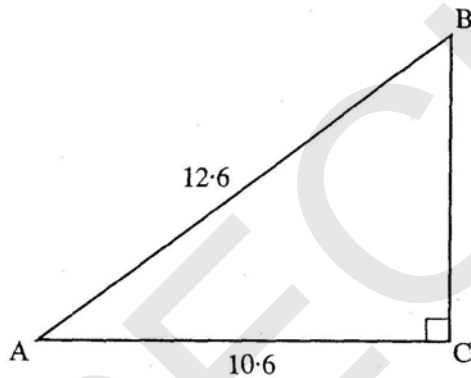
- (a) The first part of the walk was 12.6 miles.  
She walked this at an average speed of 2.4 mph.

Calculate how long she took to walk 12.6 miles.  
Give your answer in hours and minutes.



(a) \_\_\_\_\_ h \_\_\_\_\_ mins [3]

(b)



The diagram shows the whole walk.  
The distances are in miles.

Calculate the distance BC.

(b) \_\_\_\_\_ miles [3]

6
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**Section B Total [25]**

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The maximum mark for this paper is 25.

**SPECIMEN**

8	(a)	2.24	2	M1	For $2.56 \times \frac{(350)}{400}$
	(b)	1.15(0)	3	M1	Implied by figs 64 or 32 seen
			5	W2	For figs 115... or
				M1	For $400 \times \frac{(736)}{256}$ or
				M1	For $350 \times \frac{(736)}{224}$
				M1	Implied by $736 \div$ figs 64
9		57 600	2	M1	For att. at $\frac{7200}{5}$ or 14 400 seen
			2		
10	(a)	Ruled line of best fit	1		70 [165 to 170] 85 [180 to 185]
		72 to 77	1		f.t. <i>their</i> wrong line
	(b)(i)	169.25 isw	4	W1	For 3 of midpoints seen or used and
				M2	For $\frac{\sum fh}{\sum f}$ , $h$ in range $150 \leq h \leq 160$ etc or;
				M1	For $\sum fh (=13540)$
				SC3	For 174.25 or 164.25 or 169 or 169.2 or 169.3 f.t. <i>their</i> 80
11	(a)	0, -5	7		
	(b)	At least 6 points plotted correctly ( $\pm 1$ mm)	1		f.t. <i>their</i> table
		Smooth curve through 7 plotted points	1		Within 1 mm of plots
	(c)	0.5 to 0.7 and 3.4 to 2.6 isw	2	W1	For each f.t. from <i>their</i> curve
			5		

12	(a)	5 hours 15 minutes	3	W2	For figs 525 or 315 or; $5\frac{1}{4}$ seen or;
	(b)	6.75 to 6.85 www	3	M1	For $\frac{12.6}{2.4}$
			6	M2	For $\sqrt{12.6^2 - 10.6^2}$ or;
				M1	For $BC^2 + 10.6^2 = 12.6^2$ 46.4... implies M1 or;
				SC1	For 16.4 to 16.5

Section B Total 25

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**Assessment Objectives Grid**

<b>Question</b>	<b>AO2</b>	<b>AO3</b>	<b>AO4</b>	<b>Total</b>
<b>8</b>	5			<b>5</b>
<b>9</b>	2			<b>2</b>
<b>10</b>			7	<b>7</b>
<b>11</b>	5			<b>5</b>
<b>12</b>		6		<b>6</b>
<b>Totals</b>	<b>12</b>	<b>6</b>	<b>7</b>	<b>25</b>

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