RECOGNISING ACHIEVEMENT

Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

Mathematics C (Graduated Assessment) 1966/2337A

MODULE M7 SECTION A

Specimen Paper 2003

Candidates answer on question paper.
Additional materials:

Geometrical Instruments
Tracing Paper (optional)

TIME 30 minutes

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.
- Write your answers, in blue or black ink, in the spaces provided on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There is a space after most questions. Use it to do your working. In many questions marks will be given for correct working even if the answer is incorrect.

INFORMATION FOR CANDIDATES

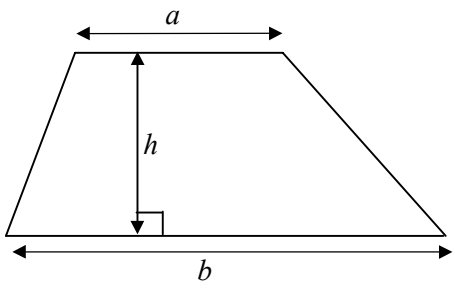
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this section is 25.

For Examiner's Use	
Section A	
Section B	
Total	

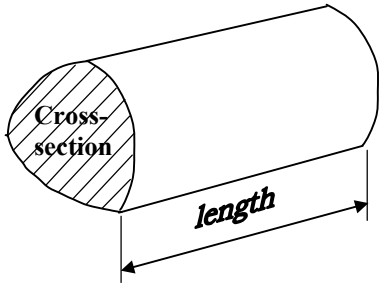
WARNING
You are not allowed to use a calculator in Section A of this paper.

FORMULA SHEET: INTERMEDIATE TIER

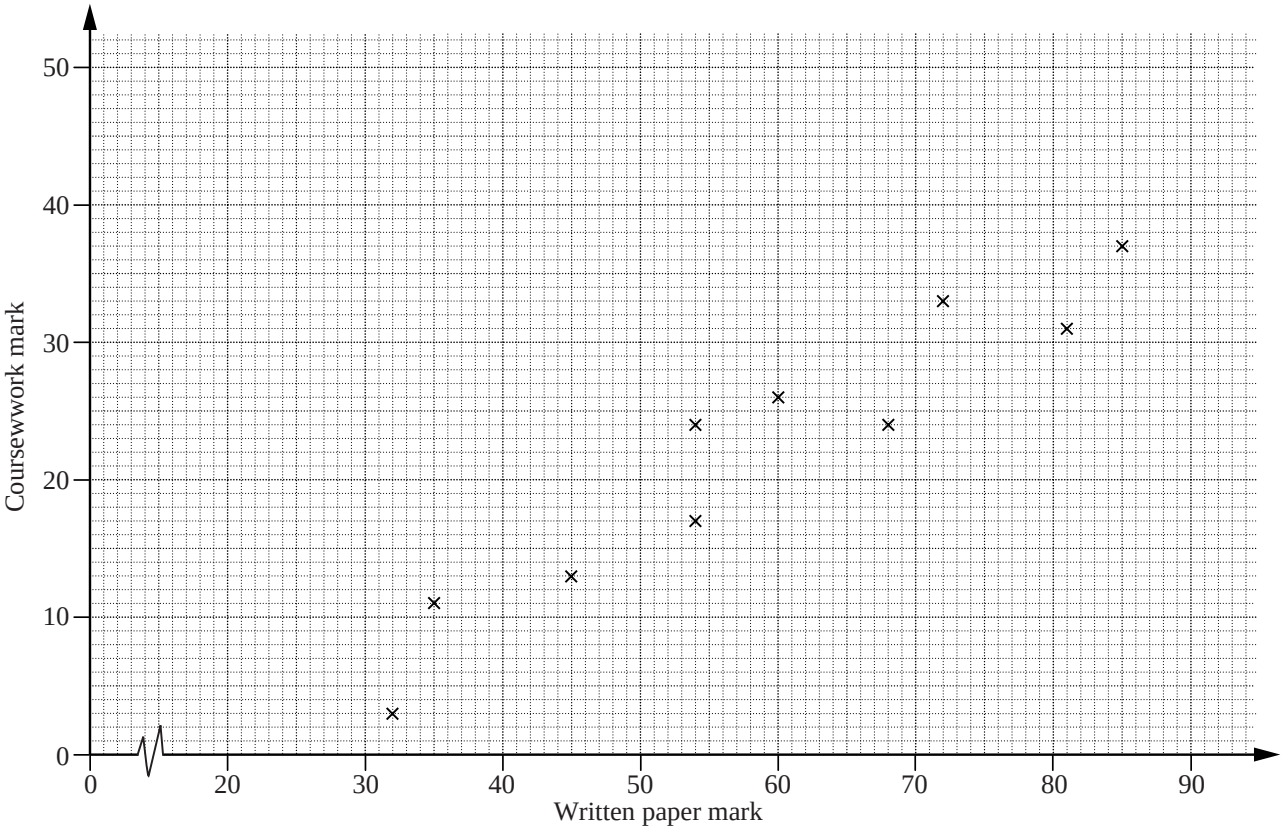
Area of trapezium = $\frac{1}{2}(a + b)h$



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



1 An examination consists of two parts, a written paper and a piece of coursework.



The written paper marks and the coursework marks for 10 candidates are shown on the scatter diagram below.

(a) Comment on the relationship between the marks on the written paper and coursework.

_____

_____ [1]

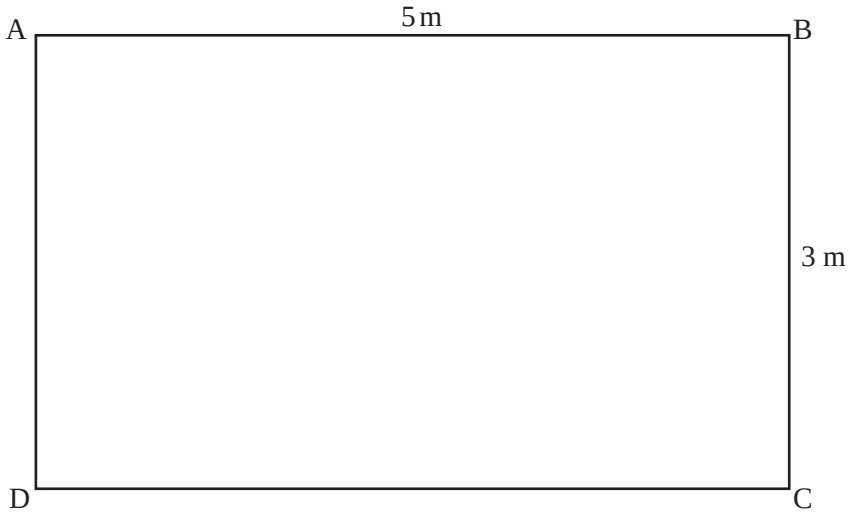
(b) Sajid scored 22 on the coursework but missed the written paper.

Draw a line of best fit on the scatter diagram and use it to estimate his mark on the written paper.

(b) _____ [2]

3

2 Pat is fixing a new lamp to the ceiling.
The diagram shows the ceiling drawn to a scale of 2 cm to 1 m.



Scale: 2 cm to 1 m

The lamp must be:

(a) not more than 4 m from D,

(b) nearer BC than AD.

On the diagram shade the region where Pat can fix the lamp.
Show all your construction lines.

[3]

3

3 A formula which connects the number of sides and the sum of the angles of a polygon is

$$S = 180n - 360.$$

Rearrange the formula to make n the subject.

$n =$ _____ [2]

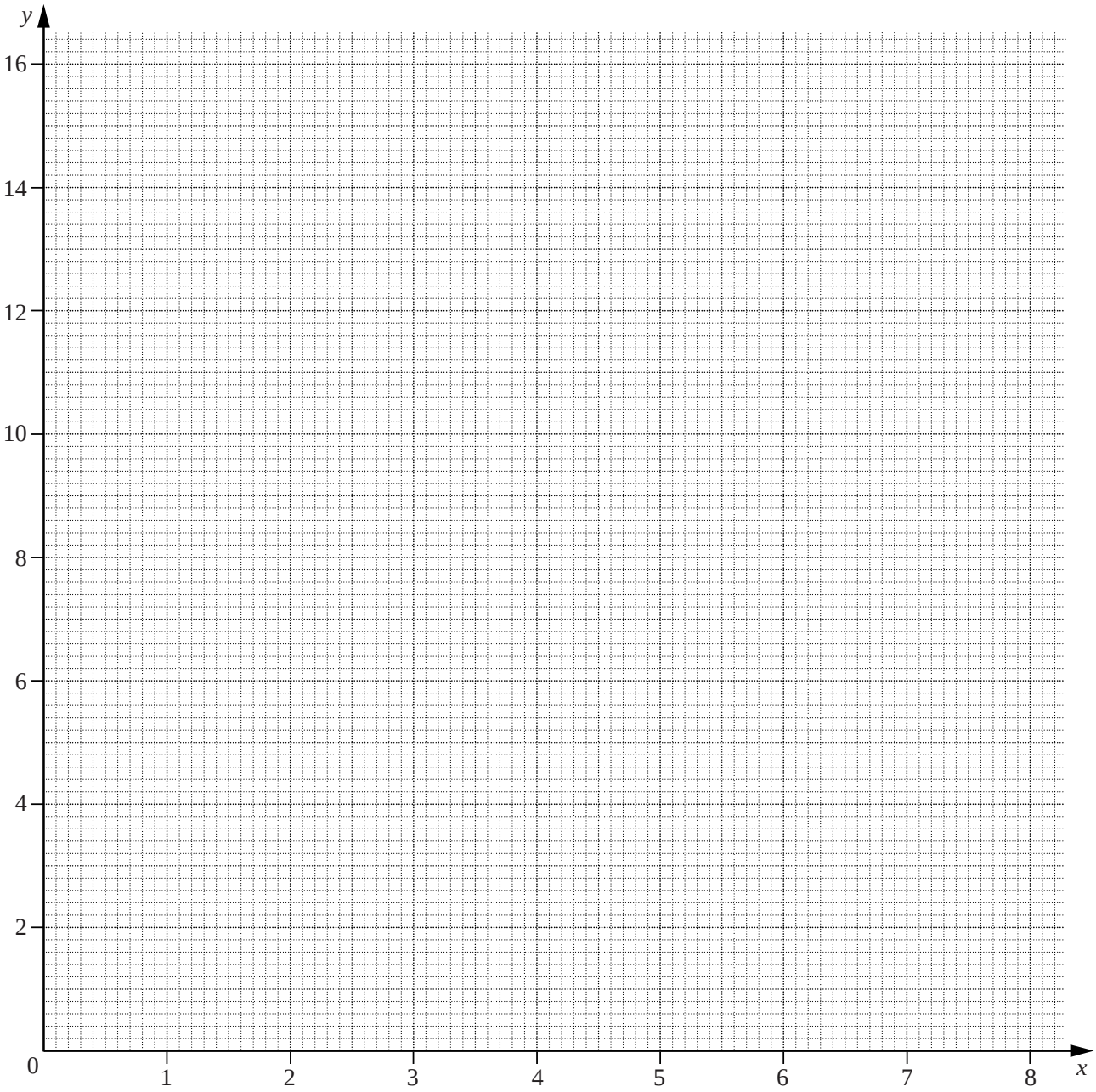
2

4 **(a)** Complete the table of values for $y = 8x - x^2$.

x	0	1	2	3	4	5	6	7	8
y		7	12			15	12	7	0

[1]

(b) On the axes below draw the graph of $y = 8x - x^2$. [2]

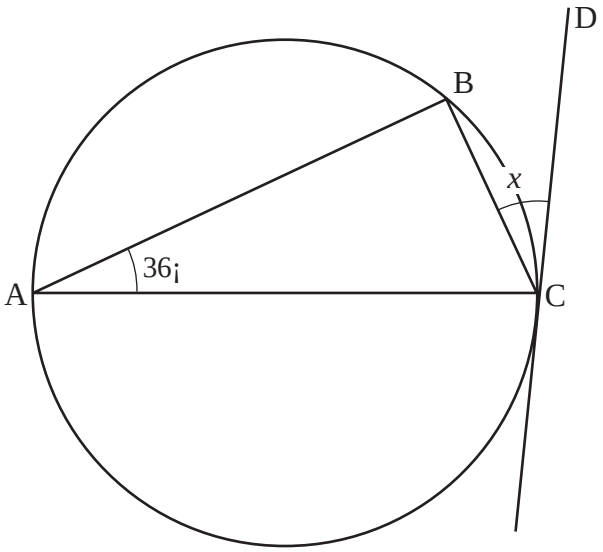


(c) Use your graph to solve the equation $8x - x^2 = 6$.

(c) $x =$ _____ [2]

5

5 The diagram shows a circle.
AC is a diameter of the circle and CD is a tangent.



Not to scale

Work out the size of x.
Give reasons for your answer.

_____° because _____

_____

_____

_____

_____ [4]

4

6 Two of these calculations are wrong.

Which two are wrong?

Explain how you can tell that they are wrong **without** doing the calculation.

(a) $15 \times 1{\cdot}7 = 25{\cdot}5$ **(b)** $0{\cdot}6 \times 12 = 21$

(c) $27 \div 45 = 0{\cdot}6$ **(d)** $25 \div 18 = 0{\cdot}8$

Part _____ is wrong because _____

_____

_____ [1]

Part _____ is wrong because _____

_____

_____ [1]

2

7 Solve these equations.

(a) $4(x-2) = 18$

(a) $x =$ _____ [2]

(b) $\frac{1}{3}x + \frac{1}{2}x = 10$

(b) $x =$ _____ [2]

(c) $7x - 4 = 2x + 11$

(c) $x =$ _____ [2]

6

RECOGNISING ACHIEVEMENT

Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

Mathematics C (Graduated Assessment) 1966/2337B

MODULE M7 –SECTION B

Specimen Paper 2003

Candidates answer on question paper.

Additional materials:

Geometrical Instruments
Tracing Paper (optional)
Scientific or Graphical Calculator

TIME 30 minutes.

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.
- Write your answers, in blue or black ink, in the spaces provided on the question paper.
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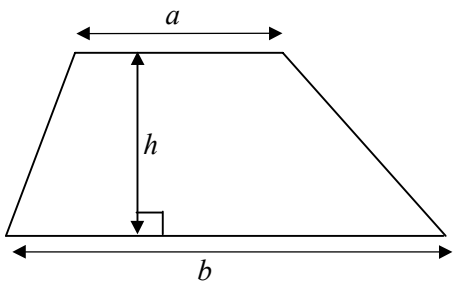
INFORMATION FOR CANDIDATES

- 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.

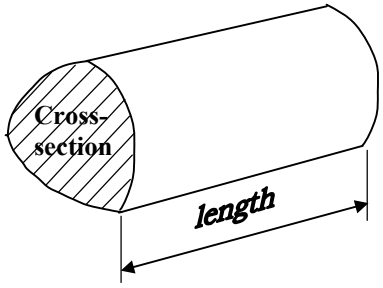
For Examiner's Use	
Section B	

FORMULA SHEET: INTERMEDIATE TIER

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



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



8 Calculate

(a) $\dfrac{15 \cdot 67 - 3 \cdot 97}{4 \cdot 4 - \dfrac{1}{2 \cdot 5}}$,

(a) _____ [1]

(b) $2 \cdot 5^3 - 1 \cdot 6^2 \times 4 \cdot 75$.

(b) _____ [1]

2

9 **(a)** Keith drives to Birmingham on a motorway.
He travels 150 miles in 2 hours 30 minutes.

Work out his average speed.

(a) _____ mph [1]

(b) He drives to Cambridge at an average speed of 57 mph.
The journey takes 3 hours 20 minutes.

How many miles is the journey?

(b) _____ miles [2]

3

10 **(a)** Find the integer values of n which satisfy the inequality

$7 < 5n < 34$.

(a) $n =$ _____ [2]

(b) Solve the inequality

$5x - 2 < 18$.

(b) _____ [2]

4

11 Michelle keeps a record of the number of minutes her train is late each day.
The table shows her results for a period of 50 days.

Number of minutes late (t)	Frequency
$0 \leq t < 10$	24
$10 \leq t < 20$	12
$20 \leq t < 30$	7
$30 \leq t < 40$	2
$40 \leq t < 50$	3
$50 \leq t < 60$	2

Calculate an estimate of the mean number of minutes late.

_____ [4]

4

12 Mary, Catherine and Rosemary have been left £24 750 by their Grandmother.
The money is to be shared between them in the ratio of their ages.

Mary is 18 years old, Catherine is 15 and Rosemary is 12.

How much more does Mary get than Rosemary?

£ _____ [3]

3

13 The amount of petrol used by Christine's car is directly proportional to the distance travelled.

When she travelled 132 miles she used 15 litres of petrol.

(a) On Monday she drove 231 miles.

How much petrol did she use?

(a) _____ litres [2]

(b) On Tuesday she used 12·25 litres of petrol.

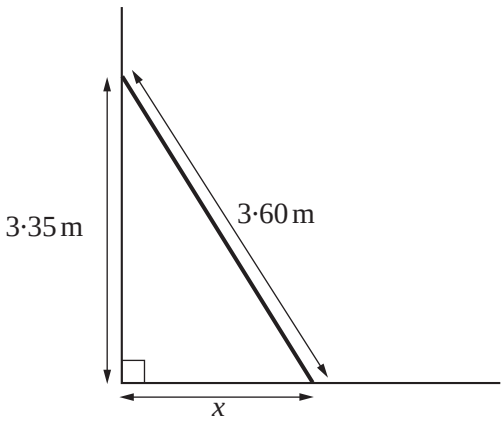
How many miles did she drive?

(b) _____ miles [2]

4

14 A ladder 3·60m long rests against a vertical wall.

The top of the ladder is 3·35m above the horizontal ground.



Calculate the distance, x metres, of the bottom of the ladder from the wall.

Give your answer to a sensible degree of accuracy.

$x =$ _____ m[4]

4

15 Write 30 as the product of prime numbers.

30 = _____ [1]

1

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Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

Mathematics C (Graduated Assessment) 1966/2337

MODULE M7

MARK SCHEME

Specimen Paper 2003

SECTION A

1	**(a)**	Positive correlation or equivalent statement	[1]
	(b)	Line of best fit drawn	[1]
		58 to 62	[1]
			[3]
2		Arc centre D radius 8cm	[1] Allow ± 0.2 cm
		Correct shading	[1]
		Perpendicular bisector of AB and CD drawn	[1]
			[3]
			first step
3		$n = \frac{S+360}{180}$	[2] M1 for correct
			[2]
4	**(a)**	0, 15, 16	[1]
	(b)	8 points plotted to within 0.5mm	[1]
		Smooth curve through the plotted points	[1]
	(c)	0.8 to 0.9 and 7.1 to 7.2	[2] W1 for each
			[5]
5		36° [2] W1 for ACB = 54°	
		Angle in a semicircle is 90°	[1]
		Angle between a tangent and a radius is 90°	[1]
			[4]
6		Number (b) - Multiplying by 0.6 will give an answer which is less than 12	[1]
		Number (d) - Division by a number less than 25 will give an answer greater than 1	[1]
			[2]
7	**(a)**	6.5	[2] M1 for 4 x – 8 = 18
	(b)	12	[2] M1 for 2x + 3x = 60
	(c)	3	[2] M1 for 7x-2x = 11 + 4
			[6]

Section A total: 25

SECTION B

8 **(a)** 2.925 [1]

(b) 3.465 [1]

[3]

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9 **(a)** 60 [1]

(b) 190 [2] M1 for $57 \times 3\frac{1}{3}$

[3]

---

10 **(a)** 2, 3, 4, 5, 6 [2] W1 for 3 correct

(b) $x < 4$ [2] M1 for $5x < 18 + 2$

or W1 for $x = 4$

[4]

---

11 15.8 [4] W3 for $\frac{790}{50}$

or M2 for use of

$\frac{\sum fx}{\sum f}$ or W1 for

790 seen or W1

for answer 10.8 or 20.8

[4]

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12 3300 [3] W2 for 9900 and

6600 seen

M1 for $24750 \div 45$

[3]

13	**(a)** 26.25	[2] M1 for $15 \times \frac{231}{132}$
	(b) 107.8	[2] M1 for $132 \times \frac{12.25}{15}$
		[4]
14	1.3 or 1.32	[4] W3 for 1.3 to 1.32 or M2 for $\sqrt{3.60^2 - 3.35^2}$ or M1 for $3.62 = x^2 + 3.35^2$
		[4]
15	$2 \times 3 \times 5$	[1]
		[1]

Section B total: 25

Total mark available: 50

MODULE: M7				12	12	4	14	7	3	2	2	6			Grades		
Question	Topic	Syll Ref	Mod Ref	N	Man A	NMan A	SSM	HD	UA 1	UA2	UA3	Multi-s	Units	Acc	D	C	B
1	Scatter diagram	H4/4c,5b,5f,1c	D7.3					3		1					2	1	
2	Locus	H3/4c,4e	S7.3				3									3	
3	Change the subject	H2/5g	A7.3		2											2	
4	Quadratic graph	H2/6e	A7.5			5									2	3	
5	Circles	H3/1b,1h,2a,2b	S7.1				4		1		2	4				4	
6	Estimation	H2/4b,1e	N7.2	2						2						2	
7	Equations	H2/5f	A7.2		6											6	
	Section A Total			**2**	**8**	**5**	**7**	**3**									
8	Calculation	H2/3o	N7.1	2												2	
9	Speed	H3/4a	S7.4				3								1	2	
10	Inequalities	H2/5j	A7.6		4										2	2	
11	Grouped mean	H4/4e	D7.2	3				4								4	
12	Ratio	H2/3f	N7.4	4					2			3				3	
13	Proportion	H2/3l,1a	N7.5													4	
14	Pythagoras	H3/2f	S7.2				4			1				1		4	
15	Prime factors	H2/2a	N7.6	1												1	
	Section B Total			**10**	**4**		**7**	**4**									
	Total																
				12	**12**	**5**	**14**	**7**	**3**	**4**	**2**	**7**		**1**	**7**	**43**	