RECOGNISING ACHIEVEMENT

Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

Mathematics C (Graduated Assessment) 1966/2338A

MODULE M8 – SECTION A

Specimen Paper 2003

Candidates answer on the 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

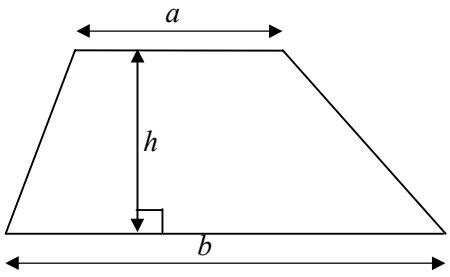
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this section is 25.

For examiner's use only	
Section A	
Section B	
Total	

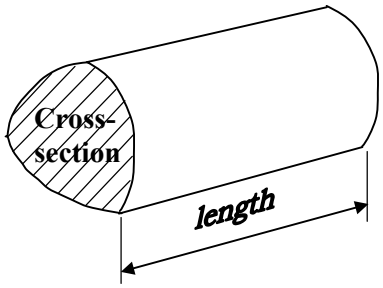
WARNING
You are not allowed to use a calculator in Section A of this paper.

FORMULA SHEET: INTERMEDIATE TIER

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



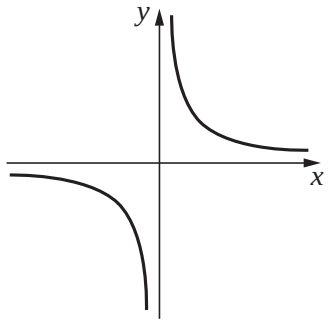
Volume of prism = (area of cross section) × length



1 For each of the graphs below, choose the correct equation from the list.

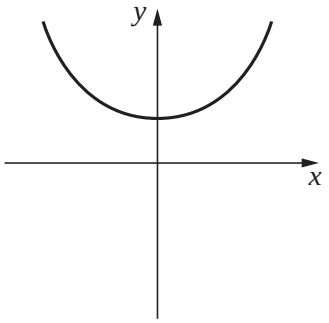
$y = ax^2 + b$
$y = ax + b$
$y = ax^3 + b$
$y = \dfrac{1}{x}$

(a)



Equation_____ [1]

(b)



Equation _____ [1]

2

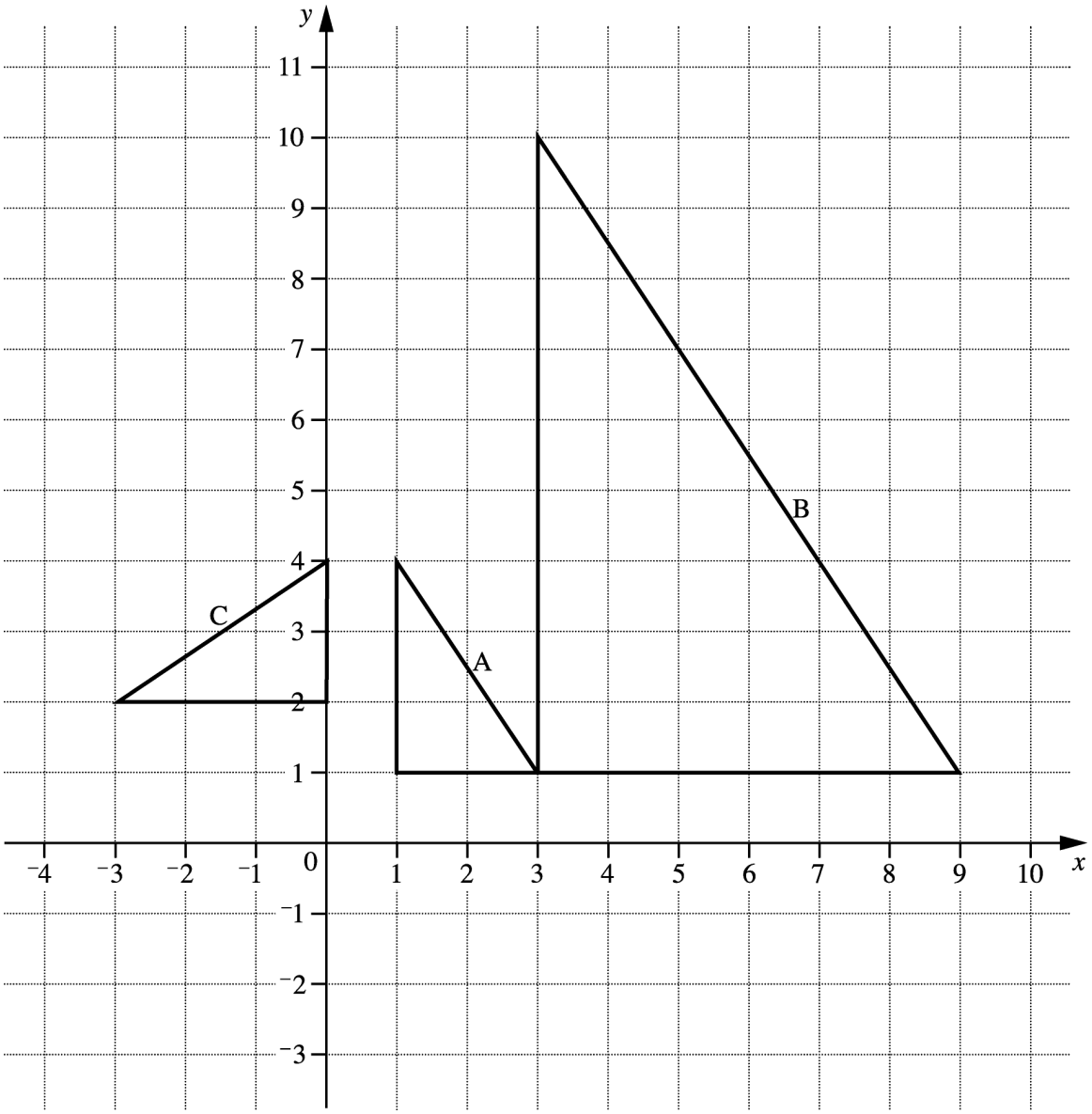
2 The population of Asia is $2 \cdot 69 \times 10^9$
The population of Africa is $5 \cdot 11 \times 10^8$

What is the difference in population between Asia and Africa?

_____ [2]

2

3



(a) Triangle A is mapped onto triangle B by an enlargement.
For this enlargement, write down.

(i) the scale factor,

(a)(i)_____ [1]

(ii) the coordinates of the centre.

(ii) (_____, _____) [1]

(b) Describe the **single** transformation that maps triangle A onto triangle C.

_____

_____ [3]

5

4 **(a)** Write down the values of

(i) $\dfrac{13^2}{7^0}$,

(a)(i)_____ [1]

(ii) $\dfrac{4^2}{2^4}$.

(ii)_____ [1]

(b) Write as a single power of 7,

$$7^2 \times 7^3 \times 7 .$$

(b)_____ [1]

3

5 Make a the subject of the formula $6(a + 2b) = 4a + 7$.

$a =$ _____ [3]

3

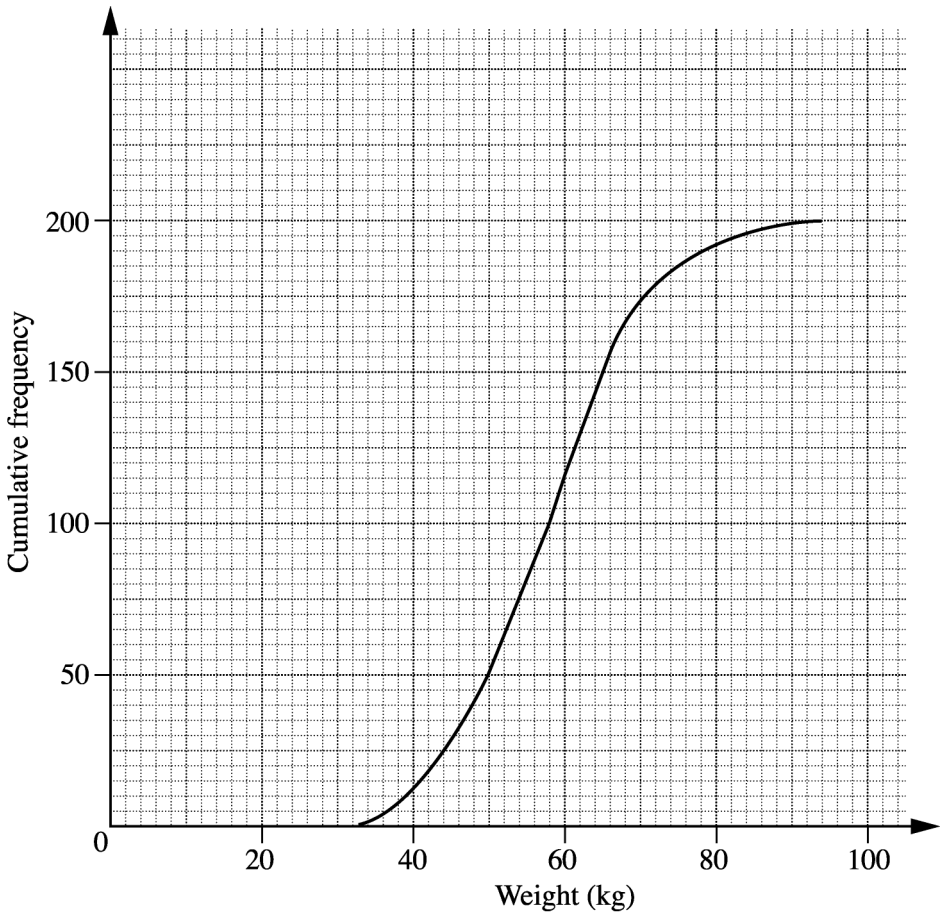
6 Find an expression, in terms of n, for the nth term of this sequence.

4 **9** **14** **19** _____

_____ [2]

2

7



The cumulative frequency graph shows the weights of 200 children.

(a) Find the median weight.

(a)_____kg [1]

(b) How many children weigh more than 60kg?

(b)_____ [2]

3

8 **(a)** Which of the following is the expression for the total surface area of a hemisphere?

$\frac{2}{3}\pi r^3 + \pi r^2$ πr^3 $3\pi r^2$ $3\pi r$

(a)_____ [1]

(b) Explain how you made your choice.

_____

_____ [1]

2

9 Solve, algebraically, these simultaneous equations.

$$3x - 2y = 9$$
$$2x - y = 5$$

x = _____

y = _____ [3]

3

RECOGNISING ACHIEVEMENT

Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

Mathematics C (Graduated Assessment
MODULE M8 - SECTION B

1966/2338B

Specimen Paper 2003

Candidates answer on the 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.
- 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.

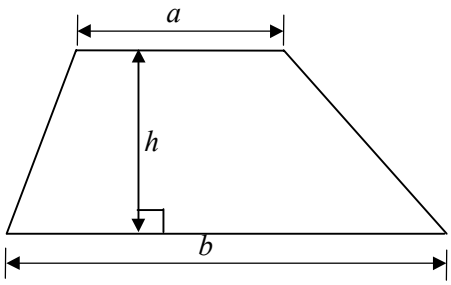
INFORMATION FOR CANDIDATES

- 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.

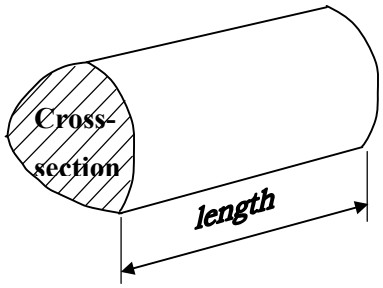
For examiner's use only	
Section B	

FORMULA SHEET: INTERMEDIATE TIER

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



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



10 In a sale the prices of all electrical goods are reduced by 15%.

(a) The price of a washing machine in the sale is £289.

Calculate the original price of the washing machine.

(a) £_____ [3]

(b) The price of a television set before the sale was £280.
In the final week, **the sale price** was reduced by a further 20%.
What is the overall percentage decrease in the price of the television?

(b) _____ % [3]

6

11 **(a)** Multiply out and simplify

$$(x - 2)(x + 1).$$

(a) _____ [2]

(b) Factorise

$$x^2 - 169.$$

(b) _____ [2]

(c) **(i)** Factorise

$$x^2 - 6x + 8.$$

(c)(i) _____ [2]

(ii) Solve the equation

$$x^2 - 6x + 8 = 0.$$

(ii) _____ [1]

7

12 Mr Morgan looks at the maths examination results for two classes in year 11.

For class A the mean mark is 58·5%,
the modal mark is 63%,
the median is 58%,
the range is 29%.

These are the percentages for class B.

43, 44, 45, 45, 50, 53, 54, 59, 59, 60, 62, 62, 62, 63, 64, 64, 64, 64, 70, 71.

Mr Morgan thinks class B has the better results.

Use the data to give one reason why he may be right and one reason why he may be wrong.

Show all your working.

Right because _____

_____

_____ [2]

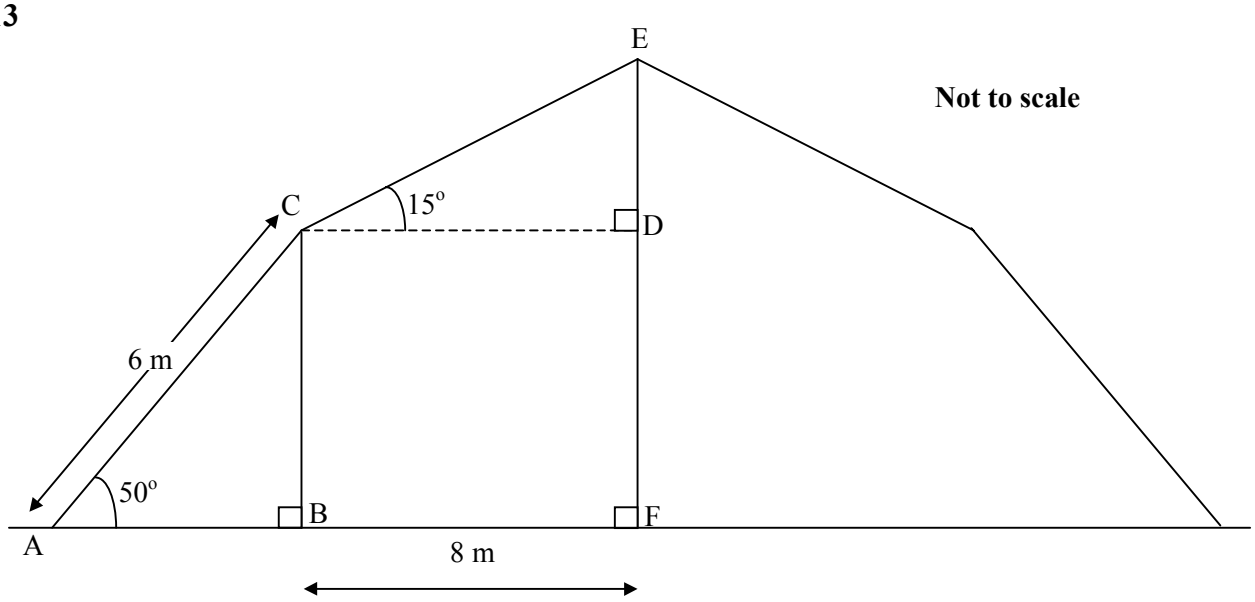
Wrong because _____

_____

_____ [2]

4

13



The diagram shows the cross section of a tent fixed on horizontal ground.

CB and EF are vertical supports.
Angle BAC = 50°, angle DCE = 15°, AC = 6 m and BF = 8 m.

Calculate the length of EF.

_____ m [4]

4

14 A solid metal cube of side 15·0 cm is melted down and made into a solid cylinder.
The length of the cylinder is 8·4 cm.

Calculate the radius of the cylinder.
Give your answer to a sensible degree of accuracy.

_____cm [4]

4

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Oxford Cambridge and RSA Examinations

General Certificate of Secondary Education

Mathematics C (Graduated Assessment) 1966/2338

MODULE M8

MARK SCHEME

Specimen Paper 2003

SECTION A

1	**(a)** $y = \frac{1}{x}$	[1]	
	(b) $y = ax^2 + b$	[1]	
		[2]	
2	2.179×10^9	[2]	W1 for figs 2179
		[2]	
3	**(a)(i)** 3	[1]	
	(ii) (0,1)	[1]	
	(b) 'rotation' or 'turn'	[M1]	
	90° anticlockwise	[A1]	
	about (0,1)	[A1]	
		[5]	
4	**(a)(i)** 169	[1]	
	(ii) 1	[1]	
	(b) 7^6	[1]	
		[3]	
5	$\frac{7-12b}{2}$	[3]	W2 for $6a - 4a = 7 - 12b$ or W1 for $6a + 12b = 4a + 7$
		[3]	
6	$5n - 1$	[2]	W1 for $5n$
		[2]	
7	57 – 59	[1]	
	82 – 88	[2]	W1 for 112 to 118 seen
		[3]	
8	**(a)** $3\pi r^2$	[1]	
	(b) Area measured in square units	[1]	
		[2]	

9	Multiplication of equation (2) by 2 or	[M1]	
	Multiplication of equation (1) by 2 and equation (2) by 3		
	Subtracting with at least two terms correct	[M1]	Dependent on first M1
	$x = 1$ and $y = -3$	[A1]	W1 answers only
		[3]	

Section A total: 25

SECTION B

10	**(a)** 340	[3]	M2 for $289 \div 0.85$ or M1 for $0.85x = 289$
	(b) 32	[3]	M2 for 0.85×0.8 or W1 for 0.85 and 0.8 seen
		[6]	
11	**(a)** $x^2 - x - 2$	[2]	W1 for 2 terms correct or W1 for $x^2 - 2x + x - 2$ seen
	(b) $(x + 13)(x - 13)$	[2]	W1 for $(x \pm 13)(x \pm 13)$
	(c)(i) $(x-4)(x-2)$	[2]	W1 for $(x \pm 4)(x \pm 2)$
	(c)(ii) $x = 4$ and 2	[1]	
		[7]	
12	**(a)** 'right' with mode or median and correct data correct	[2]	W1 if mode or median and used
	(b) 'wrong' with mean used and correct data	[2]	W1 if mean correct and used Mean = 57.9, mode = 64, median = 61, range = 28
		[4]	
13	6.7 to 6.8	[4]	M1 for 6 x sin 50 M1 for 8 x tan 15 M1 for CB + ED
		[4]	
14	11.3	[4]	M2 for $\frac{15}{\pi \times 8 \cdot 4}$ or 127.8 or M1 for $\pi r^2 \times 8 \cdot 4 = 15^3$ W3 for 11.308(…) or
	11.31(…)	**[4]**	

Section B total: 25

Total mark available: 50

MODULE: M8				12	12	4	14	7	3	2	2	6			Grades		
Question	Topic	Syll Ref	Mod Ref	N	Man A	NMan A	SSM	HD	UA1	UA2	UA3	Multi-s	Units	Acc	D	C	B
1	Recognise graphs	2/6f	A8.4			2											2
2	Standard form	2/3h	N8.5	2													2
3	Transformations	3.3a, 3/3c, 3/1e	S8.4				5			3						1	3
4	Indices	2/3g, 2/3a	N8.2	3												1	2
5	Rearrange formula	2/5g	A8.1		3												3
6	Sequence	2/6a	A8.7			2										2	
7	Cumulative frequency	4/4e, 4/5d	D8.2					3									3
8	Dimensions	3/4a, 3/1f	S8.2				2				1						2
9	Simultaneous Equations	2/5i	A8.3		3												3
	Section A Total			**5**	**6**	**4**	**7**	**3**									
10	Repeated percentages	2/3k	N8.4	6													6
11	Factorise / Expand	2/5b	A8.2		7												7
12	Compare distributions	4/5d, 4/1a, 4/1d	D8.3					4	2		2						4
13	Trig	3/2g, 3/1a, 3/1d	S8.5				4		4			4					4
14	Volume of cylinder	3/2I	S8.3				4		3	1		3		1			4
	Section B Total			**6**	**7**		**8**	**4**									
	Total			**11**	**13**	**4**	**15**	**7**	**9**	**4**	**3**	**7**		**1**		**4**	**45**