OCR
RECOGNISING ACHIEVEMENT

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)

M7 B247A

MODULE M7 – SECTION A

WEDNESDAY 27 JUNE 2007 Morning

Time: 30 minutes

Candidates answer on the question paper.
Additional materials: Geometrical instruments
Tracing paper (optional)

CUP/T38527

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.

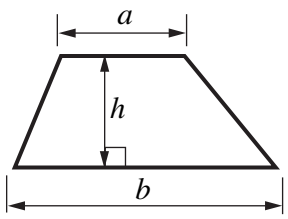
For Examiner's Use	
Section A	
Section B	
Total	

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

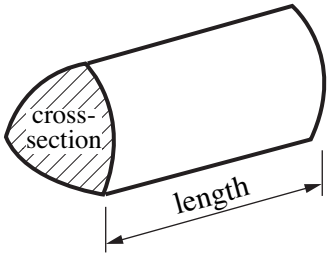
[Turn over

Formulae Sheet

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



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



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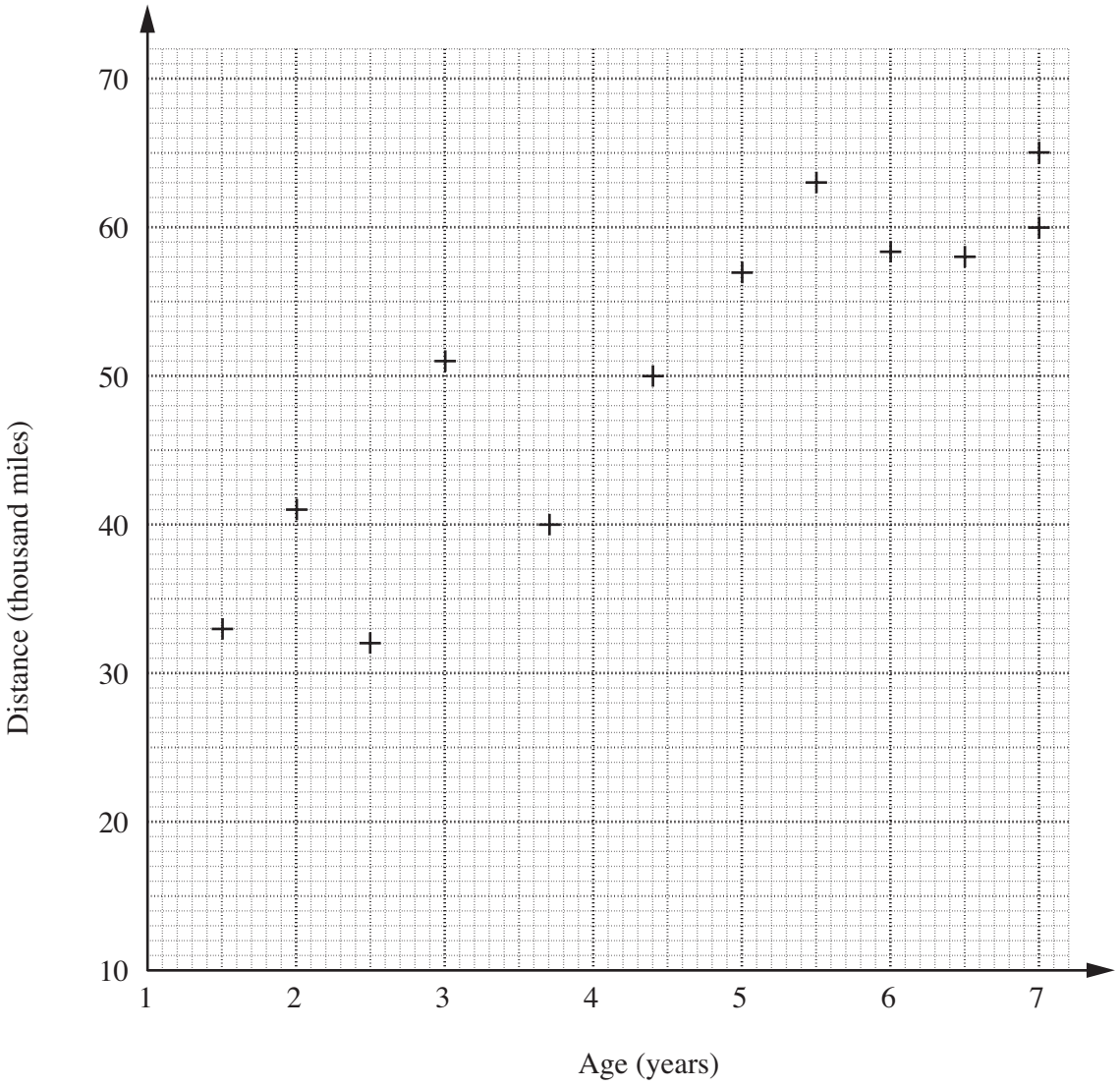
1 A car dealer has 12 cars for sale.
For each car, he recorded the age in years and the distance in miles it had covered.
The scatter diagram shows his results.



(a) Describe the correlation.

..... [1]

(b) (i) Draw a line of best fit. [1]

(ii) Another car was $3\frac{1}{2}$ years old.

Use your line of best fit to estimate the distance it had covered.

(b)(ii) ..... thousand miles [1]

3

2 **(a)** **Estimate** the answer to this calculation.
Show clearly the values you use.

$$\frac{19{\cdot}7 \times 7{\cdot}9}{0{\cdot}48}$$

(a) ..... [2]

(b) **(i)** Express 72 as a product of its prime factors.

(b)(i) ..... [2]

(ii) Given that $45 = 3^2 \times 5$, find the lowest common multiple (LCM) of 72 and 45.

(ii) ..... [2]

6

3 **(a)** Given that $a = 2$ and $b = -3$, work out the value of

$$a^2 + 5b^2.$$

(a) ..... [2]

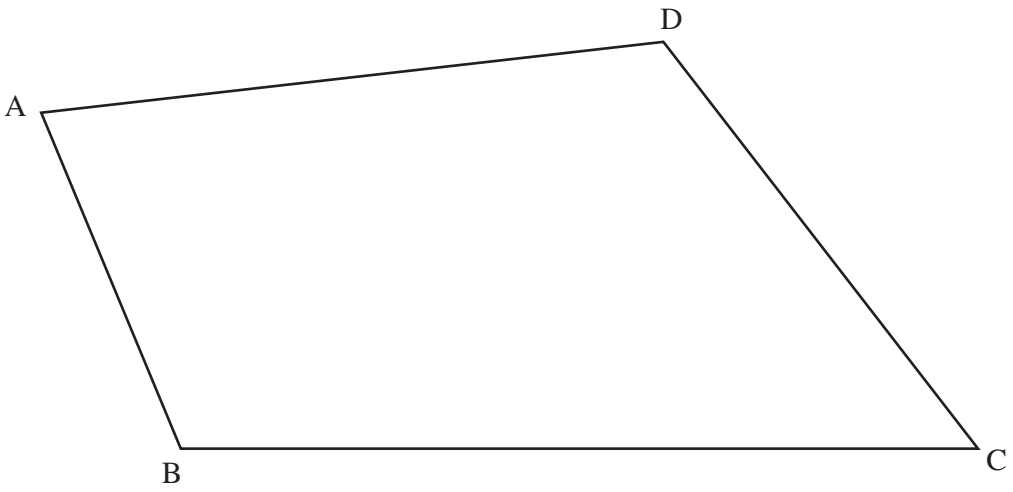
(b) Rearrange this formula to make x the subject.

$$c = 9x + 30$$

(b) ..... [2]

4

4 In this question use only ruler and compasses.
Leave in all your construction lines.



The diagram shows the scale drawing of a field, ABCD.
The scale is **1 cm to 10 m**.

A tree, T, stands in the field.

It is :

- equidistant from BA and BC
- 50 m from D

Construct and mark the position of T. [4]

4

5 Solve.

(a) $5x - 2 = x - 1$

(a) ..... [3]

(b) $5x + 1 = 3(x + 5)$

(b) ..... [3]

(c) $4n - 1 > 11$

(c) ..... [2]

8

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

M7 B247B

MODULE M7 – SECTION B

WEDNESDAY 27 JUNE 2007 Morning

Time: 30 minutes

Candidates answer on the question paper.
Additional materials: Geometrical instruments
Tracing paper (optional)
Scientific or graphical calculator

CUP/T38528

Candidate Name

Centre Number

Candidate Number

INSTRUCTIONS TO CANDIDATES

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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.
- Section B starts with question 6.
- Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.

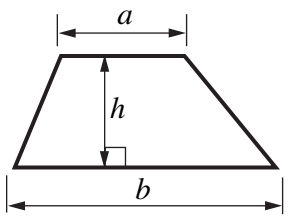
For Examiner's Use	
Section B	

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

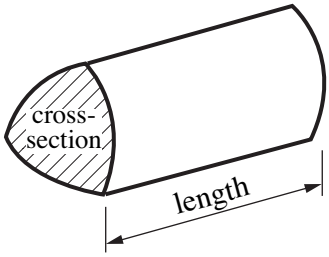
[Turn over

Formulae Sheet

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



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



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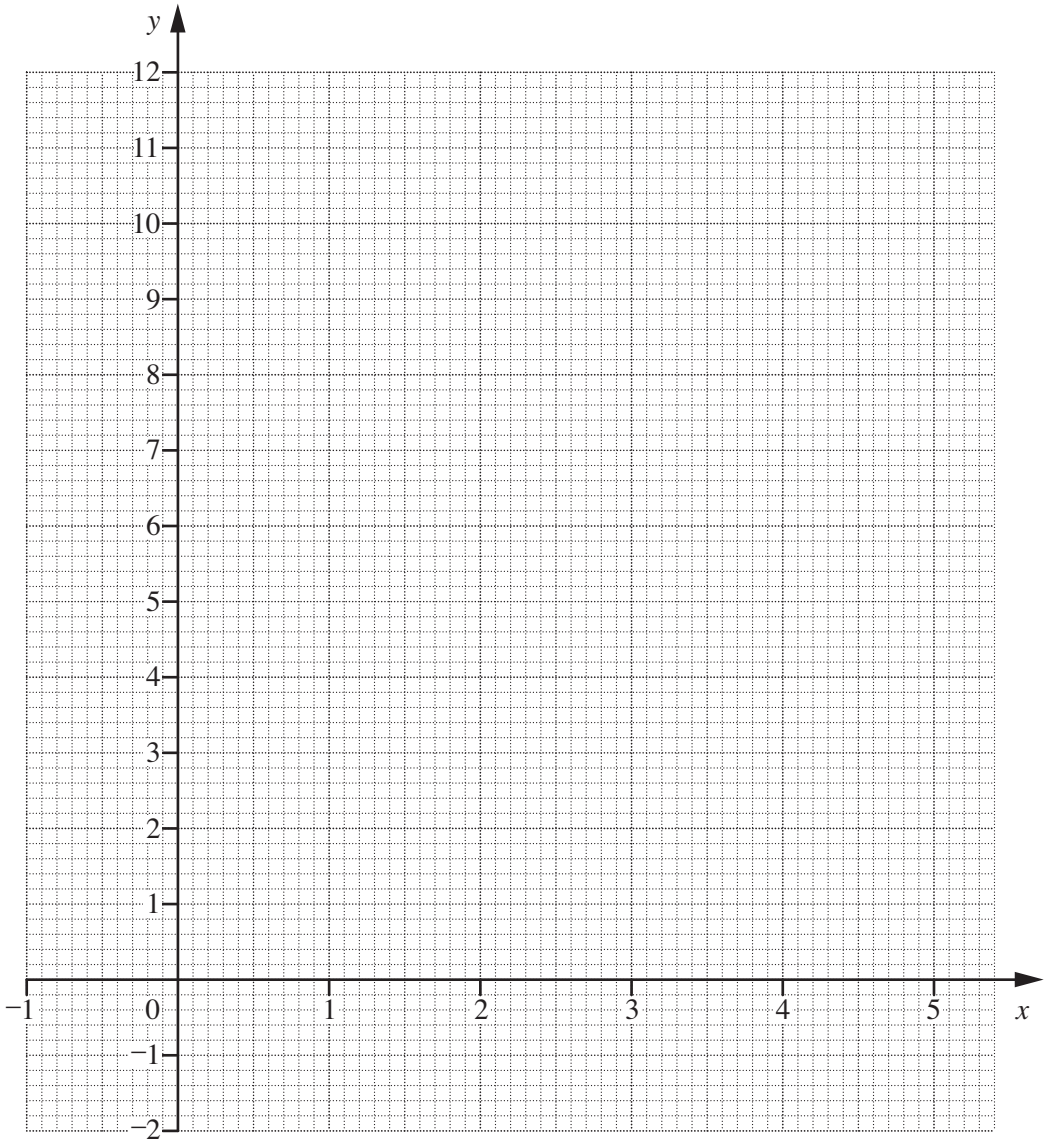
6 **(a)** Complete this table for $y = x^2 - 4x + 5$.

x	−1	0	1	2	3	4	5
y		5	2		2	5	10

[2]

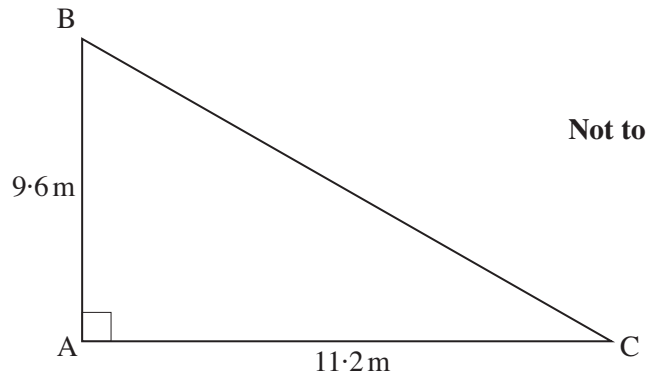
(b) Draw the graph of $y = x^2 - 4x + 5$ for $x = -1$ to $x = 5$.



[2]

4

7



Not to scale

Calculate the length of BC.

..... m [3]

3

8 The price of a TV is reduced by £63 from £450.

Calculate the percentage reduction.

.....% [2]

2

9 Sixty students took part in a sponsored walk.
Their times are summarised in the table below.

Time (t minutes)	Frequency
$120 < t \leqslant 140$	3
$140 < t \leqslant 160$	26
$160 < t \leqslant 180$	19
$180 < t \leqslant 200$	10
$200 < t \leqslant 220$	2

Calculate an estimate of the mean time.

..... minutes [4]

4

10 Jean, Paula and Rashid each used the treadmill at a gym.

Each ran for the same length of time but at a different constant speed.

	Jean	Paula	Rashid
Speed (km/h)	12	p	13·8
Distance (km)	5	4·5	r

Work out the values of p and r.

p = ...km/h

r = ...km [4]

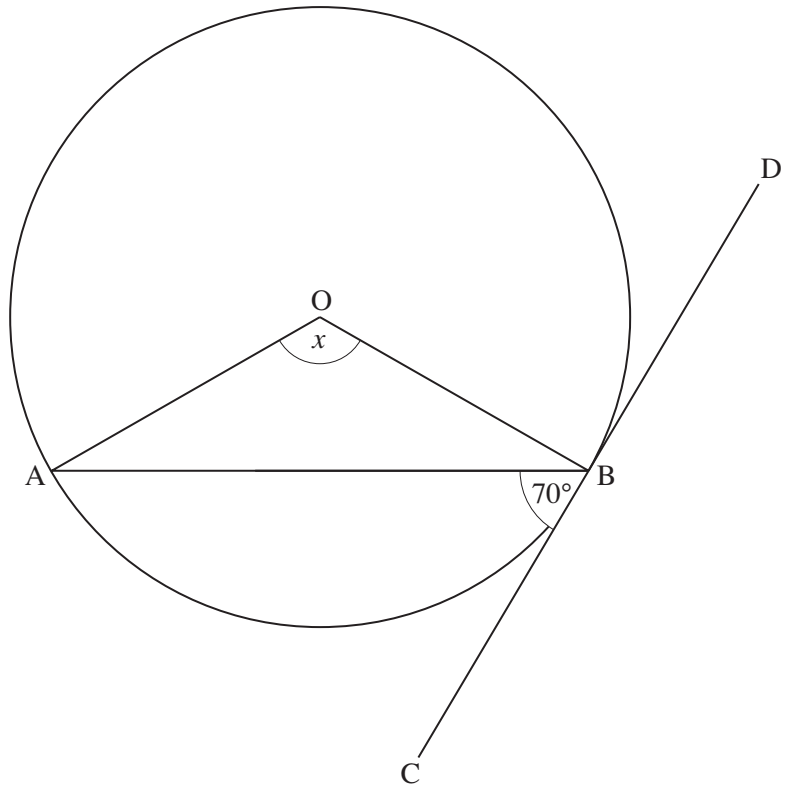
4

11 **(a)** The exterior angle of a regular polygon is 20°.

Work out the number of sides of the polygon.

(a) ..... [2]

(b)



Not to scale

CBD is a tangent to the circle, centre O.

Angle ABC = 70°.

Work out angle *x*.
Give a reason for each step of your answer.

x = ...° because .....

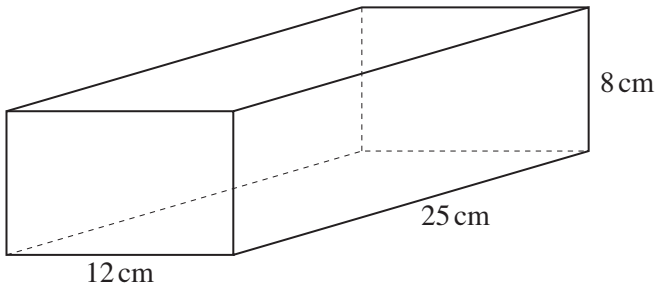
.....

..... [3]

5

TURN OVER FOR QUESTION 12

12



A block of aluminium is in the shape of a cuboid.

It measures 12 cm by 25 cm by 8 cm.

The density of aluminium is 2·7 g/cm^3.

Calculate the mass of the block.

..... g [3]

3