

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)
MODULE M8 – SECTION B

B278B

Candidates answer on the Question Paper

OCR Supplied Materials:

None

Other Materials Required:

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

Thursday 21 January 2010
Afternoon

Duration: 30 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

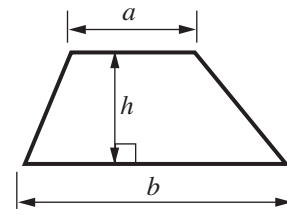
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

INFORMATION FOR CANDIDATES

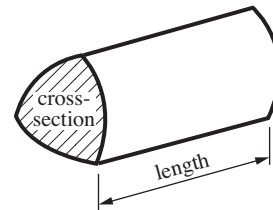
- The number of marks is given in brackets [] at the end of each question or part question.
- Section B starts with question 7.
- You are expected to use a calculator in Section B of this paper.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

Formulae Sheet

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



Volume of prism = (area of cross-section) \times length

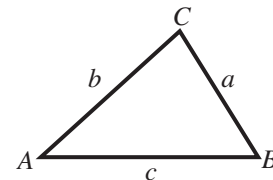


In any triangle ABC

Sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

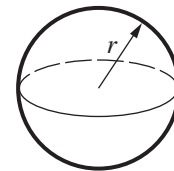
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2}ab \sin C$



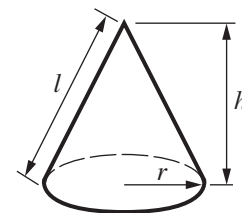
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

Curved surface area of cone = $\pi r l$



The Quadratic Equation

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

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

PLEASE DO NOT WRITE ON THIS PAGE

7 Solve.

$$\frac{4x}{3} + 1 = 12$$

..... [3]

8 The equation of a straight line is $y = 6 - 2x$.

(a) Write down the coordinates of the point where this line crosses the y -axis.

(a) (.....,) [1]

(b) Write down the coordinates of the point where this line crosses the x -axis.

(b) (.....,) [1]

(c) Write down an equation for a line parallel to $y = 6 - 2x$.

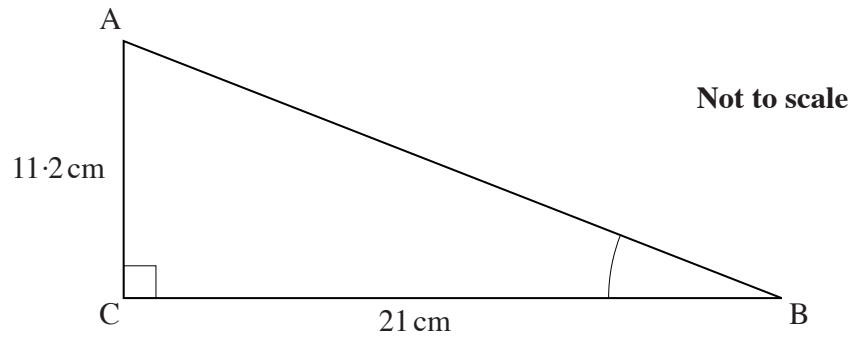
(c) [1]

9 Rucinder invests £4500 at a rate of 6.5% per year compound interest.

Calculate the value of her investment after 5 years.

£ [3]

- 10 The diagram shows a right-angled triangle ABC.
 $AC = 11.2 \text{ cm}$ and $BC = 21 \text{ cm}$.



- (a) Calculate angle ABC.

(a) ° [3]

- (b) Calculate the perimeter of triangle ABC.

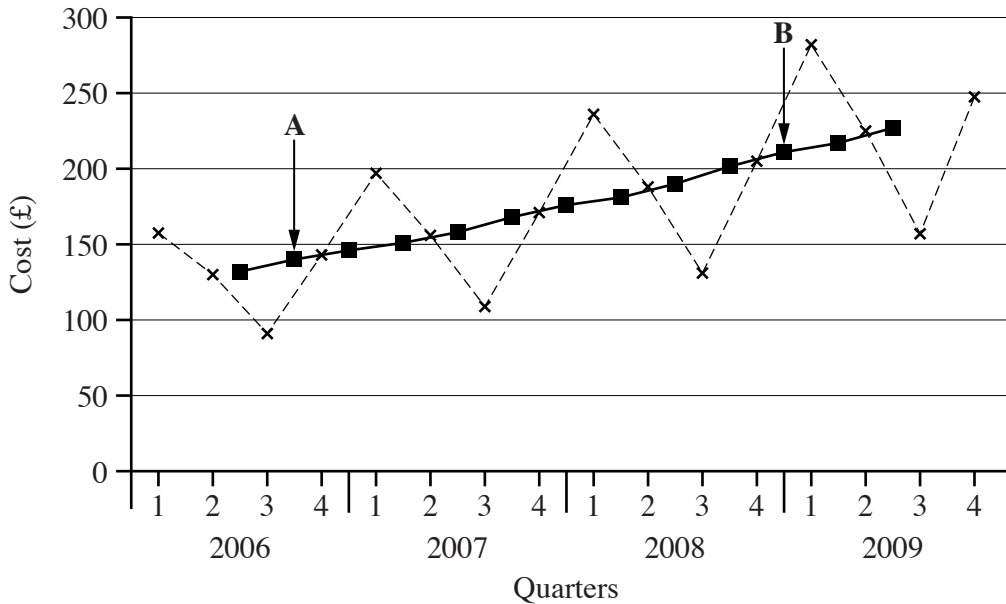
(b) cm [4]

11 The table shows a family's gas bills, in £, for each quarter from 2006 to 2009.

Year	2006				2007			
Quarter	1	2	3	4	1	2	3	4
Cost (£)	165	130	91	143	197	156	109	171

Year	2008				2009			
Quarter	1	2	3	4	1	2	3	4
Cost (£)	236	188	131	205	282	225	157	247

The information has been plotted on this graph, together with the 4-point moving averages.



(a) Calculate the moving averages labelled A and B.

(a) A = £

B = £ [3]

(b) What do the moving averages on this graph show about the amount the family spent on gas during these years?

.....
 [1]

12 This table shows the surface area of the five major oceans.

Ocean	Surface area (km ²)
Pacific	1.56×10^8
Atlantic	7.7×10^7
Indian	6.9×10^7
Southern	2.0×10^7
Arctic	1.4×10^7

(a) What percentage of the total surface area of these five major oceans does the Pacific Ocean cover?

(a) % [4]

(b) How much greater is the surface area of the Pacific Ocean than the Atlantic Ocean?

(b) km² [1]

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