Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B278B

MATHEMATICS C (GRADUATED ASSESSMENT)

MODULE M8 – SECTION B

THURSDAY 21 JANUARY 2010: Afternoon
DURATION: 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments
Tracing paper (optional)
Scientific or graphical calculator

READ INSTRUCTIONS OVERLEAF

DC (LEO/CGW) MEP10109 23559/2

INSTRUCTIONS TO CANDIDATES

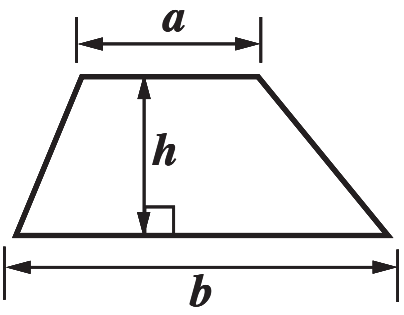
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Answer ALL the questions.**
- **Write your answer to each question in the space provided, however additional paper may be used if necessary.**

INFORMATION FOR CANDIDATES

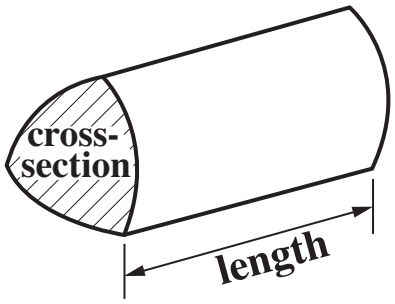
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 7.**
- **You are expected to use a calculator in Section B of this paper.**
- **Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.**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

FORMULAE SHEET

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



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

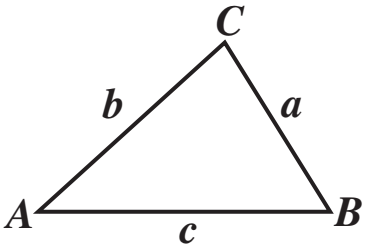


In any triangle ABC

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

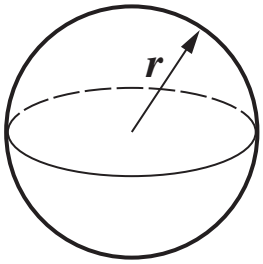
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

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



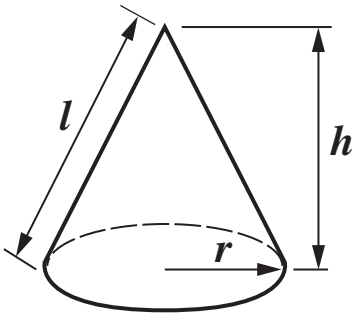
Volume of sphere $= \frac{4}{3}\pi r^3$

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



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

Curved surface area of cone $= \pi rl$



The Quadratic Equation

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

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

7 Solve.

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

[3 marks]

_____

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.
[1 mark]

(a) (_____ , _____)

(b) Write down the coordinates of the point where this line crosses the *x*-axis.
[1 mark]

(b) (_____ , _____)

(c) Write down an equation for a line parallel to $y = 6 - 2x$. [1 mark]

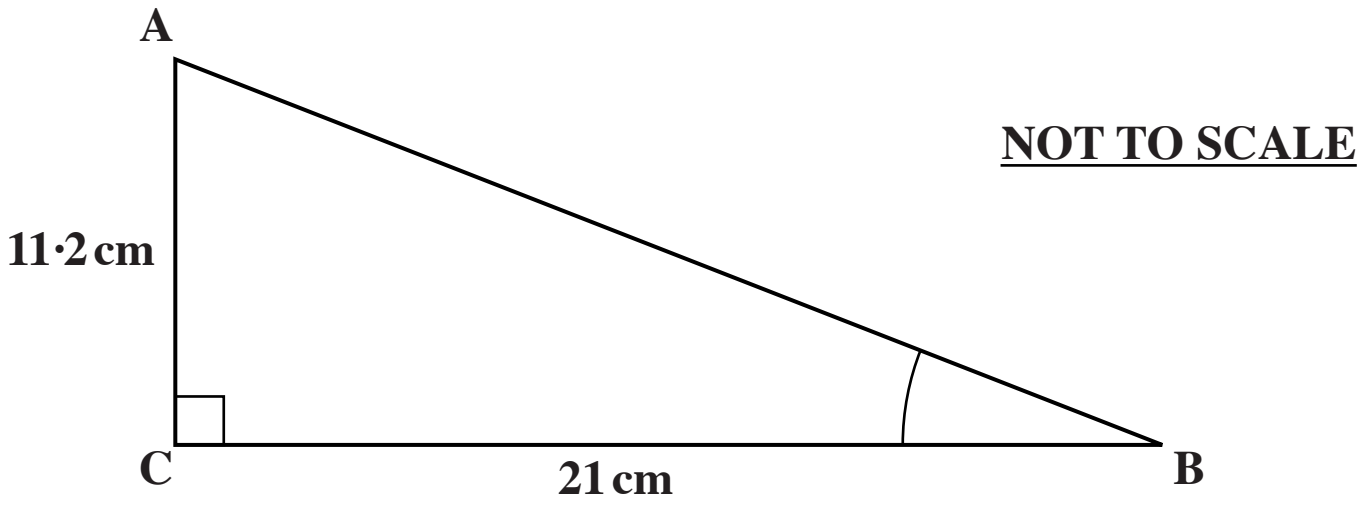
(c) _____

9 Rucinder invests £4500 at a rate of 6·5% per year compound interest.

Calculate the value of her investment after 5 years.
[3 marks]

£ _____

10 The diagram shows a right-angled triangle ABC.
AC = 11·2 cm and BC = 21 cm.



(a) Calculate angle ABC.
[3 marks]

(a) _____ °

(b) Calculate the perimeter of triangle ABC.
[4 marks]

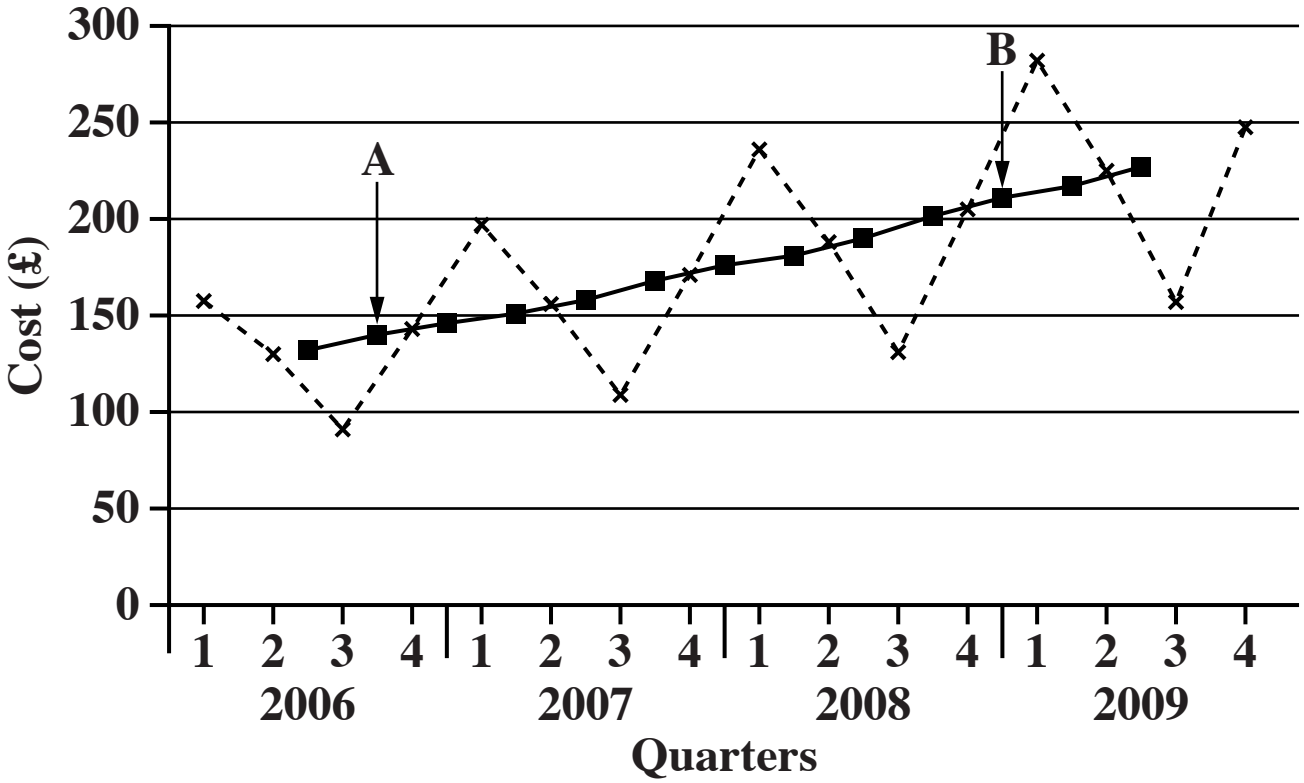
(b) _____ **cm**

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.
[3 marks]

(a) A = £ _____

B = £ _____

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

_____

_____

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

OCEAN	SURFACE AREA (km^2)
Pacific	$1{\cdot}56 \times 10^8$
Atlantic	$7{\cdot}7 \times 10^7$
Indian	$6{\cdot}9 \times 10^7$
Southern	$2{\cdot}0 \times 10^7$
Arctic	$1{\cdot}4 \times 10^7$

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

(a) _____%

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

(b) _____ km^2