



M8

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

Tuesday 21 June 2011
Afternoon

Duration: 30 minutes



Candidate forename		Candidate surname	
-----------------------	--	----------------------	--

Centre number							Candidate number				
---------------	--	--	--	--	--	--	------------------	--	--	--	--

MODIFIED LANGUAGE

INSTRUCTIONS TO CANDIDATES

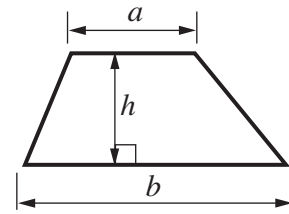
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

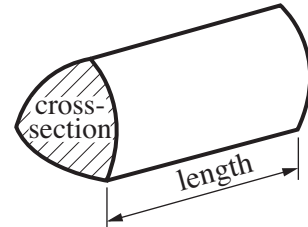
- The number of marks is given in brackets [] at the end of each question or part question.
- Section B starts with question 6.
- You are expected to use a calculator in Section B of this paper.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- The total 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

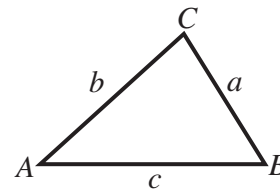


In any triangle ABC

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

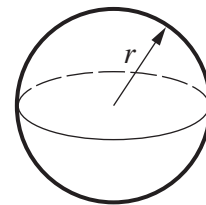
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



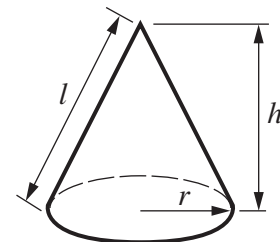
Volume of sphere = $\frac{4}{3}\pi r^3$

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

6 (a) Ayesha invests £1500 for 3 years.

The investment earns compound interest of 3.2% per year.

Work out how much her investment is worth at the end of the 3 years.

(a) £ [3]

(b) Simon sells his house for £193 200.

He makes an 8% loss on the price he paid for the house.

Work out the price Simon paid for his house.

(b) £ [3]

7 Here are the equations of some lines.

A $y = 3x + 2$ B $y = 2x + 3$ C $y = x + 3$

D $y = -3x + 4$ E $y = 4 - 2x$ F $y = 1 - 3x$

(a) Write down which two lines are parallel.

(a) [1]

(b) Explain why you chose these two lines.

.....
 [1]

8 In this question a, b, x, y and r represent lengths.

(a) In the table put one tick in each row to show what the expression represents.

Expression	length	area	volume	none of these
$3ab^2$				
$4x + 2y + \pi r$				

[2]

(b) Denise says that $xy - 3r$ represents an area.

Is Denise correct?
 Give a reason for your answer.

Denise is because
 [1]

10 The table shows the population and land area of China and the UK.

	Population	Land area (km ²)
China	1.32×10^9	9.64×10^6
UK	6.16×10^7	2.45×10^5

(a) Calculate the difference between the land area of China and the land area of the UK.

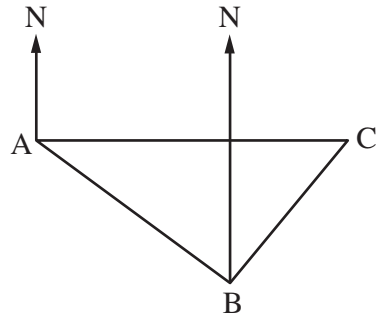
(a) km² [1]

(b) Use the information in the table to find out which country has the greater number of people per km².

Show how you worked out your answer.

.....
 [4]

- 11 A boat sails 67 km on a bearing of 124° from A to B.
 The boat then sails on a bearing of 034° from B to C.
 C is due East of A.



Not to scale

- (a) Explain why angle ABC is a right angle.

.....
 [2]

- (b) Calculate the direct distance AC.

(b) km [3]

PLEASE DO NOT WRITE ON THIS PAGE



Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series. If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.