



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	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

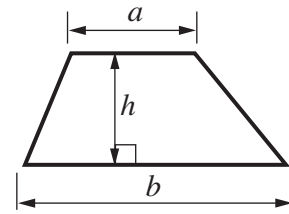
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Show your working. 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

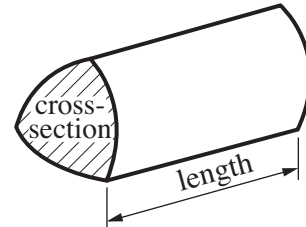
- The number of marks is given in brackets [] at the end of each question or part question.
- Section B starts with question 6.
- You are expected to use a calculator in Section B of this paper.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- The total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

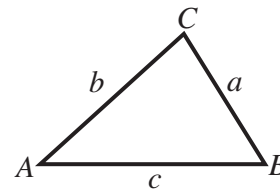


In any triangle ABC

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

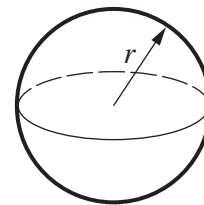
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



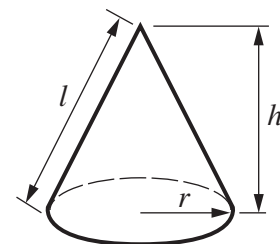
Volume of sphere = $\frac{4}{3}\pi r^3$

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.

Calculate 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 purchase price.

Calculate the purchase price.

(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) Which two of these 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.

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

[2]

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

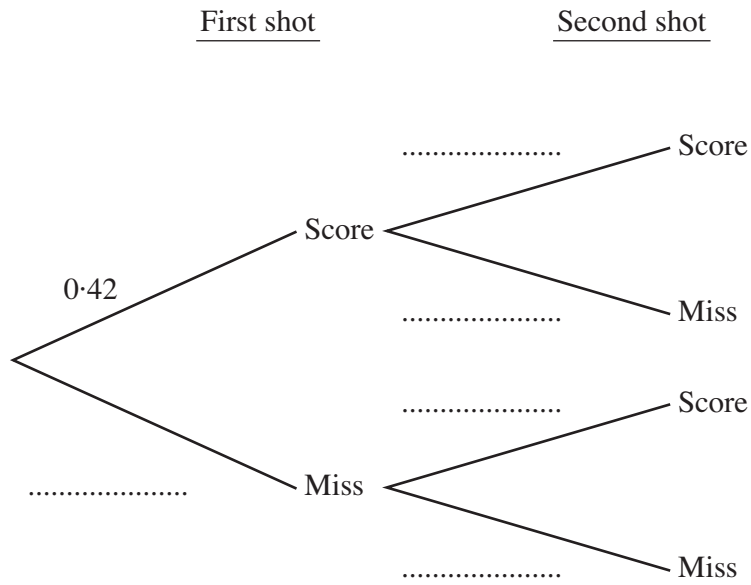
Is she correct?

Give a reason for your answer.

..... because
 [1]

9 Jeff is taking two free shots in a basketball match.
The probability that he scores with any free shot is 0.42.

(a) Complete the tree diagram.



[2]

(b) Work out the probability that Jeff scores with both shots.

(b) [2]

10 The table below 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 areas of China and the UK.

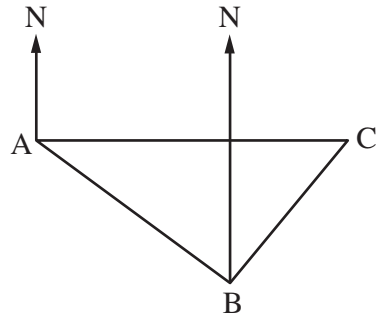
(a) km² [1]

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

Show how you decide.

.....
 [4]

- 11 A boat sails 67 km on a bearing of 124° from A to B and then 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]

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