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)

TUESDAY 21 JUNE 2011: 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

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INSTRUCTIONS TO CANDIDATES

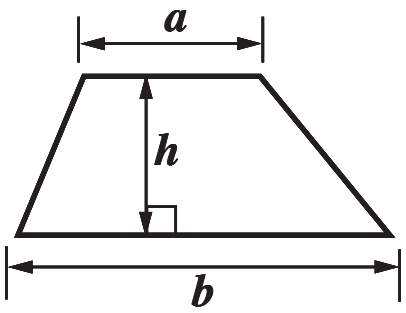
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**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

INFORMATION FOR CANDIDATES

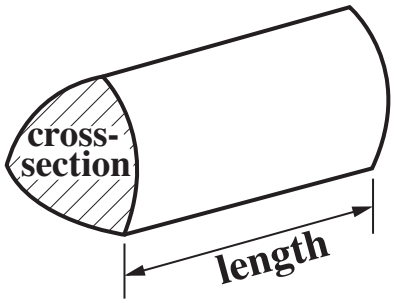
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 6.**
- **You are expected to use a calculator in Section B of this paper.**
- **Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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



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

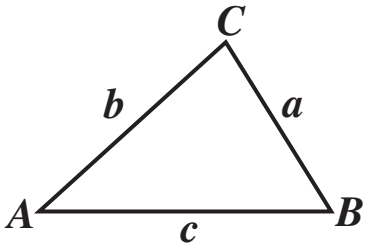


In any triangle ABC

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

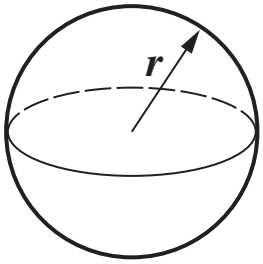
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

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



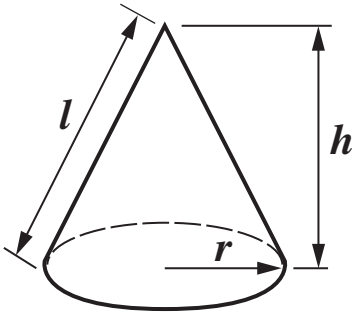
Volume of sphere $= \frac{4}{3}\pi r^3$

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**

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

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.

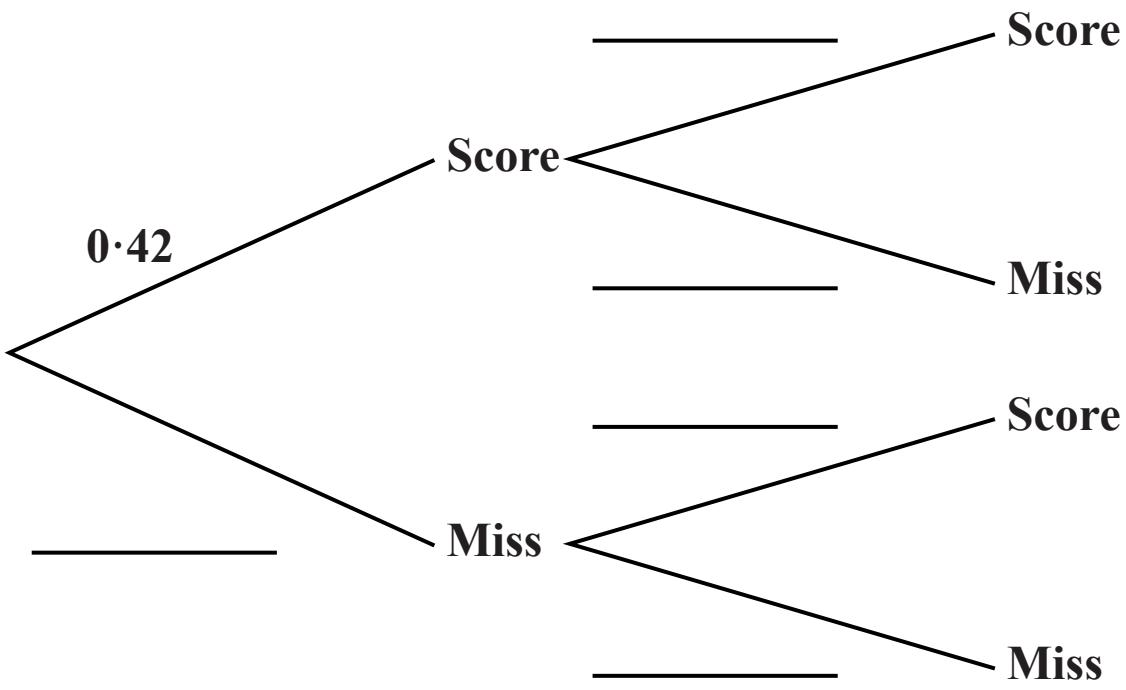
Is she correct?
Give a reason for your answer.

_____ 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	$1{\cdot}32 \times 10^9$	$9{\cdot}64 \times 10^6$
UK	$6{\cdot}16 \times 10^7$	$2{\cdot}45 \times 10^5$

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

(a) _____ km^2 [1]

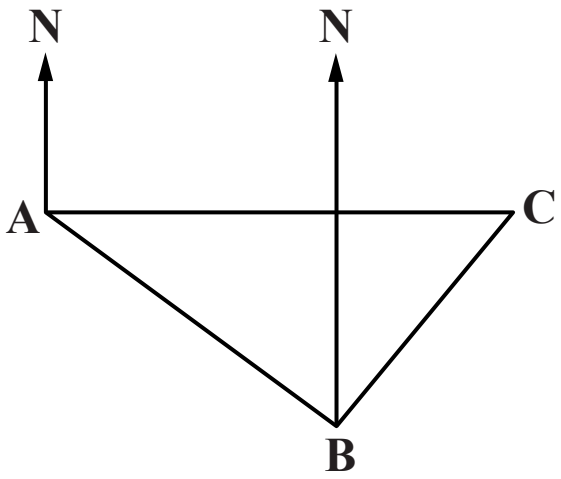
(b) Use the information in the table to find out which country has the greater population density (number of people per km^2).

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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