OCR RECOGNISING ACHIEVEMENT

B278B

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS C (GRADUATED ASSESSMENT)

MODULE M8 – SECTION B

M8

TUESDAY 24 JUNE 2008

Morning
Time: 30 minutes

Candidates answer on the question paper
Additional materials (enclosed): None

Additional materials (required):
Geometrical instruments
Tracing paper (optional)
Scientific or graphical calculator

INSTRUCTIONS TO CANDIDATES

*   Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
*   Use blue or 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.

INFORMATION FOR CANDIDATES

*   The number of marks is given in brackets [ ] at the end of each question or part question.
*   The total number of marks for this Section is **25**.
*   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.

FOR EXAMINER'S USE

SECTION B	

This document consists of **8** printed pages.

[Turn over

Formulae Sheet
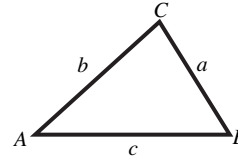
Volume of prism = (area of cross-section) ×length
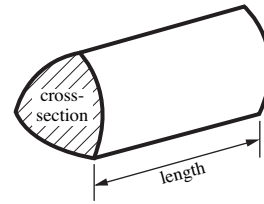
In any triangle *ABC*

Sine rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$
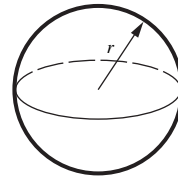
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

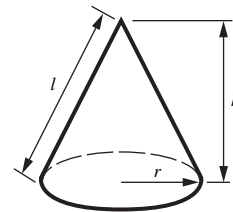**Area of triangle** = $\frac{1}{2} ab \sin C$

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 = $\pi r l$

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 **(a)** Edward bought a caravan for £25 000.
Each year the caravan loses 32% of its value at the beginning of the year.

    (i) Which of the calculations below would give the value of Edward's caravan one year after he bought it?
Explain your answer.

       $25\,000 \times 0{\cdot}32$ $25\,000 \times 1{\cdot}32$ $25\,000 \times 0{\cdot}68$ $25\,000 \times 0{\cdot}78$

.... because ....

.... [1]

    (ii) Calculate the value of Edward's caravan three years after he bought it.

(a)(ii) £ .... [2]

(b) Edward pays £1944 for his annual caravan site rental in 2008.
This is an increase of 8% on the rental in 2007.

How much was his annual site rental in 2007?

(b) £ .... [3]

                   [Turn over

8 **(a)** Solve.

$$\frac{2x - 5}{3} = 8$$

(a) .... [3]

(b) Solve by factorising.

$$x^2 - 3x - 70 = 0$$

(b) .... [3]

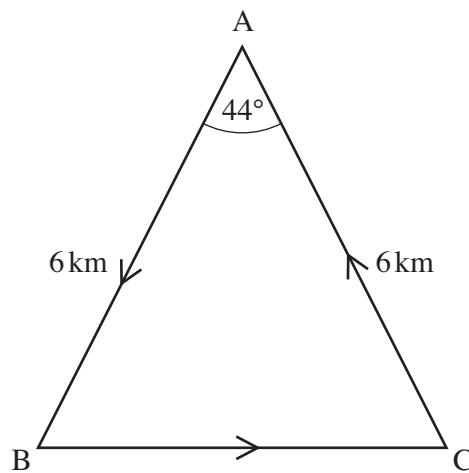**9** In this expression, *r*, *a* and *b* represent lengths.

$$\frac{1}{3}\pi r^2(a + b)$$

Does this expression represent a perimeter, an area, a volume or none of these?
Give a reason for your answer.

.... because ....

.... [2]

10 The diagram shows the plan view of the course for a yacht race.
Yachts race from A to B to C to A.

Not to scale

AB = AC = 6 km and angle BAC = 44°.

Calculate the total distance around the course.

...................................km [5]

[Turn over

11 Deepthy is driving to work.
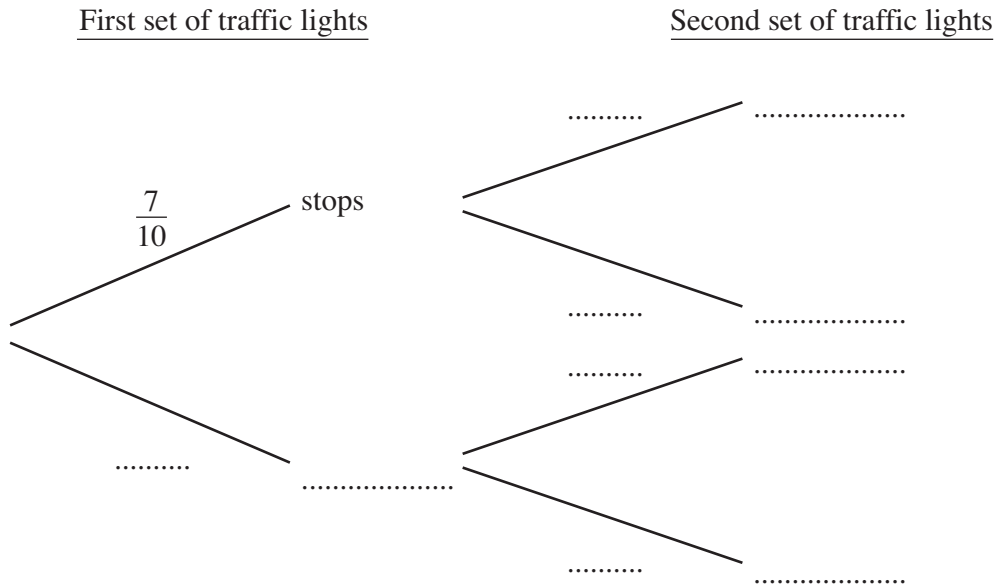She has to drive through two sets of traffic lights.
The probability that she has to stop at the first set of traffic lights is $\frac{7}{10}$.

The probability that she has to stop at the second set of traffic lights is $\frac{7}{10}$.
These probabilities are independent.

(a) Complete the tree diagram to show this information.

First set of traffic lights   Second set of traffic lights

$\frac{7}{10}$ stops

....

....

....

....

....

[2]

(b) Calculate the probability that she does not stop at either set of lights.

(b) .... [2]

12 This table shows the annual profits for *Dean Motors*.

	2002	2003	2004	2005	2006	2007
Profit (£'000)	92	84	88	104	78	97

The first two 3-point moving averages are shown below.

Calculate the remaining two moving averages.

£88 000 £92 000 £.......................... £..........................[2]

PLEASE DO NOT WRITE ON THIS PAGE