Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B279B

MATHEMATICS C (GRADUATED ASSESSMENT)

MODULE M9 (SECTION B)

MONDAY 21 JUNE 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/DJ) MEP60062 27437/2
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INSTRUCTIONS TO CANDIDATES

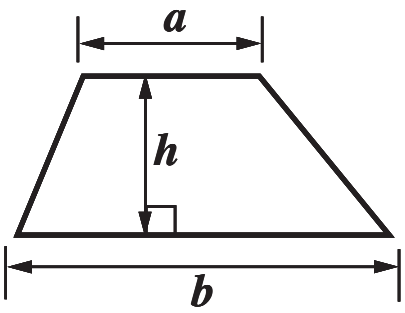
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **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. Additional paper may be used if necessary but you must clearly show your Candidate Number and question number(s).**

INFORMATION FOR CANDIDATES

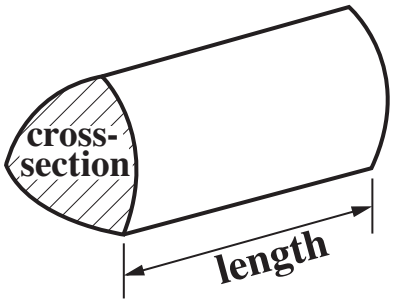
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 7.**
- **You are expected to use a calculator in Section B of this paper.**
- **Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.**
- **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

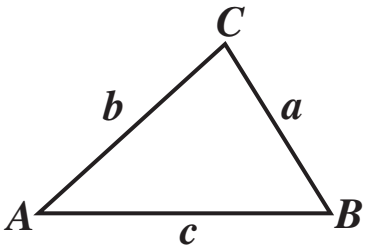


In any triangle ABC

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

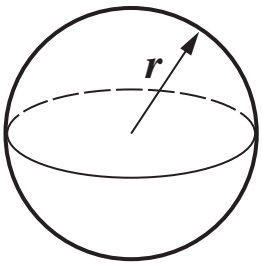
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

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



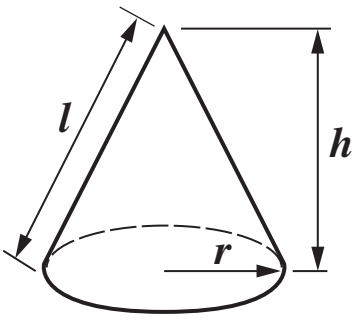
Volume of sphere $= \frac{4}{3}\pi r^3$

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 Rearrange this formula to make *m* the subject.

$$\frac{2m + 3p}{5} = 2m - 7$$

_____

[3 marks]

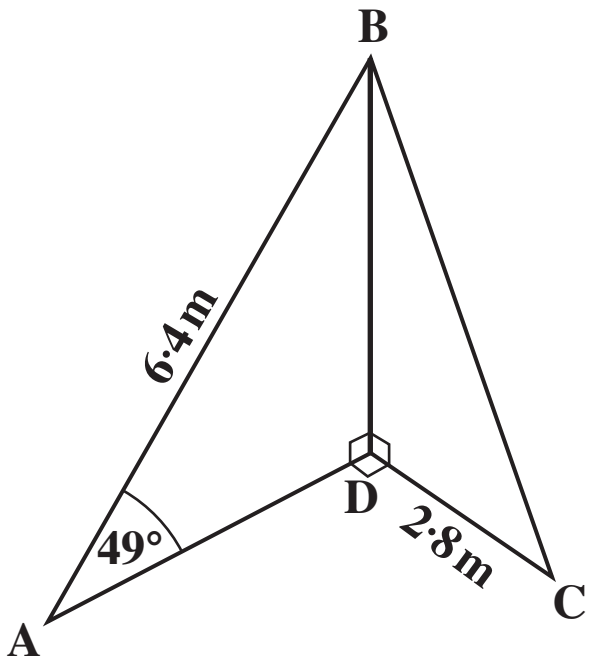
8 **Maggie measures the dimensions of her bedroom correct to the nearest 0·1 m.**
The room is a cuboid.
These are the measurements of the room.

length 4·2 m width 3·4 m height 2·8 m

Work out the upper bound of the volume of the room.
[2 marks]

_____ m^3

9 The diagram shows two supporting guy ropes, AB and BC, and a vertical pole, BD.



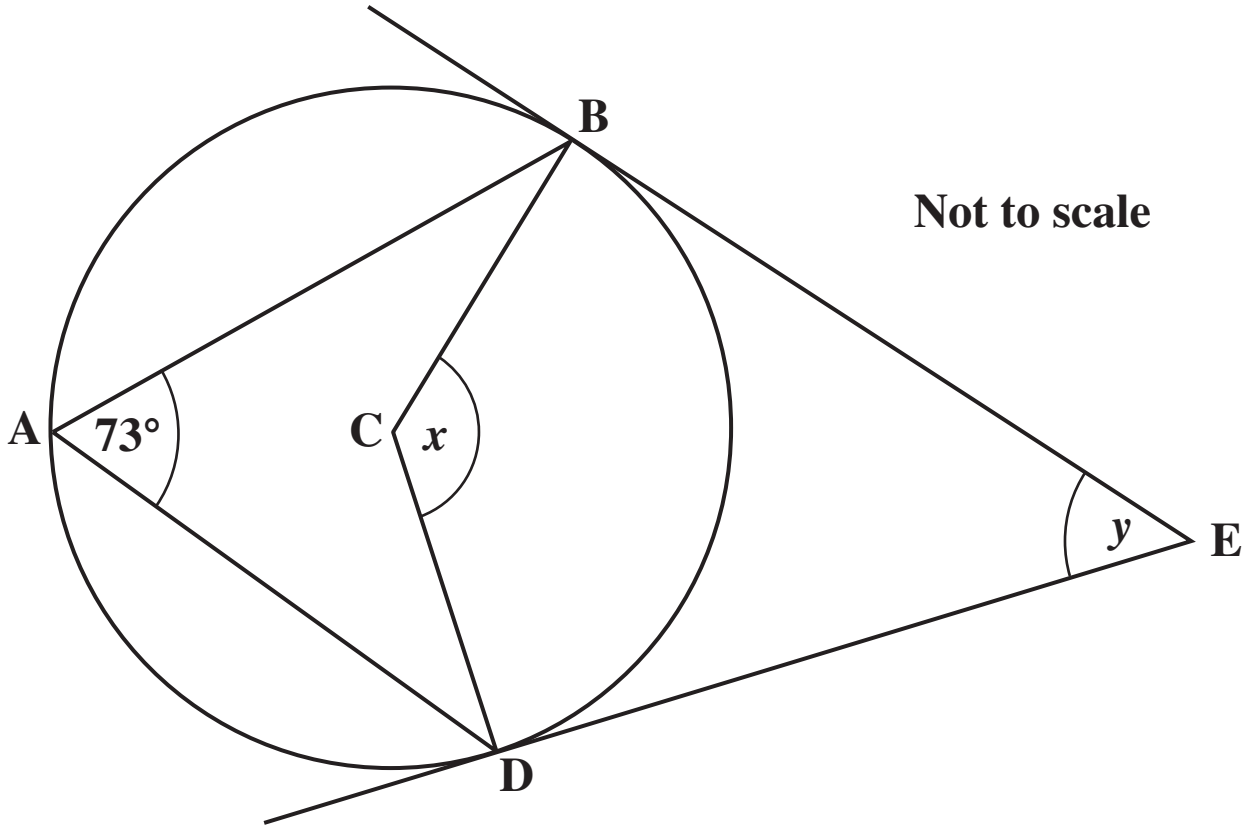
(a) Calculate BD, the height of the pole.
[3 marks]

(a) _____ m

(b) Calculate the angle BCD.
[3 marks]

(b) _____ °

10 A, B and D are points on the circle, centre C.
EB and ED are tangents to the circle.
Angle BAD is 73°.

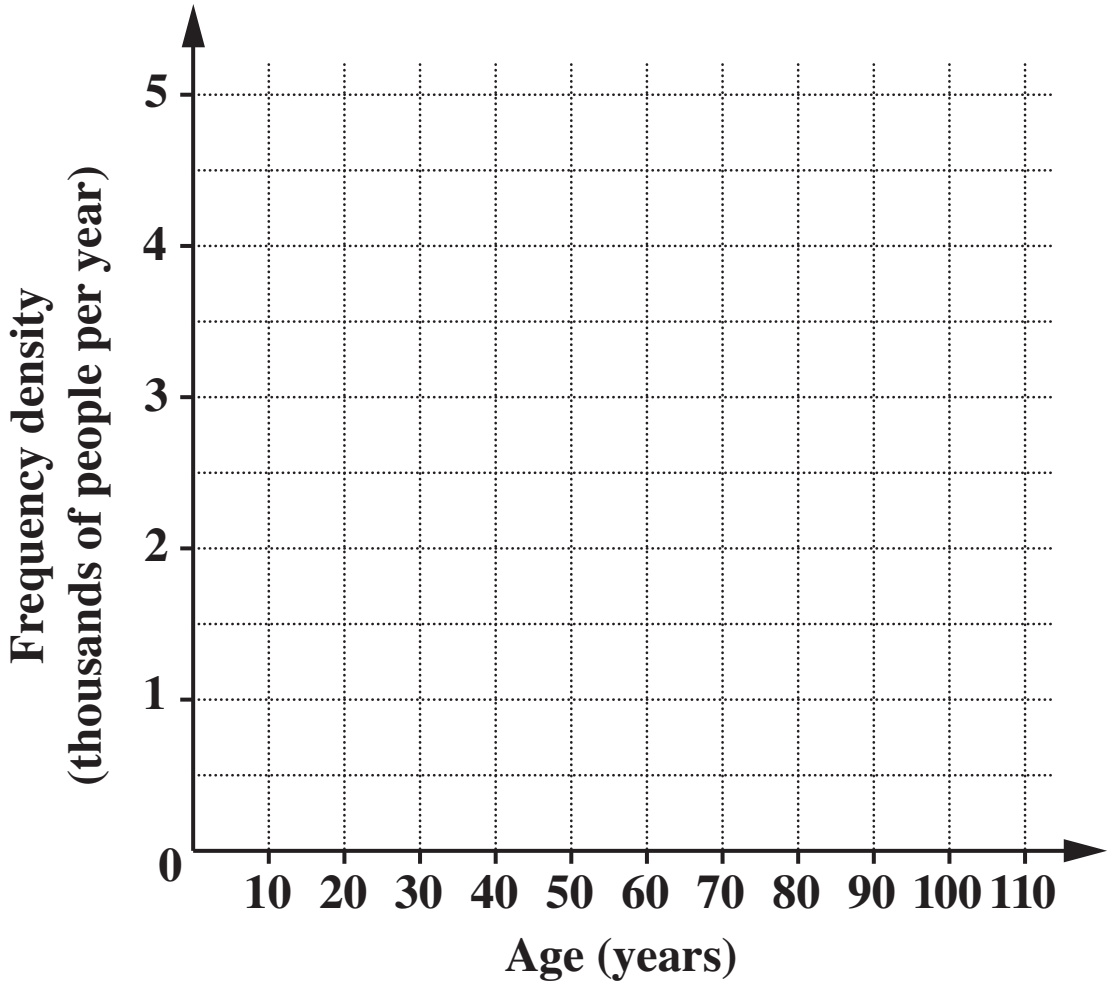


Calculate angles *x* and *y*, giving reasons for each step of your working.
[5 marks]

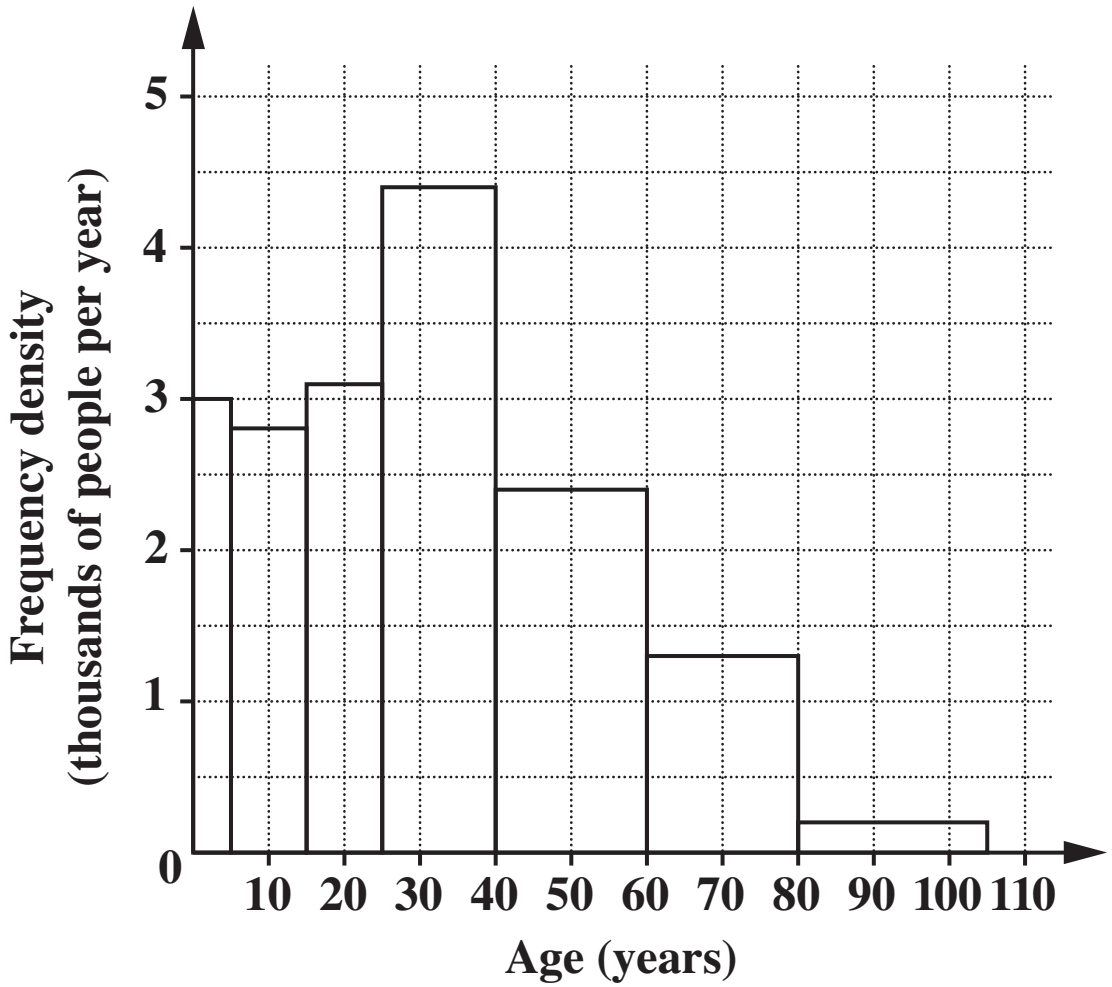
11 This frequency table shows the distribution of ages of people in Bexley in 2001.

Age (n years)	Frequency (thousands of people)
$0 \leqslant n < 5$	13
$5 \leqslant n < 15$	30
$15 \leqslant n < 25$	25
$25 \leqslant n < 40$	49
$40 \leqslant n < 60$	57
$60 \leqslant n < 80$	36
$80 \leqslant n < 105$	8

(a) Draw a histogram to represent this distribution. [3 marks]



(b) The histogram below represents the distribution of the ages of people in Haringey in 2001.



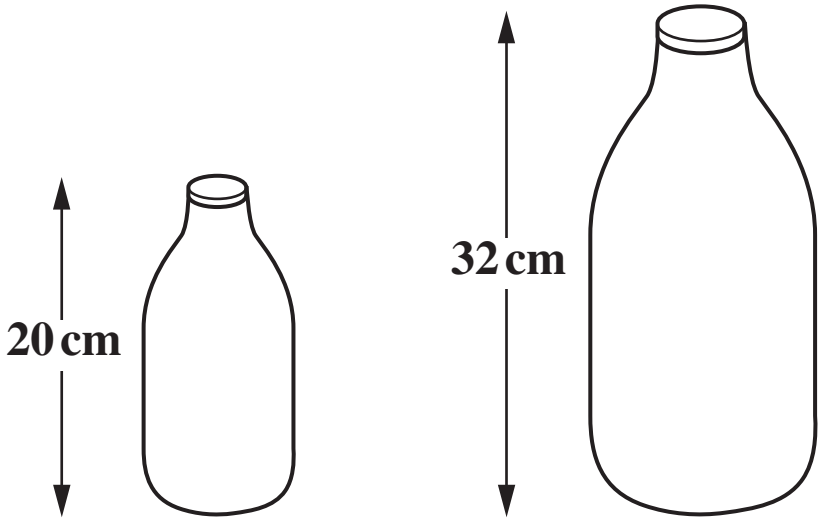
(i) Show that the population of Haringey in 2001 was approximately 219 000.
[2 marks]

(ii) Describe one difference between the distributions of the ages in Bexley and Haringey.
[1 mark]

_____

_____

12 These two bottles are mathematically similar.



The height of the smaller bottle is 20 cm and its capacity is 500 ml.
The height of the larger bottle is 32 cm.

Calculate the capacity of the larger bottle.
[3 marks]

_____ **ml**

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