OCR
RECOGNISING ACHIEVEMENT

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
General Certificate of Secondary Education

MATHEMATICS C
(Graduated Assessment)

1966/2339A

MODULE M9 – SECTION A

Monday **23 JANUARY 2006** Morning 30 minutes

Candidates answer on the question paper.
Additional materials:
Geometrical instruments
Tracing paper (optional)

Candidate Name	

Centre Number						Candidate Number				

TIME 30 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers on the dotted lines unless the question says otherwise.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There is a space after most questions. Use it to do your working. In many questions marks will be given for a correct method even if the answer is incorrect.
- Do not write in the bar code. Do not write in the grey area between the pages.
- **DO NOT** WRITE IN THE AREA **OUTSIDE** THE BOX BORDERING EACH PAGE. ANY WRITING IN THIS AREA WILL NOT BE MARKED.

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.

WARNING
You are not allowed to use a calculator in Section A of this paper.

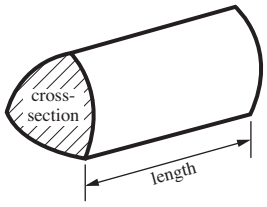
FOR EXAMINER'S USE	
Section A	
Section B	
TOTAL	

This question paper consists of 7 printed pages and 1 blank page.

[Turn over

Formulae Sheet

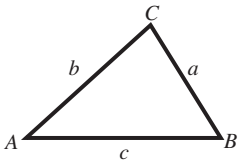
Volume of prism = (area of cross-section) × length



In any triangle *ABC*

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

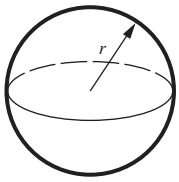
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$



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

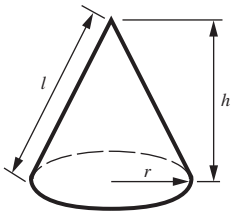
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$



Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = πrl



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$, are given by

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

1 Work out.

(a) 9^0

(a) .....[1]

(b) 10^{-2}

(b) .....[1]

(c) $36^{\frac{1}{2}}$

(c) .....[1]

3

2 Work out.

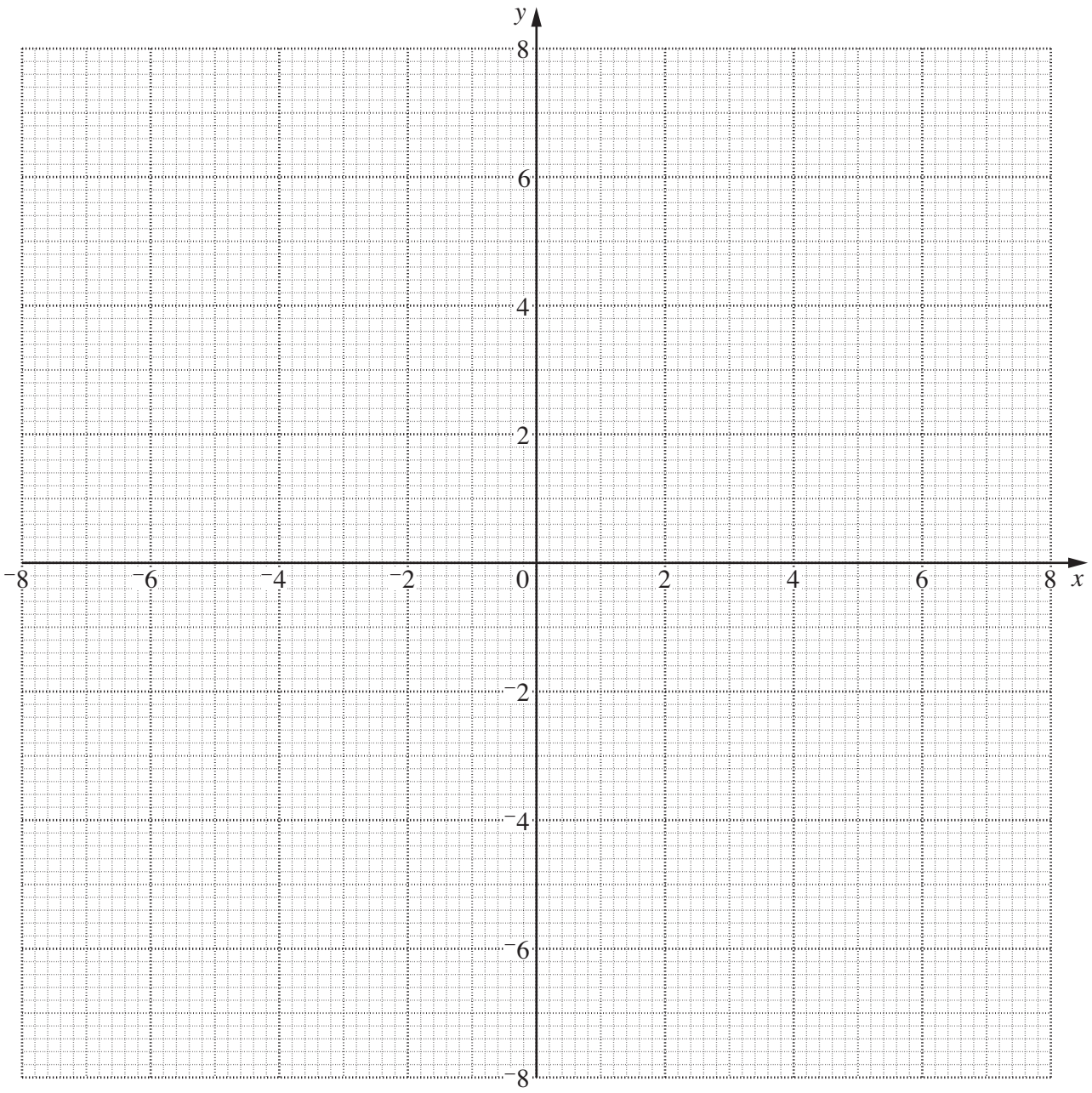
$$\frac{3 \times 10^7}{6 \times 10^3}$$

Give your answer in standard form.

.....[2]

2

3 **(a)** Construct the graph of $x^2 + y^2 = 36$.



[2]

(b) By drawing a suitable straight line on the grid above, solve these simultaneous equations.

$x^2 + y^2 = 36$
$y = 4 - 3x$

.....

.....[3]

5

4 Fiona drives to work.
Each day she drives 49 miles, to the nearest mile.

Calculate the least possible distance she drives in 5 working days.

..... miles [2]

2

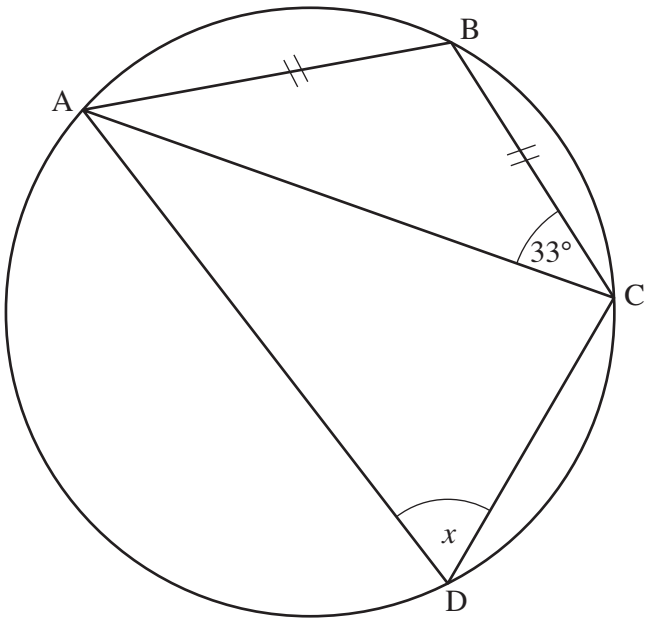
5 Rearrange this formula to make t the subject.

$$g = \frac{3t + 1}{t}$$

.....[4]

4

6



Not to scale

A, B, C and D are points on a circle.
Angle BCA = 33° and AB = BC.

Calculate angle x.
Give a reason for each step of your calculation.

.....

.....

.....

.....

.....

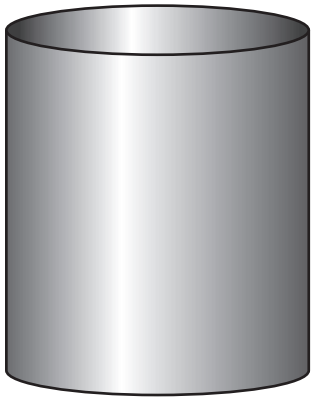
.....

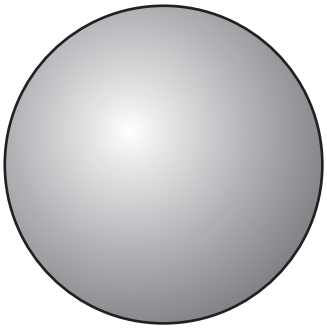
x = ...° [5]

5

7 A cylinder has a base radius of 6 cm.
A sphere has radius 6 cm.

The cylinder and the sphere have the same volume.





Find the height of the cylinder.

.....cm [4]

4

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