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Centre number						Candidate number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE**

B279A

**MATHEMATICS C
(GRADUATED ASSESSMENT)**

MODULE M9 – SECTION A

MONDAY 16 JANUARY 2012: Morning

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)

WARNING

**No calculator can be used for
Section A of this paper.**

This paper has been pre modified for carrier language

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

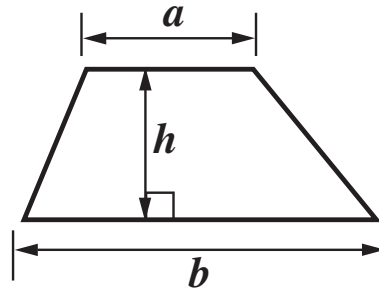
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. HB pencil may be used for graphs and diagrams only.**
- **Answer ALL the questions.**
- **Read each question carefully. Make sure you know what you 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).**

INFORMATION FOR CANDIDATES

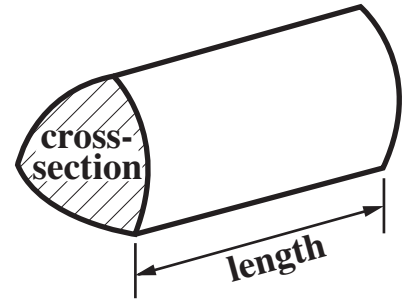
- **The number of marks is given in brackets [] at the end of each question or part question.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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



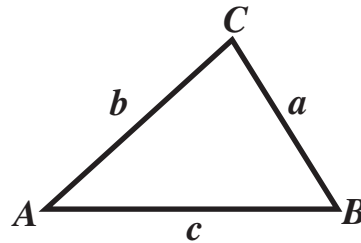
Volume of prism = (area of cross-section) \times length



In any triangle ABC

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

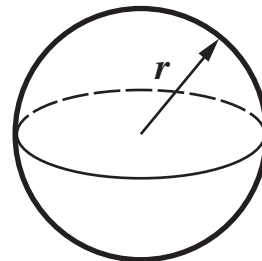
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$



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

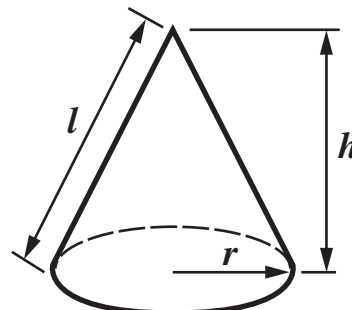
Volume of sphere = $\frac{4}{3}\pi r^3$

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

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

- 1 A gift shop conducted a survey of its customers one Wednesday afternoon. The results gave the following probabilities about the next customer. Assume that gender and age are independent.**

Gender	Probability
Male	0.3
Female	0.7

Age	Probability
Under 16	0.15
16 to 30	0.1
31 to 60	0.35
Over 60	0.4

- (a) What is the probability that the next customer will be over 30 years old?**

(a) _____ [1]

- (b) What is the probability that the next customer will be a female aged over 60?**

(b) _____ [2]

2 Estimate.

$$\sqrt{\frac{412 \times 2100}{499}}$$

_____ [2]

3 (a) Expand and simplify.

$$(2x + 3)(3x - 2)$$

(a) _____ **[3]**

(b) Factorise.

$$4x^2 - 25$$

(b) _____ **[2]**

4 Write as a single power of 5.

(a) $\frac{5^2 \times 5^0}{5^{-4}}$

(a) _____ **[2]**

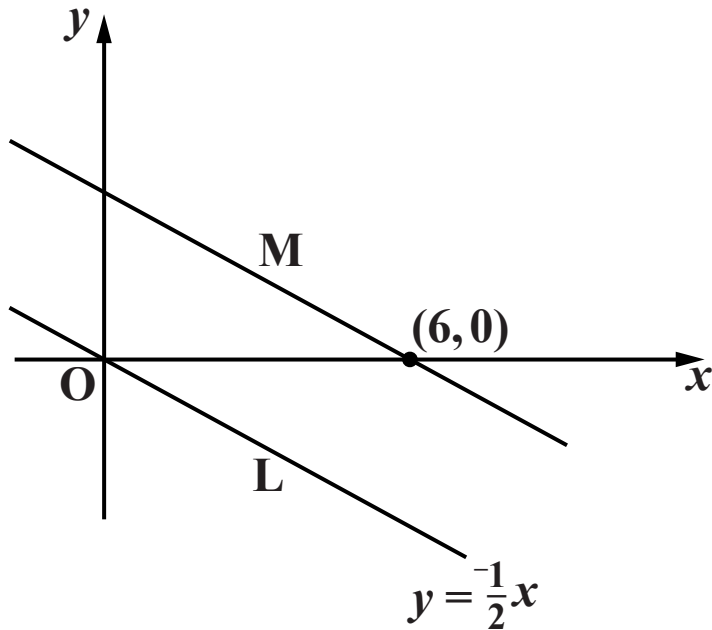
(b) $\frac{(\sqrt{5})^3}{5}$

(b) _____ **[2]**

5 This sketch graph shows two parallel lines, L and M.

Line L has the equation $y = -\frac{1}{2}x$.

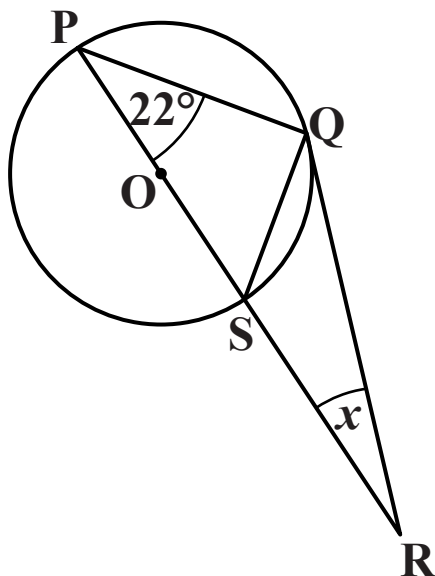
Line M intersects the x-axis at $(6, 0)$.



Find the equation of line M.

_____ [3]

- 6 **RQ is a tangent to the circle, centre O.**
POSR is a straight line.
Angle QPS = 22° .



**NOT TO
SCALE**

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

$x =$ _____ $^\circ$ [4]

7 This table gives some corresponding values for x and y .

x	16	25
y	24	30

(a) Given that $y \propto \sqrt{x}$, find the equation connecting x and y .

(a) _____ [2]

(b) Calculate the value of x when $y = 120$.

(b) _____ [2]

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