

Candidate forename						Candidate surname					
Centre number						Candidate number					

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**B279A**

**MATHEMATICS C  
(GRADUATED ASSESSMENT)**

**MODULE M9 – SECTION A**

**TUESDAY 1 MARCH 2011: 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.**

**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

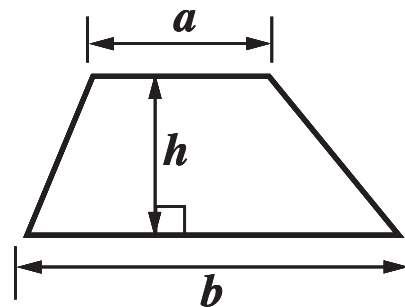
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **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).**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Answer ALL the questions.**

## **INFORMATION FOR CANDIDATES**

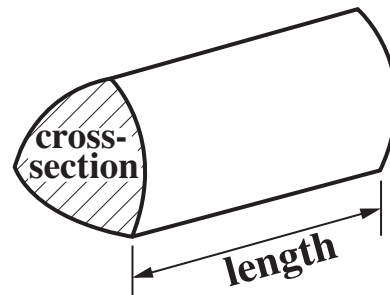
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **The total number of marks for this Section is 25.**

# FORMULAE SHEET

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



**Volume of prism**  $= (\text{area of cross-section}) \times \text{length}$

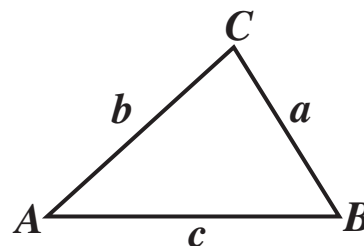


**In any triangle  $ABC$**

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

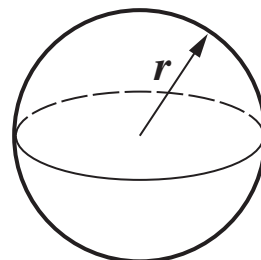
**Cosine rule**  $a^2 = b^2 + c^2 - 2bc \cos A$

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



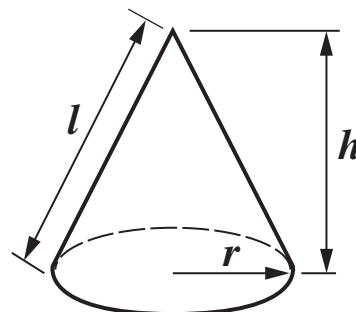
**Volume of sphere**  $= \frac{4}{3}\pi r^3$

**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) Work out.**

**(i)  $9^0$**   
**[1 mark]**

**(a)(i)** \_\_\_\_\_

**(ii)  $64^{\frac{1}{2}}$**   
**[1 mark]**

**(ii)** \_\_\_\_\_

**(iii)  $(9 \times 10^{-8}) \times (2 \times 10^3)$**

**Give your answer in standard form. [2 marks]**

**(iii)** \_\_\_\_\_

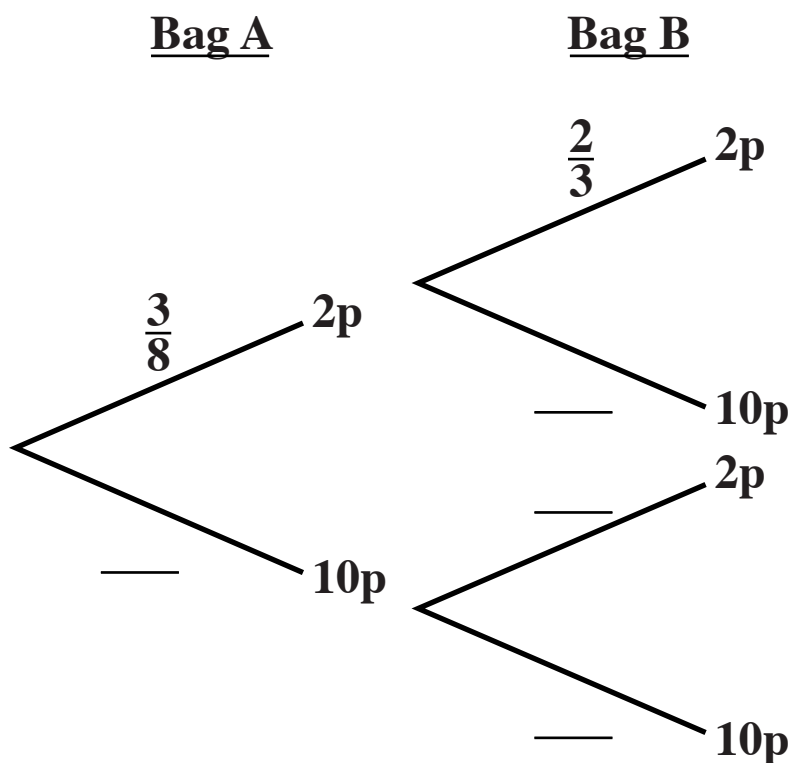
**(b) What is the value of  $n$  in this equation? [1 mark]**

$$3^n \div 3^{-2} = 3^6$$

**(b)** \_\_\_\_\_

- 2 Kevin has two bags of coins.  
 Bag A contains three 2p coins and five 10p coins.  
 Bag B contains two 2p coins and one 10p coin.  
 Kevin picks one coin at random from bag A and then picks one coin at random from bag B.

(a) Complete the tree diagram. [1 mark]



**(b) Calculate the probability that he has picked a total of 12p. [3 marks]**

**(b)** \_\_\_\_\_

**3 (a) Factorise fully. [2 marks]**

$$12xy - 9y^2$$

**(a)** \_\_\_\_\_

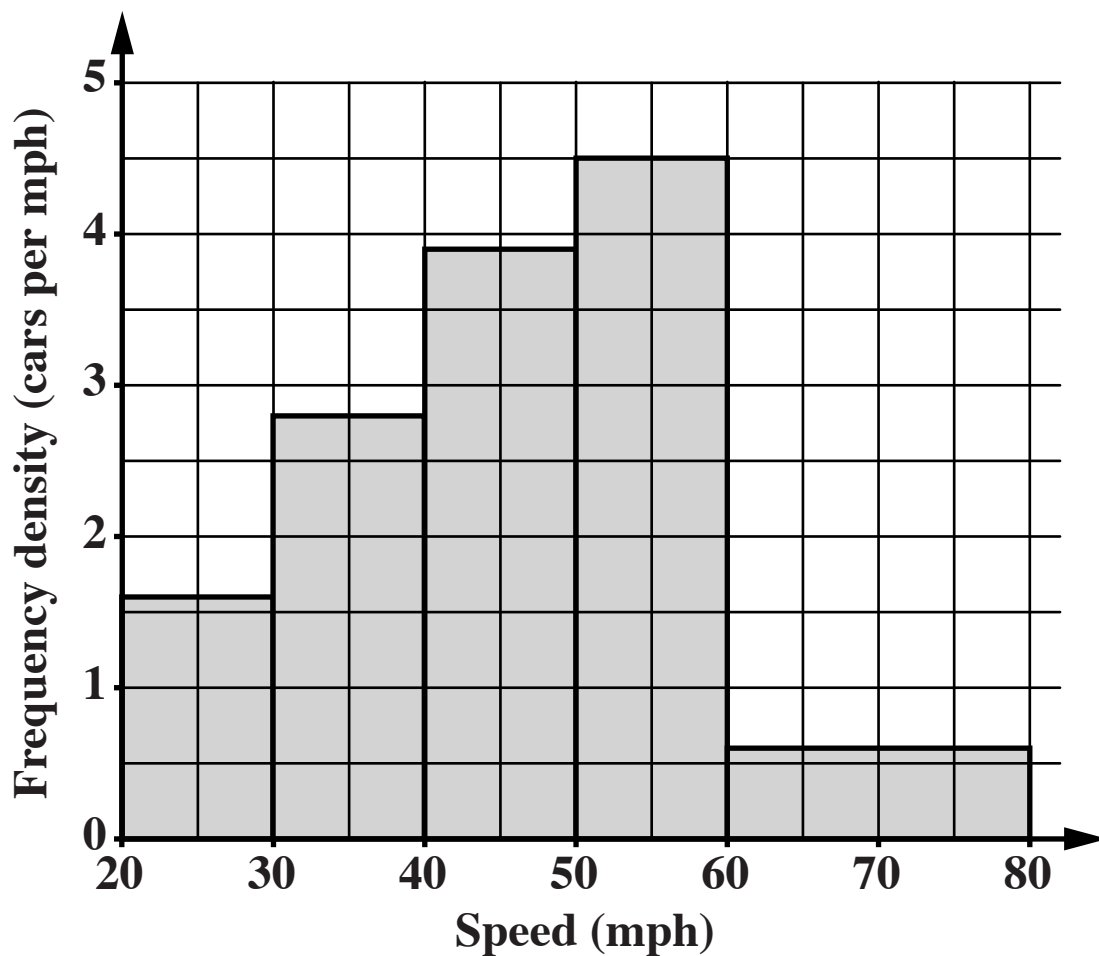
**(b) Solve by factorising. [3 marks]**

$$2x^2 + 7x - 15 = 0$$

**(b)** \_\_\_\_\_

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- 4 The histogram shows the distribution of the speeds, in miles per hour, of cars as they travel along a road in a one-hour period.



**How many cars travelled along the road in this time?**  
**[3 marks]**

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- 5 The change in energy of a body is given by this formula.**

$$E = \frac{mv^2 - mu^2}{2}$$

**Rearrange the formula to make  $v$  the subject. [3 marks]**

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**6 (a) Expand and simplify. [3 marks]**

$$(3x + 2)(5x - 2)$$

**(a)** \_\_\_\_\_

**(b) Factorise. [2 marks]**

$$9x^2 - 25y^2$$

**(b)** \_\_\_\_\_

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