

<b>Candidate Forename</b>		<b>Candidate Surname</b>	
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<b>Centre Number</b>						<b>Candidate Number</b>				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**B277A**

**MATHEMATICS C  
(GRADUATED ASSESSMENT)**

**MODULE M7 – SECTION A**

**TUESDAY 23 JUNE 2009: 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**

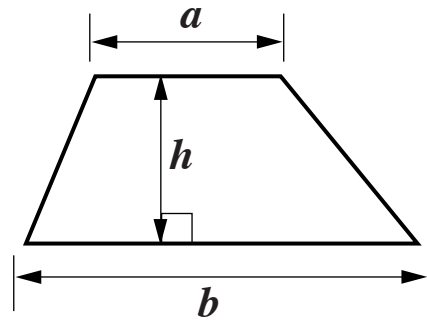
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your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

## **INFORMATION FOR CANDIDATES**

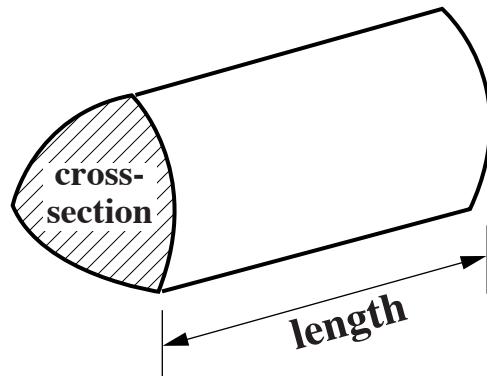
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this Section is 25.

# FORMULAE SHEET

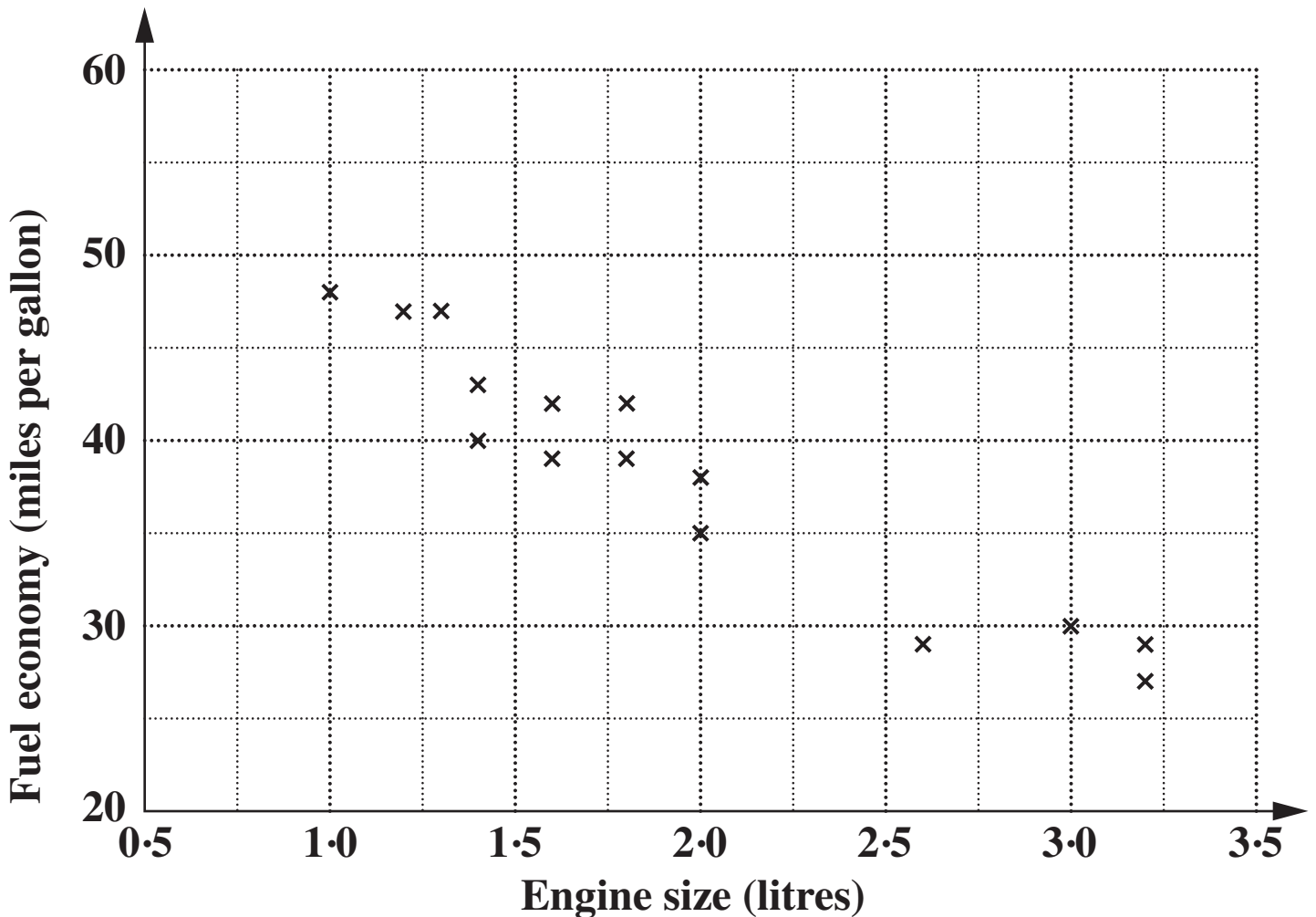
Area of trapezium =  $\frac{1}{2}(a + b)h$



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



- 1 The scatter graph shows information about the engine size, in litres, and the fuel economy, in miles per gallon of petrol (mpg) of some cars.



- (a) Draw a line of best fit on the scatter graph.  
[1 mark]

- (b) Use your line of best fit to estimate the fuel economy of a car with engine size 2.3 litres.  
[1 mark]

(b) \_\_\_\_\_ mpg

- (c) Describe the correlation.  
[1 mark]

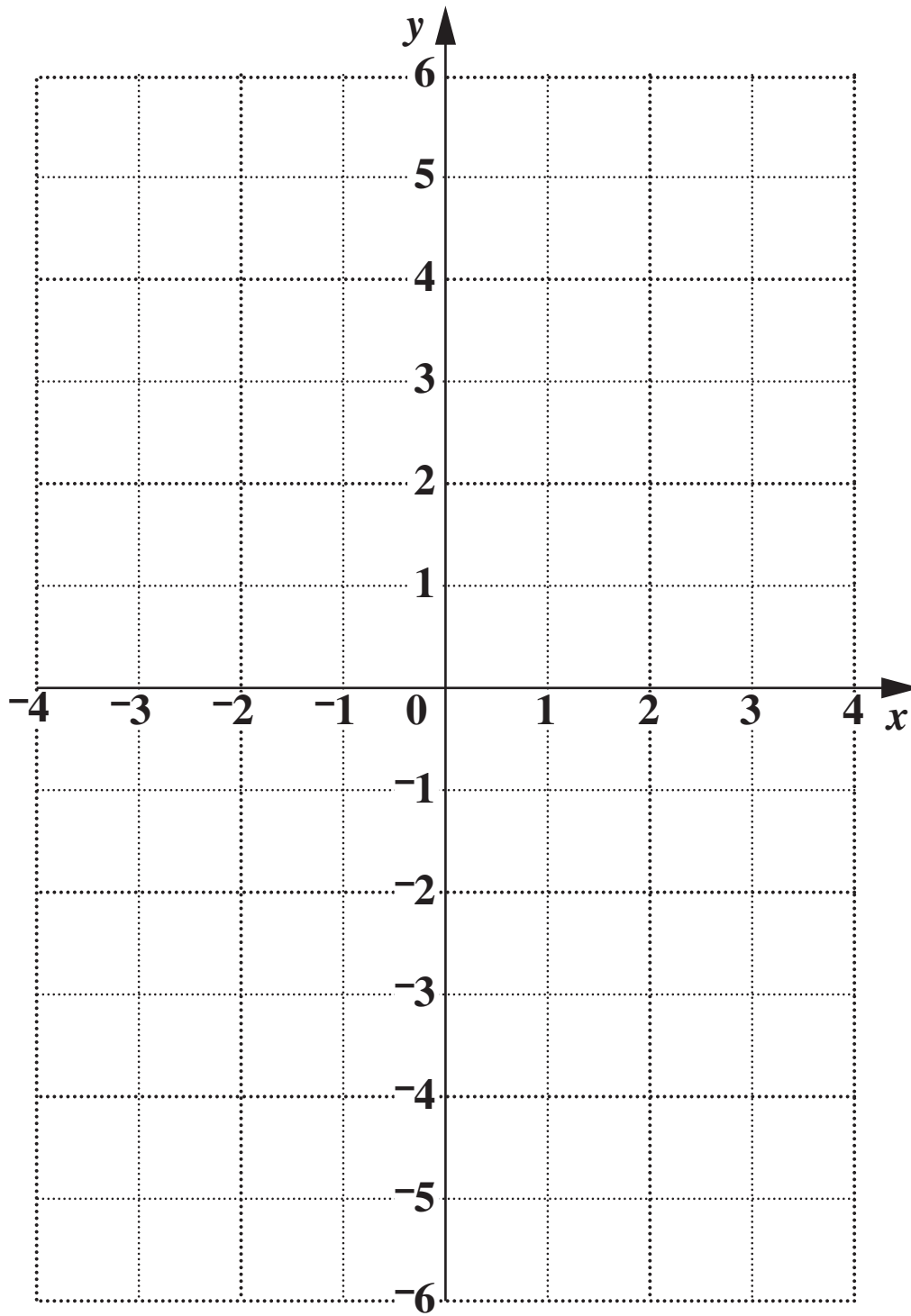
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**2 (a) Complete the table of values for  $y = 3 - x^2$ .**

<b><math>x</math></b>	<b>-3</b>	<b>-2</b>	<b>-1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b><math>y</math></b>	<b>-6</b>		<b>2</b>	<b>3</b>	<b>2</b>		<b>-6</b>

**[1 mark]**

(b) Draw the graph of  $y = 3 - x^2$  for values of  $x$  from  $-3$  to  $3$ .



[2 marks]

- (c) **EXPLAIN** how you can use your graph to solve the equation  $3 - x^2 = 0$ .  
[1 mark]

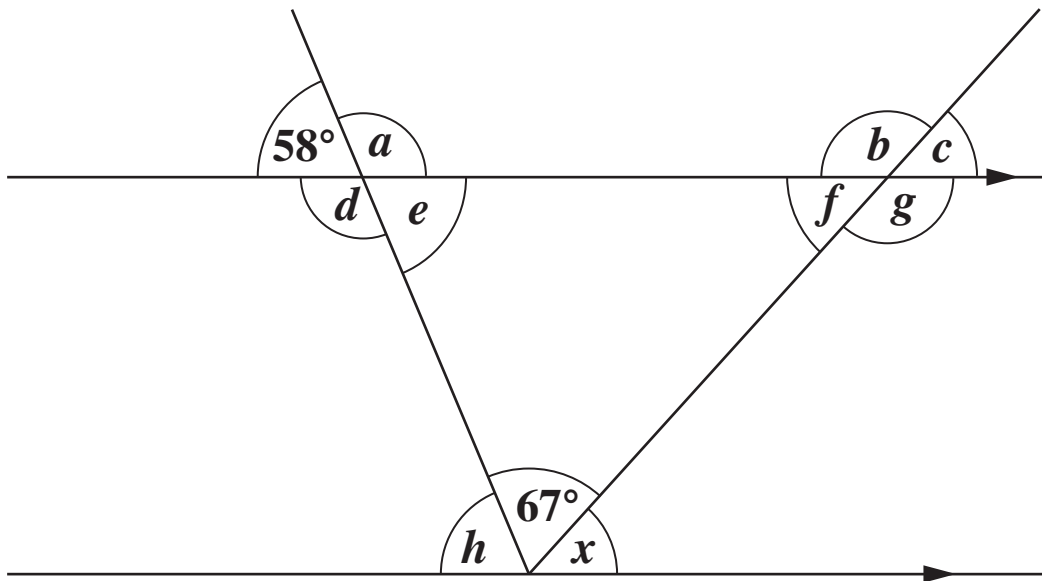
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- 3 (a) Calculate the size of angle  $x$  on the diagram below.  
 Give a reason for each step of your working.  
 Other angles have been labelled to help you with your explanation.



Not to scale

[3 marks]

$x =$  \_\_\_\_\_<sup>°</sup> because \_\_\_\_\_

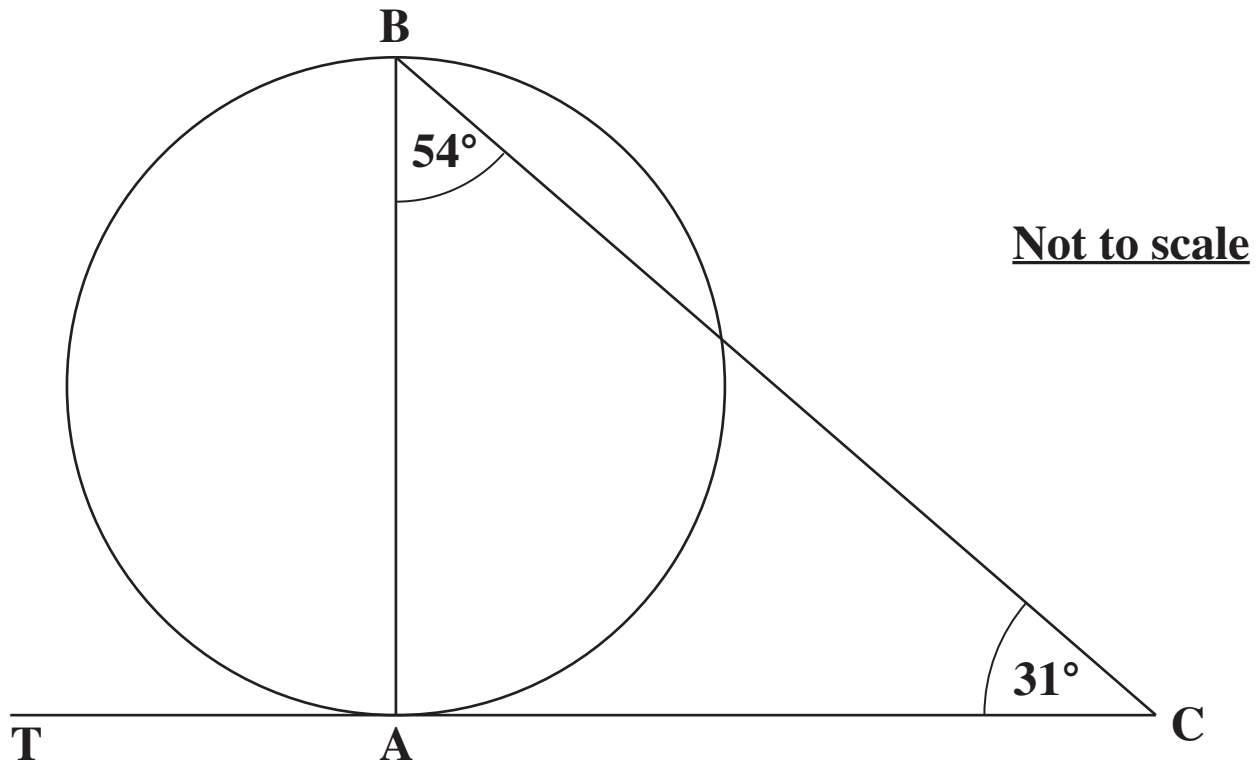
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- (b) A and B are points on the circumference of a circle shown in the diagram below.  
CAT is a tangent to the circle.  
Angle ABC =  $54^\circ$  and angle ACB =  $31^\circ$ .

Explain why AB is NOT a diameter of this circle.



[1 mark]

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4 (a) Simplify  $\frac{7^9}{7^3}$  .

Give your answer as a power of 7.  
[1 mark]

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

(b) The number 240 can be written as a product of prime factors in this form.

$$2^x \times 3^y \times 5$$

Find the values of  $x$  and  $y$ .  
[2 marks]

(b)  $x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

(c) Write down the reciprocal of  $\frac{1}{2}$ .  
[1 mark]

(c) \_\_\_\_\_

**5 Solve.**

**(a)  $7x - 2 = 2(2x + 5)$**

**[3 marks]**

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

**(b)  $4x > 2x + 10$**

**[2 marks]**

**(b)** \_\_\_\_\_ **[2]**

- 6 (a) **ESTIMATE** the answer to this calculation.  
Show clearly the values you use.

$$\frac{\sqrt{64 \cdot 7}}{0 \cdot 21}$$

[2 marks]

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

- (b) Explain how you can tell that the answer to this calculation is wrong.  
You do not need to work out the correct answer.

$$8 \cdot 16 \div 0 \cdot 85 = 6 \cdot 8$$

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[1 mark]

**7 Which two of these fractions can be written as recurring decimals?**

$$\frac{4}{9} \quad \frac{3}{5} \quad \frac{3}{4} \quad \frac{7}{12} \quad \frac{7}{50}$$

**[2 marks]**

\_\_\_\_\_ and \_\_\_\_\_



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