

**GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)
MODULE M7 – SECTION A**

B277A

Candidates answer on the question paper

OCR Supplied Materials:
None

Other Materials Required:

- Geometrical instruments
- Tracing paper (optional)

**Tuesday 23 June 2009
Morning**

Duration: 30 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- 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.
- Do **not** write in the bar codes.
- 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**.
- This document consists of **8** pages. Any blank pages are indicated.

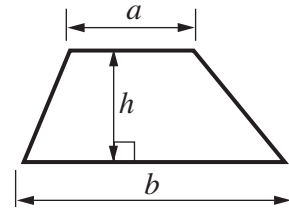
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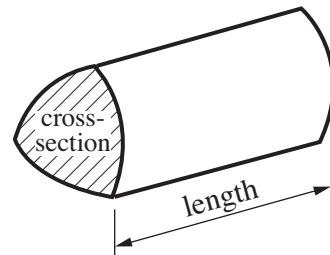
No calculator can be used for Section A of this paper

Formulae Sheet

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

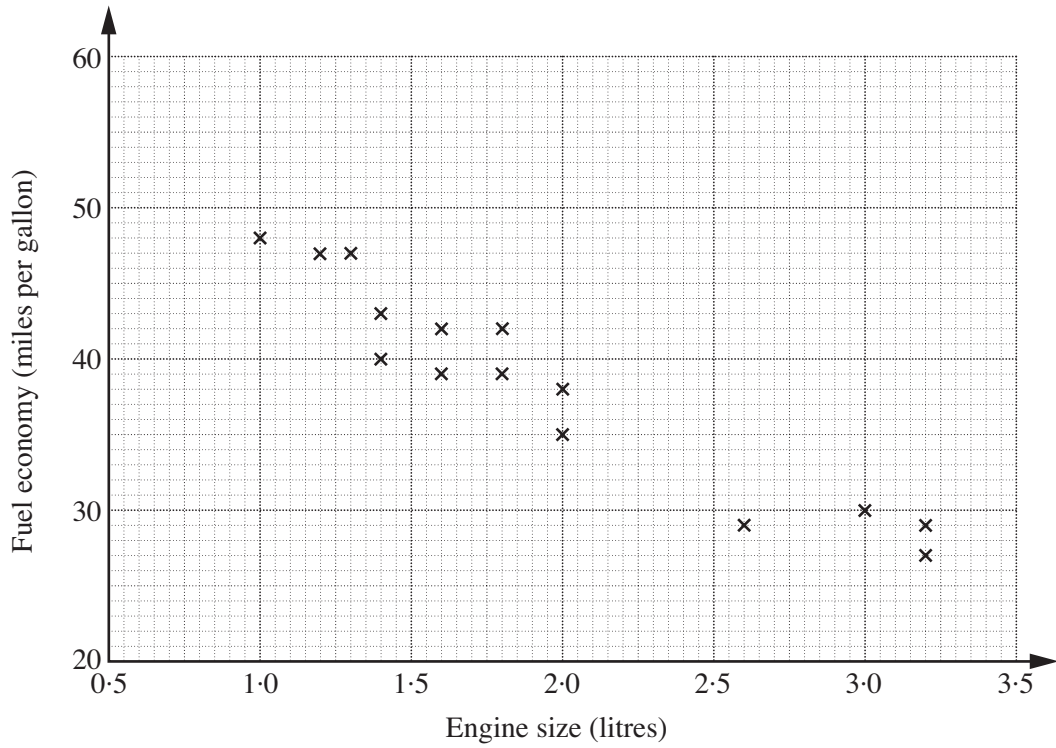


Volume of prism = (area of cross-section) \times length



PLEASE DO NOT WRITE ON THIS PAGE

- 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]

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

(b)mpg [1]

(c) Describe the correlation.

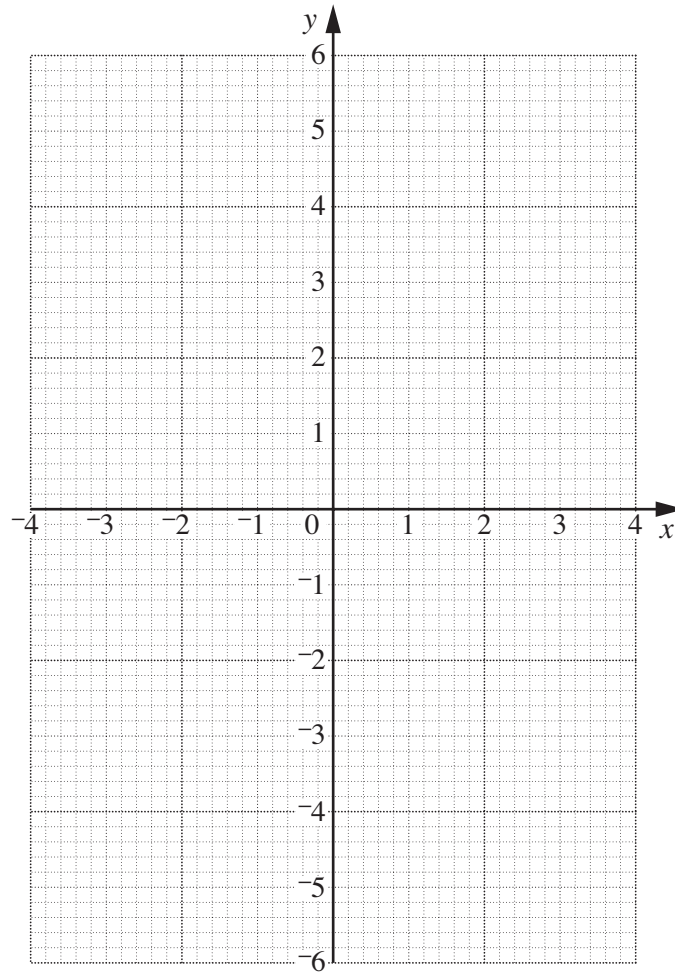
..... [1]

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

x	-3	-2	-1	0	1	2	3
y	-6		2	3	2		-6

[1]

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

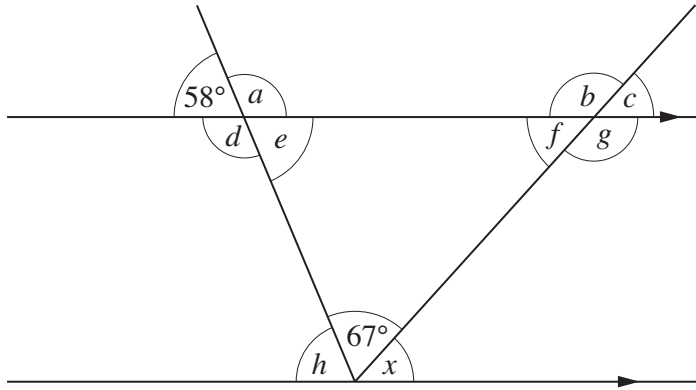


[2]

- (c) **Explain** how you can use your graph to solve the equation $3 - x^2 = 0$.

.....
 [1]

3 (a)

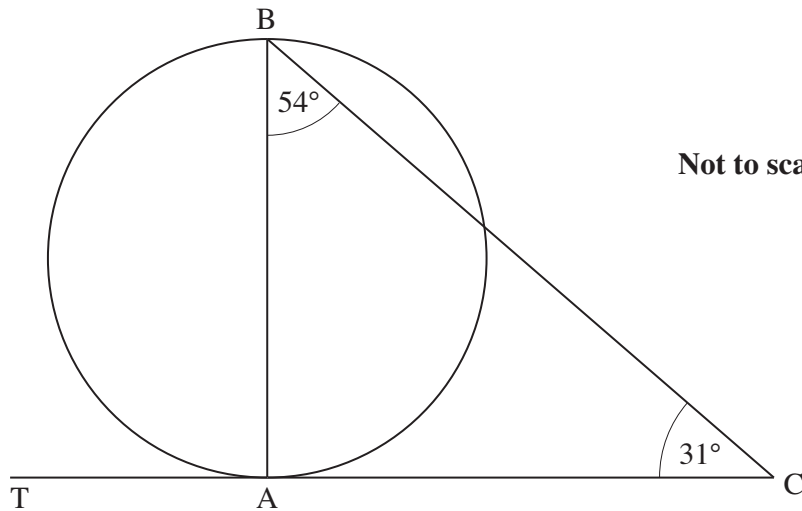


Not to scale

Calculate the size of angle x .
 Give a reason for each step of your working.
 Other angles have been labelled to help you with your explanation.

$x = \dots\dots\dots^\circ$ because $\dots\dots\dots$
 $\dots\dots\dots$
 $\dots\dots\dots$ [3]

(b)



Not to scale

A and B are points on the circumference of a circle.
 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.

$\dots\dots\dots$
 $\dots\dots\dots$ [1]

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

Give your answer as a power of 7.

(a) [1]

(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 .

(b) $x =$

$y =$ [2]

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

(c) [1]

5 Solve.

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

(a) [3]

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

(b) [2]

TURN OVER FOR QUESTIONS 6 AND 7

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

$$\frac{\sqrt{64 \cdot 7}}{0.21}$$

(a) [2]

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

$$8.16 \div 0.85 = 6.8$$

.....

 [1]

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

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

..... and [2]



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