

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Secondary Education
June 2009



MATHEMATICS (MODULAR) (SPECIFICATION B)
Module 5 Foundation Tier
Paper 1 Non-calculator

43055/1F

F

Monday 18 May 2009 1.30 pm to 2.45 pm

<p>For this paper you must have:</p> <ul style="list-style-type: none"> mathematical instruments. <p>You must not use a calculator.</p>	
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For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
TOTAL	
Examiner's Initials	

Time allowed: 1 hour 15 minutes

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book.

Information

- The maximum mark for this paper is 70.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. This must be tagged securely to this answer book.

Advice

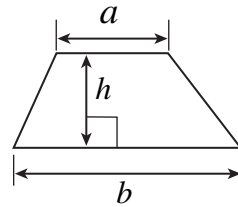
- In all calculations, show clearly how you work out your answer.



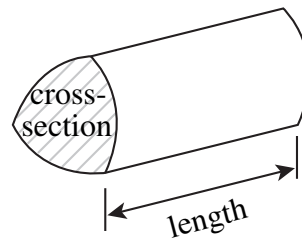
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Formulae Sheet: Foundation Tier

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

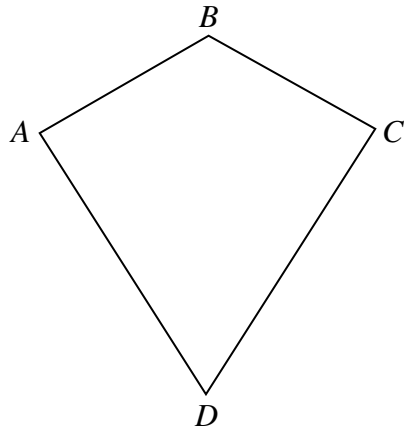


Volume of prism = area of cross-section \times length



Answer **all** questions in the spaces provided.

1 The diagram shows a kite $ABCD$.



Tick a box to show whether each statement is true or false.

1 (a) AB is parallel to CD .

True

False

(1 mark)

1 (b) Angle $A =$ Angle C

True

False

(1 mark)

1 (c) The kite has two lines of symmetry.

True

False

(1 mark)

1 (d) The diagonals are at right angles to each other.

True

False

(1 mark)



2 (a) Here is a sequence of numbers.

8 15 22 29 36

2 (a) (i) Write down the next number in the sequence.

.....

Answer (1 mark)

2 (a) (ii) What is the rule for continuing the sequence?

.....

..... (1 mark)

2 (b) Here is a different sequence of numbers.

1 2 4 8 16

2 (b) (i) What is the rule for continuing this sequence?

.....

..... (1 mark)

2 (b) (ii) Circle the square numbers in this sequence.

1 2 4 8 16

(2 marks)

2 (b) (iii) Continue the sequence until you find another square number.

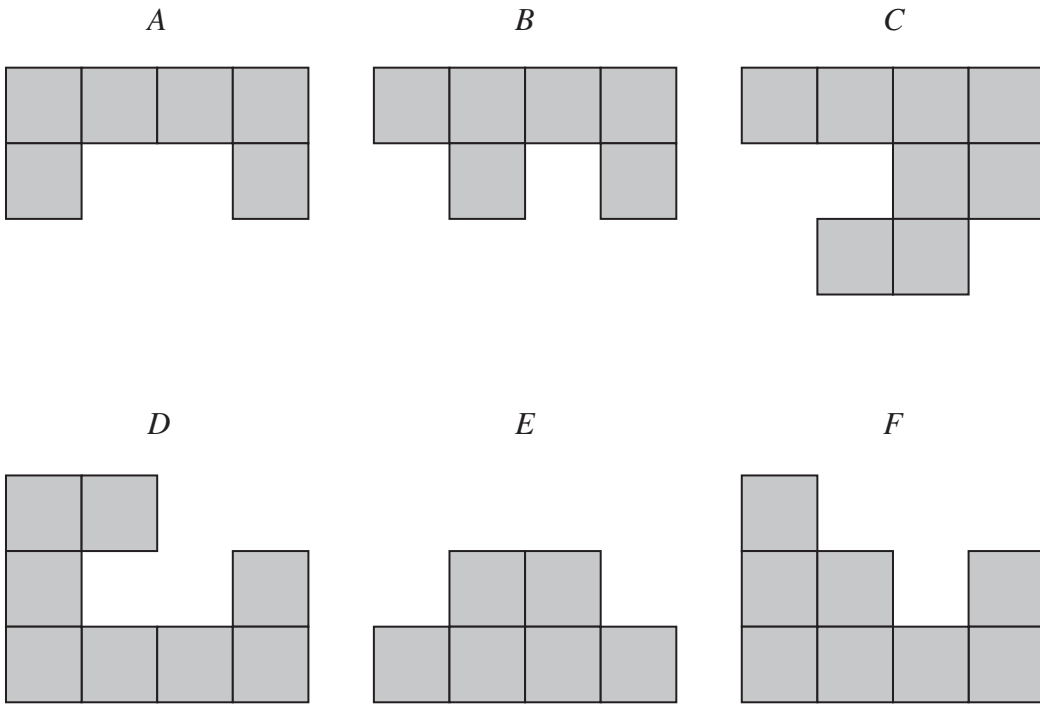
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.....

Answer (2 marks)



3 Here are six shapes made from centimetre squares.



3 (a) Which **two** shapes fit together to make a rectangle?

Answer and (1 mark)

3 (b) Which **two** shapes fit together to make a square?

Answer and (1 mark)

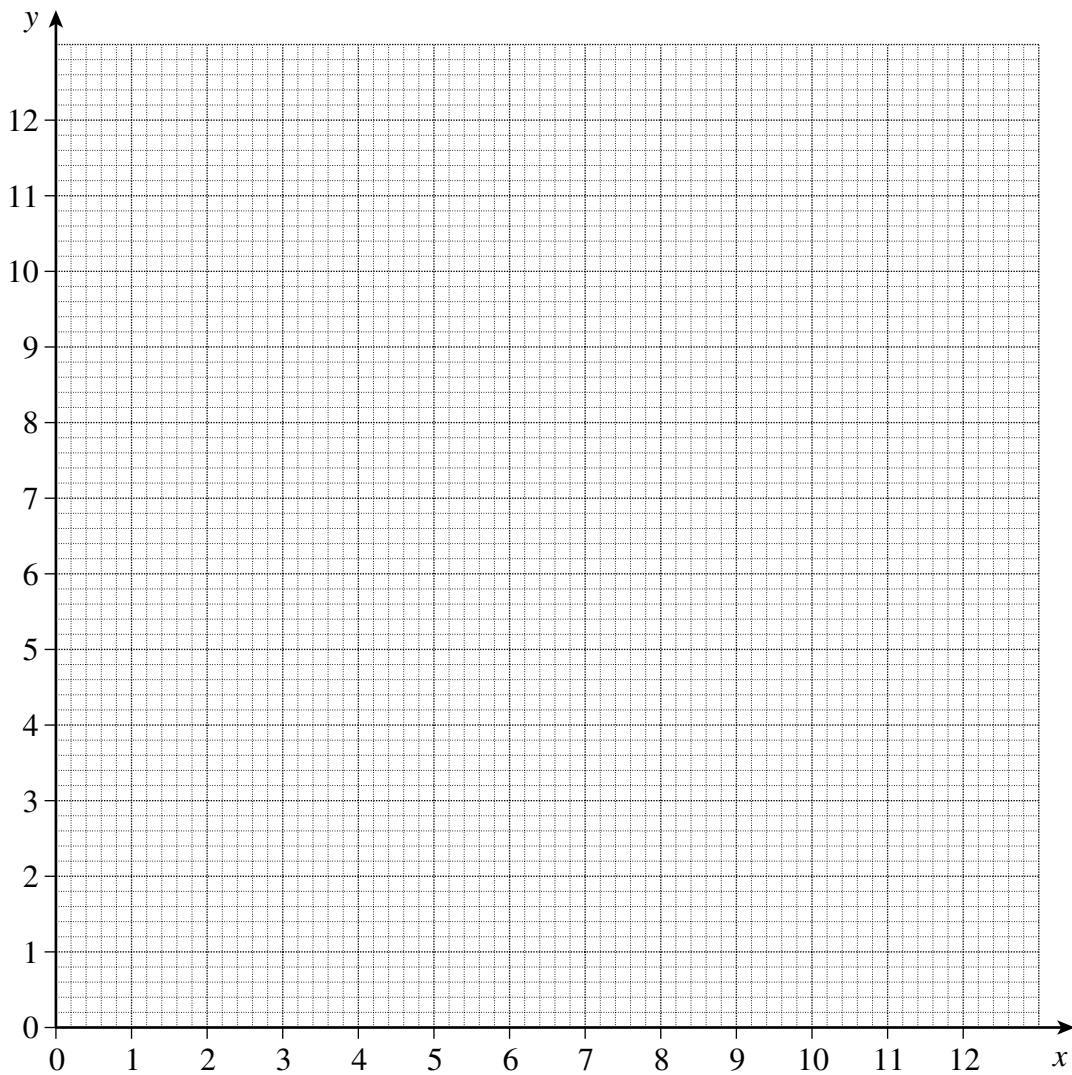
3 (c) Work out the area of shape *D*.
State the units of your answer.

.....

Answer (2 marks)



- 4 (a) Plot the points $A(2, 6)$ and $B(12, 6)$ on the grid.



(2 marks)

- 4 (b) Write down the coordinates of the midpoint of AB .

Answer (..... ,)

(1 mark)

- 4 (c) Draw the circle with AB as diameter.

(1 mark)



- 5 (a) Write $\frac{49}{77}$ as a fraction in its simplest form.

.....

Answer (1 mark)

- 5 (b) Which fraction is greater, $\frac{3}{10}$ or $\frac{3}{11}$?

Explain how you know.

Answer

Explanation

.....

(2 marks)

- 5 (c) Given that $\frac{1}{11} = 0.0909090909 \dots$

write down $\frac{1}{11}$ of 100

Give your answer to 1 decimal place.

.....

.....

Answer (2 marks)

- 5 (d) Simplify $\frac{77x}{7}$

.....

Answer (1 mark)

- 5 (e) Solve $\frac{y}{7} = 11$

.....

Answer $y =$ (1 mark)



6 A website shows ticket information for trains from London to Brighton.

Key ○ means that a ticket can be bought at the price shown.

Ticket	Depart	11:26	11:36	11:41	11:56	12:06
	Arrive	12:24	12:27	12:49	12:54	12:58
Advance £16.40		○		○	○	
Off-peak £19.00		○	○	○	○	○
Anytime £28.50		○	○	○	○	○

6 (a) What is the cost of the cheapest ticket that can be bought for the 11:36 train?

Answer £ (1 mark)

6 (b) How long does the journey take on the 11:36 train?

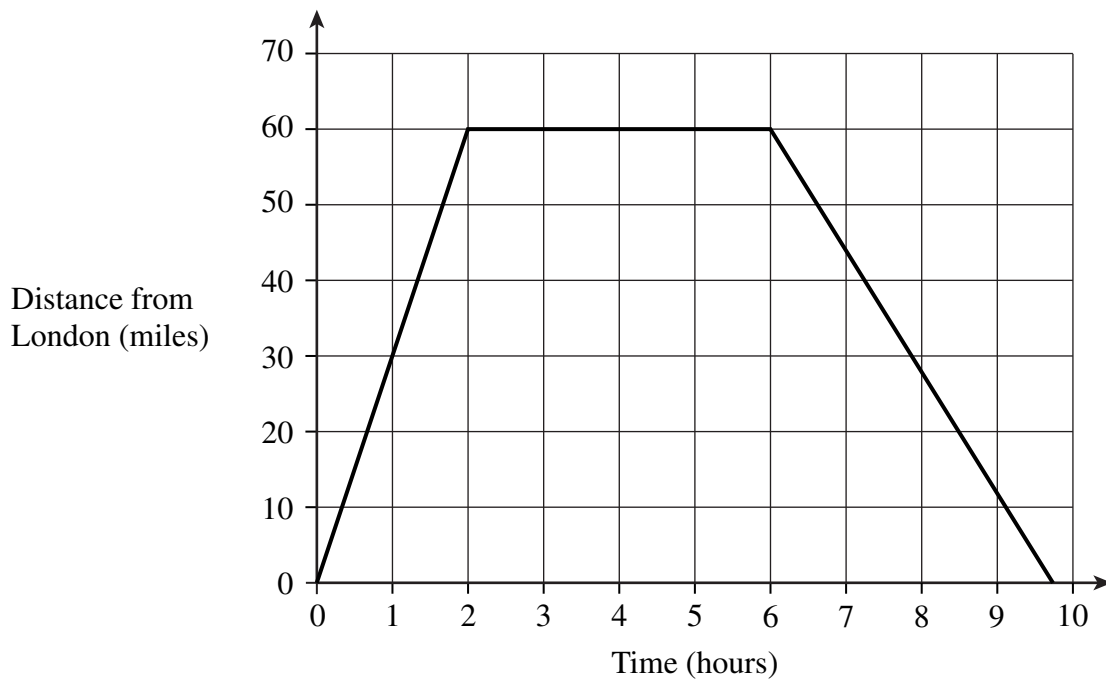
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.....

Answer minutes (2 marks)



6 (c) The graph shows a car journey from London to Brighton and back.



6 (c) (i) How long does this journey to Brighton take?

Answer hours (1 mark)

6 (c) (ii) How long is the stay in Brighton?

Answer hours (1 mark)

6 (c) (iii) What is the average speed of the car on the journey to Brighton?

.....

Answer mph (2 marks)

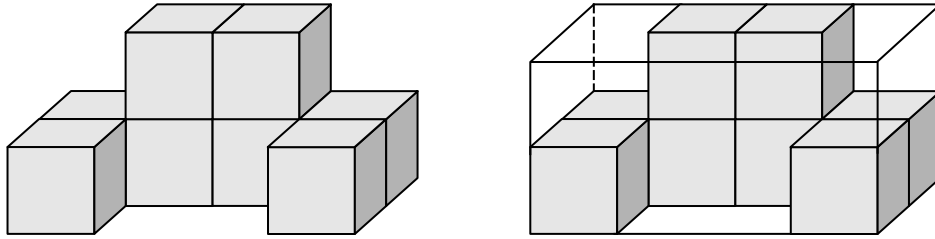
6 (d) Is the average speed on the return journey faster or slower?
 Explain your answer.

.....

 (1 mark)



7 Centimetre cubes are fitted together to make a solid as shown on the left.



The solid is packed into a box as shown on the right.

The box is a cuboid.

Work out the volume of the box.

.....

.....

.....

Answer cm^3 (3 marks)



8 A shopkeeper uses this formula to calculate the total cost when customers pay by monthly instalments.

$$C = d + 24 \times m$$

C is the total cost in pounds.

d is the deposit in pounds.

m is the monthly instalment in pounds.

8 (a) Work out the total cost, C , when $d = 16$ and $m = 10$

.....
.....
.....

Answer £ (2 marks)

8 (b) How many years does it take to finish paying for goods using this formula?

.....

Answer years (1 mark)

8 (c) The total cost of a sofa is £600.
The deposit, d , is 20% of the total cost.

8 (c) (i) Show that the value of d is 120.

.....
.....
..... (1 mark)

8 (c) (ii) Work out the value of m .

.....
.....
.....

Answer (3 marks)



9 (a) Use the following numbers to complete each conversion.

1.75 2.2 4.5 8 30

1 kilogram is approximately pounds

1 gallon is approximately litres

1 litre is approximately pints

1 foot is approximately centimetres

5 miles is approximately kilometres

(3 marks)

9 (b)

1 mile per hour = 0.45 metres per second
--

9 (b) (i) Convert 30 miles per hour into metres per second.

.....

Answer m/s (2 marks)

9 (b) (ii) A car is travelling at 30 miles per hour.

How many metres will it travel in 10 seconds?

.....

Answer metres (2 marks)



10 (a) Solve the equation $7x - 3 = 60$

.....

Answer $x =$ (2 marks)

10 (b) y is an odd integer.

For each statement tick the correct box.

	True	False
$7y - 3$ is never odd	<input type="checkbox"/>	<input type="checkbox"/>
$7y - 3$ is never prime	<input type="checkbox"/>	<input type="checkbox"/>
$7y - 3$ is never a multiple of 7	<input type="checkbox"/>	<input type="checkbox"/>

(3 marks)

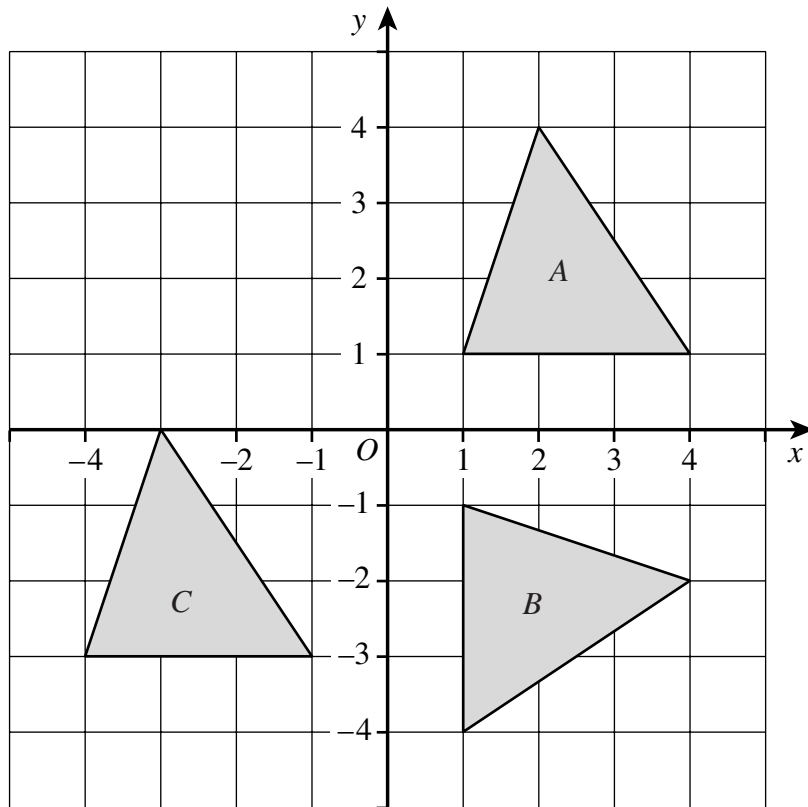
10 (c) Write down **one** integer which satisfies the inequality $7w > 63$

Answer (1 mark)

Turn over for the next question



11 Triangles A, B and C are shown on the grid.



11 (a) Describe fully the **single** transformation that maps triangle A onto triangle B.

.....

.....

.....

(3 marks)

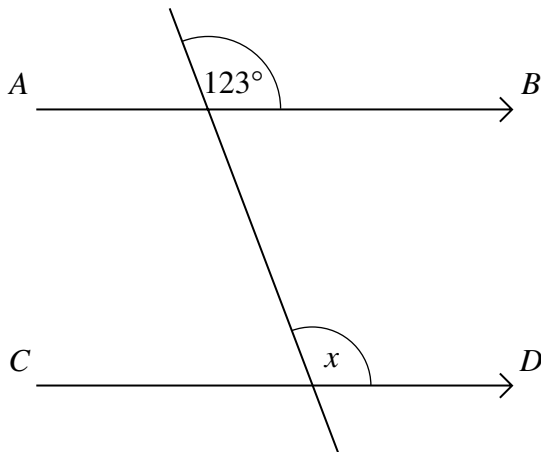
11 (b) Write down the vector which describes the translation of triangle A onto triangle C.

Answer $\begin{pmatrix} \dots\dots\dots \\ \dots\dots\dots \end{pmatrix}$

(1 mark)



12 (a) In the diagram, AB is parallel to CD .



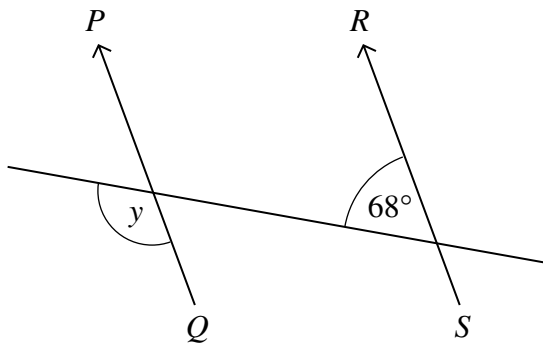
Not drawn accurately

Write down the value of x .
Give a reason for your answer.

Answer degrees

Reason
(2 marks)

12 (b) In the diagram, PQ is parallel to RS .



Not drawn accurately

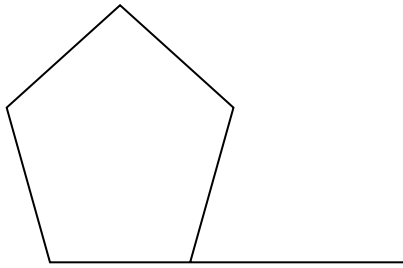
Work out the value of y .

.....
.....

Answer degrees (2 marks)



- 13 (a) The diagram shows a regular pentagon. One side has been extended.



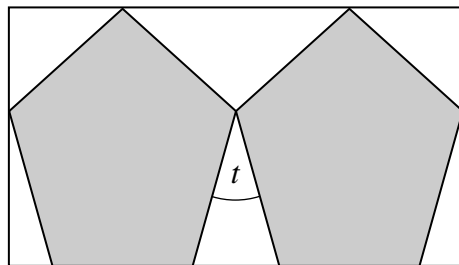
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- 13 (a) (i) Which **one** of these statements is true?

- A The exterior angle of a regular pentagon is equal to $360^\circ \div 5 = 72^\circ$
- B The interior angle of a regular pentagon is equal to $360^\circ \div 5 = 72^\circ$
- C The exterior angle of a regular pentagon is equal to $360^\circ - 72^\circ = 288^\circ$
- D The interior angle of a regular pentagon is equal to $360^\circ - 72^\circ = 288^\circ$

Answer (1 mark)

- 13 (a) (ii) The diagram shows two identical regular pentagons touching inside a rectangle.



Not drawn accurately

Work out the value of *t*.

.....

.....

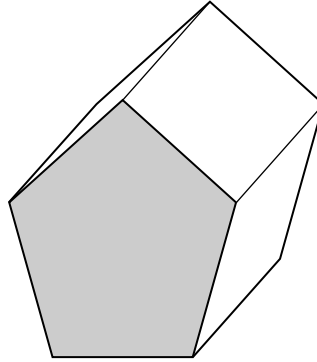
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Answer degrees (2 marks)



- 13** (b) The diagram shows a pentagonal prism.
The area of the cross-section is 90 cm^2 .
The volume of the prism is 720 cm^3 .



Work out the length of the prism.

.....
.....

Answer cm (2 marks)

END OF QUESTIONS



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