

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
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TOTAL	



General Certificate of Secondary Education
Foundation Tier
November 2010

Mathematics (Modular) (Specification B) Module 5

43055/1F

F

Paper 1 Non-calculator

Tuesday 9 November 2010 9.00 am to 10.15 am

<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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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. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

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

Advice

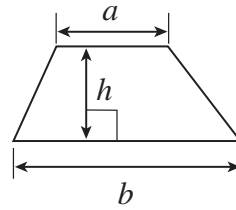
- In all calculations, show clearly how you work out your answer.



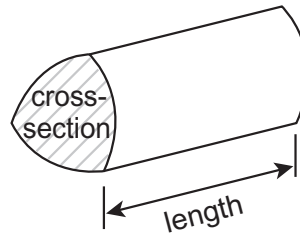
N 0 V 1 0 4 3 0 5 5 1 F 0 1

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 Here is a list of numbers.

5 7 12 13 18 24 25 27

From the list,

1 (a) write down the number that is a multiple of 8

Answer (1 mark)

1 (b) write down the number that is a factor of 28

Answer (1 mark)

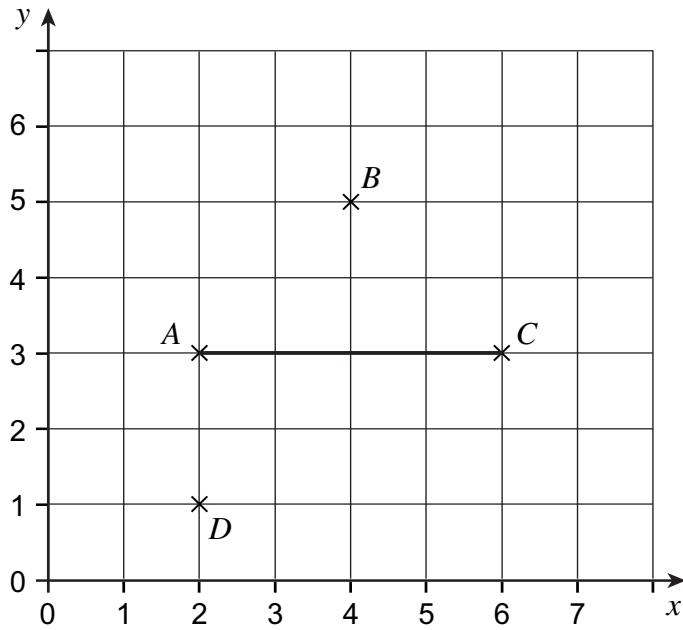
1 (c) write down the number that is a multiple of 9 and a factor of 36.

Answer (1 mark)

Turn over for the next question



2 AC is a straight line.



- 2 (a) Draw a line that is parallel to AC and passes through B . (1 mark)
- 2 (b) Draw a line that is at right angles to AC and passes through D . (1 mark)
- 2 (c) (i) Mark with a cross, the point that is half-way between C and D . Label the point E . (1 mark)
- 2 (c) (ii) Mark with a cross, the point with coordinates $(6, 1)$. Label the point F . (1 mark)



- 3 (a)** Complete the table to show the properties of the shapes.
The first one has been done for you.

Property Shape	The interior angles are equal	All the sides are equal	It has eight sides	All the interior angles are obtuse
Square	✓	✓	✗	✗
Rectangle				
Equilateral Triangle				
Regular Pentagon				

(3 marks)

- 3 (b)** Write down the name of the shape for which all four properties are true.

Answer (1 mark)

Turn over for the next question



4 Here is a sequence of numbers.

35 30 25 20 15

4 (a) Write down the next number in the sequence.

Answer (1 mark)

4 (b) Write down the rule for continuing the sequence.

Answer (1 mark)

4 (c) Which of the following expressions is the n th term of the sequence?
Circle the correct answer.

$5n + 30$ $5n - 40$ $30 - 5n$ $40 - 5n$

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

4 (d) Here is a different sequence of numbers.

60 54 48 42 36

4 (d) (i) Both sequences are continued.

Write down **two** numbers which are in both sequences.

.....
.....
Answer and (2 marks)

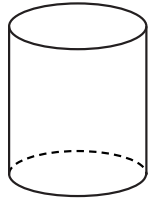
4 (d) (ii) Is -25 in both sequences?
Give a reason for your answer.

Yes No

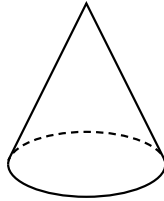
.....
.....
(1 mark)



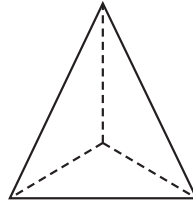
5 Here are five solid shapes.



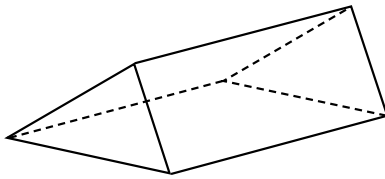
A



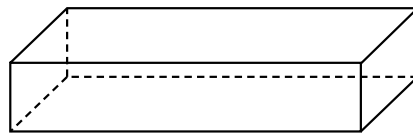
B



C



D



E

5 (a) (i) What name is given to shape *A*?

Answer (1 mark)

5 (a) (ii) What name is given to shape *B*?

Answer (1 mark)

5 (b) How many edges does shape *C* have?

Answer (1 mark)

5 (c) How many faces does shape *D* have?

Answer (1 mark)

5 (d) Shape *E* is a cuboid.
All the faces are rectangles.

How many planes of symmetry does shape *E* have?

Answer (1 mark)



6 In each part, circle the odd one out.
Give a reason for your answer.

6 (a) $\frac{1}{2}$ $\frac{3}{6}$ $\frac{2}{3}$ $\frac{5}{10}$

Reason

.....

(1 mark)

6 (b) 10% of 60 20% of 30 3% of 200 100% of 600

Reason

.....

(1 mark)

6 (c) $\sqrt{144}$ $\sqrt{192}$ $\sqrt{121}$ $\sqrt{169}$

Reason

.....

(1 mark)

6 (d) Rectangle Hexagon Trapezium Parallelogram

Reason

.....

(1 mark)

6 (e) $x + 4 = 12$ $x - 5 = 13$ $4x = 32$

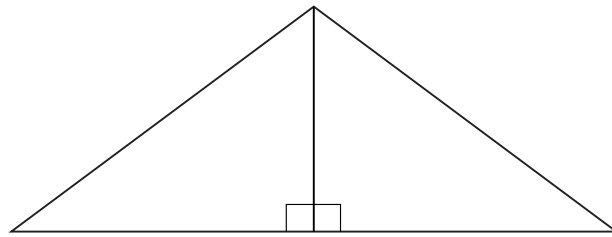
Reason

.....

(1 mark)



7 Two congruent right-angled triangles are put together to make an isosceles triangle as shown.



7 (a) Use measurements to work out the perimeter of the isosceles triangle.

.....
.....

Answer cm (2 marks)

7 (b) Work out the area of the isosceles triangle.
State the units of your answer.

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

Answer (3 marks)

7 (c) Draw a sketch to show how the two right-angled triangles can be put together to make a kite.

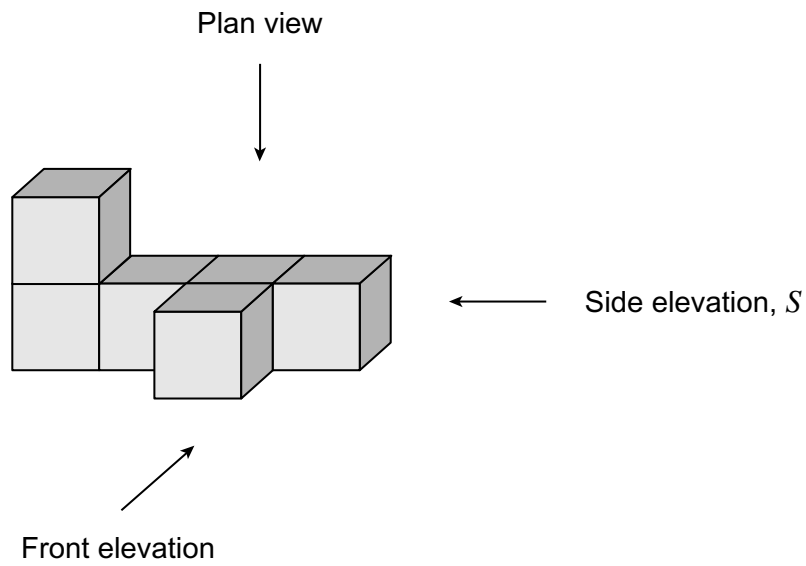
(1 mark)

11

Turn over ►



- 8 This solid shape is made from cubes.



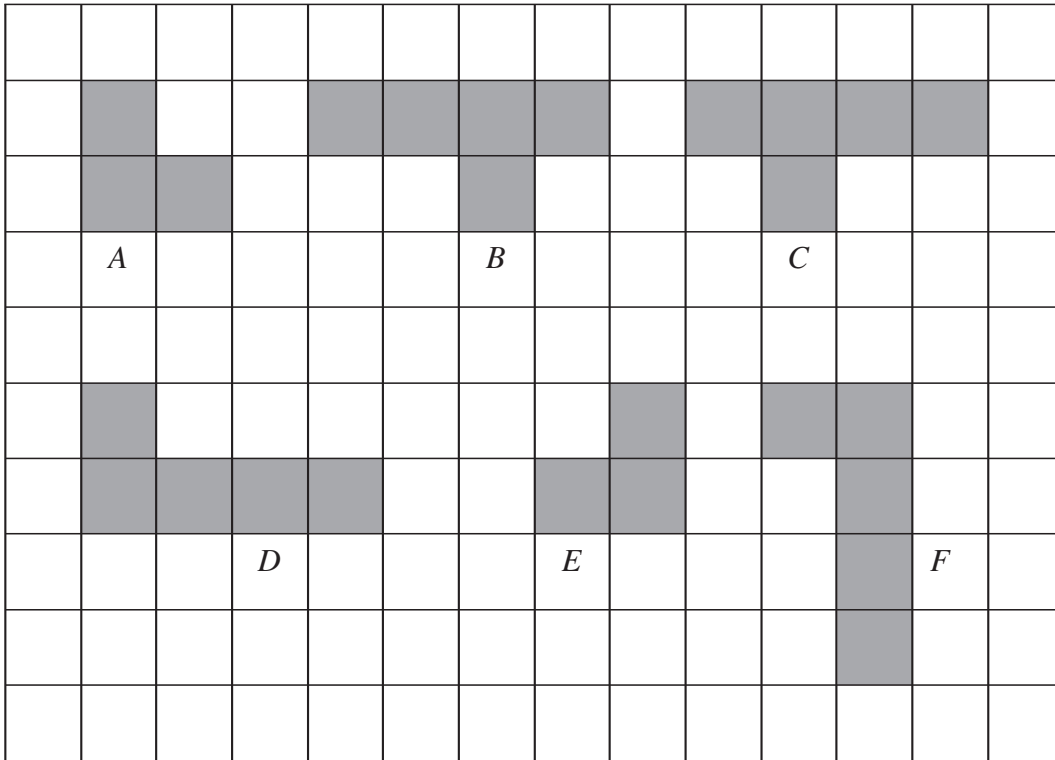
- 8 (a) How many cubes are there in the solid shape?

Answer

(1 mark)



8 (b) Here are some diagrams.



8 (b) (i) Which is the plan view?

Answer (1 mark)

8 (b) (ii) Which is the front elevation?

Answer (1 mark)

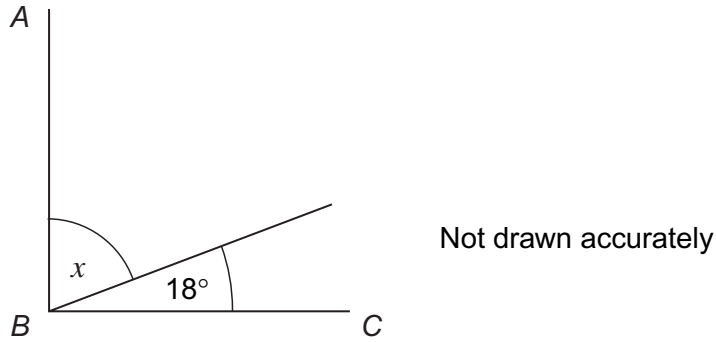
8 (b) (iii) Which is the side elevation, *S*?

Answer (1 mark)

Turn over for the next question



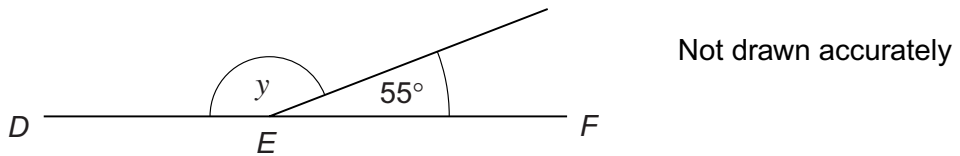
9 (a) Angle ABC is a right angle.



Work out the value of x .

.....
Answer $x =$ degrees (1 mark)

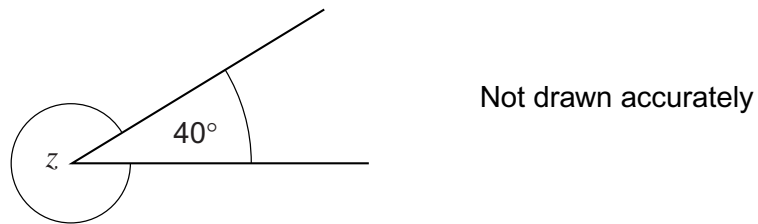
9 (b) DEF is a straight line.



Work out the value of y .

.....
Answer $y =$ degrees (1 mark)

9 (c) The diagram shows two angles at a point.

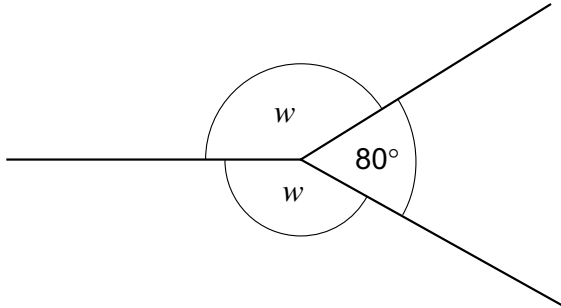


Work out the value of z .

.....
Answer $z =$ degrees (1 mark)



9 (d) The diagram shows three angles at a point.



Not drawn accurately

Work out the value of w .

.....

.....

.....

.....

Answer $w =$ degrees (3 marks)

Turn over for the next question



10 The values of some expressions for $x = 4$ and $x = 7$ are shown.

Expression	Value when $x = 4$	Value when $x = 7$
x^2	16	
$2x$		14
	9	12

10 (a) Complete the **three** missing entries in the table.

.....

 (3 marks)

10 (b) Work out the value of $x^2 + 3x + 5$ when $x = 4$

.....

 Answer (2 marks)

11 (a) Simplify $2w + 8w$

.....
 Answer (1 mark)

11 (b) Solve $6x = 24$

.....
 Answer $x =$ (1 mark)

11 (c) Solve $3(y + 2) = 30$

.....

 Answer $y =$ (3 marks)



12 The difference between the squares of two whole numbers is sometimes a prime number.

For example $5^2 - 2^2 = 21$ and 21 is **not** prime

but $4^2 - 3^2 = 7$ and 7 is prime

12 (a) Find a different example where the answer is **not** prime.

.....
.....

Answer (1 mark)

12 (b) Find a different example where the answer is prime.

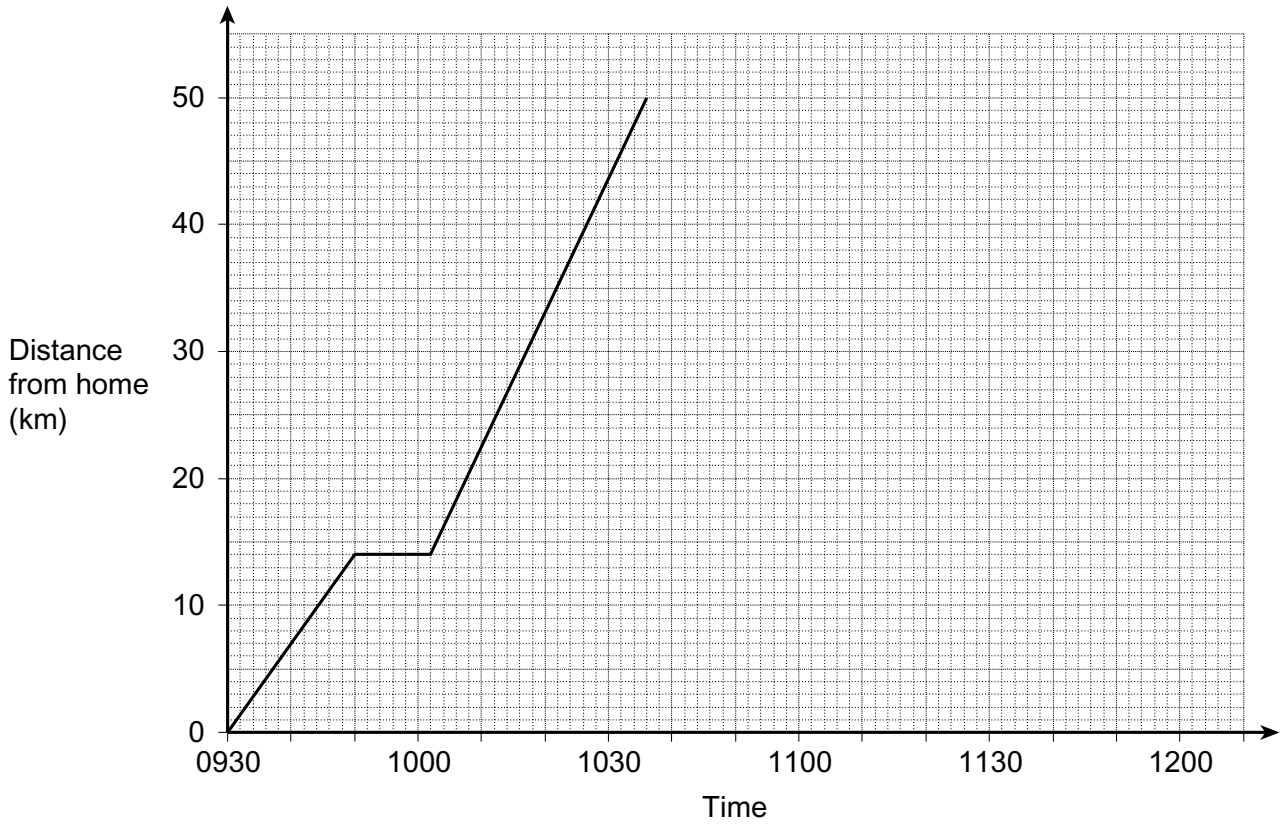
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Answer (1 mark)

Turn over for the next question



13 Marcus leaves home at 0930 to drive to Leeds, 50 km away. He stops at a petrol station on his way to Leeds. The graph shows his journey to Leeds.



13 (a) How far has he gone before he stops at the petrol station?

Answer km (1 mark)

13 (b) How many minutes is he at the petrol station?

.....

Answer minutes (1 mark)



13 (c) Marcus stays in Leeds until 1110.
He leaves Leeds and arrives home at 1150.

13 (c) (i) Complete the graph. (1 mark)

13 (c) (ii) Calculate his average speed for the return journey.
Give your answer in kilometres per hour.

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

Answer km/h (2 marks)

13 (d) Here is a formula for working out the total petrol costs, T (£), for one year.

$$T = \frac{dA}{p}$$

The table shows information for Marcus.

Distance travelled in one year (d)	30 000 kilometres
Average cost of petrol (A)	£1.10 per litre
Petrol consumption (p)	15 kilometres per litre

13 (d) (i) Work out his total petrol costs for one year.

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

Answer £ (3 marks)

13 (d) (ii) In the following year Marcus travels fewer kilometres but his total petrol costs stay the same.

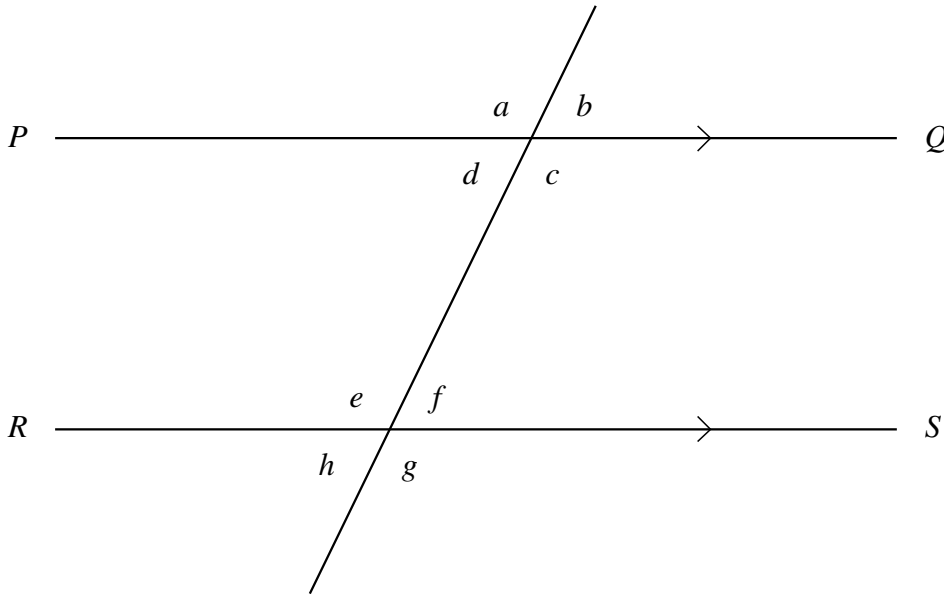
Give a possible reason for this.

.....
.....

(1 mark)



14 On the diagram PQ is parallel to RS .



14 (a) Which angle is vertically opposite to angle a ?

Answer (1 mark)

14 (b) Which angle is alternate to angle f ?

Answer (1 mark)

14 (c) Which angle is corresponding to angle c ?

Answer (1 mark)



15 Solve $5(x - 4) = 3x + 7$

.....

.....

.....

.....

Answer $x =$ (3 marks)

END OF QUESTIONS

6



There are no questions printed on this page

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**

