

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use
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General Certificate of Secondary Education  
June 2009



**MATHEMATICS (MODULAR) (SPECIFICATION B)**  
**Module 5 Foundation Tier**  
**Paper 2 Calculator**

43055/2F

**F**

Monday 1 June 2009 9.00 am to 10.15 am

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• a calculator</li> <li>• mathematical instruments.</li> </ul>	
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For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16	
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.
- Use a calculator where appropriate.
- Do all rough work in this book.
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.14 unless another value is given in the question.

**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**

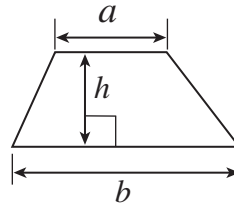
- In all calculations, show clearly how you work out your answer.



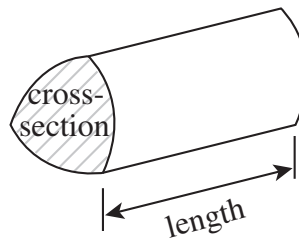
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**Formulae Sheet: Foundation Tier**

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

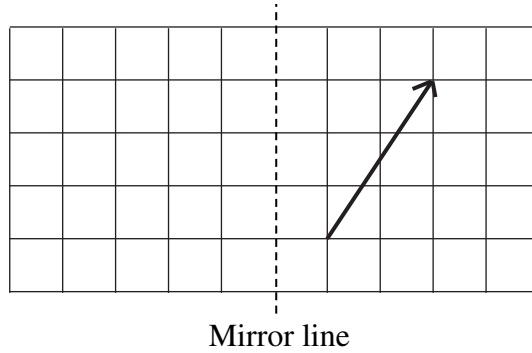


**Volume of prism** = area of cross-section  $\times$  length



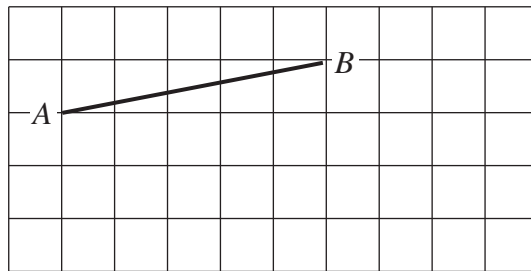
Answer **all** questions in the spaces provided.

- 1 (a) Draw the reflection of the arrow in the mirror line.



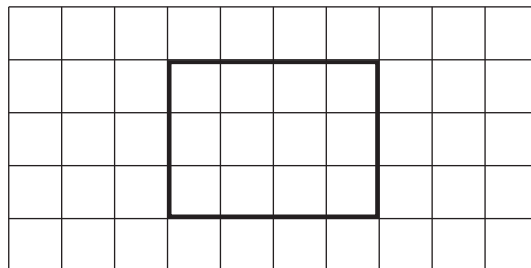
(1 mark)

- 1 (b) On the grid, draw a line parallel to the line  $AB$ .



(1 mark)

- 1 (c) Draw the lines of symmetry on the rectangle.



(2 marks)



2 Here is a list of names of shapes and solids.

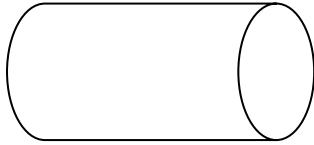
parallelogram  
hexagon  
scalene triangle

cube  
isosceles triangle  
trapezium

cuboid  
octagon  
cylinder

Use the list to label each diagram correctly.

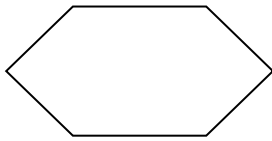
2 (a)



.....

(1 mark)

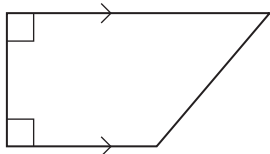
2 (b)



.....

(1 mark)

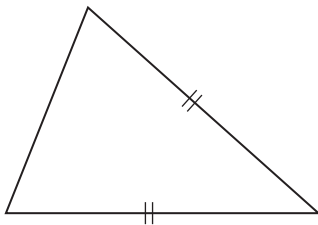
2 (c)



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(1 mark)

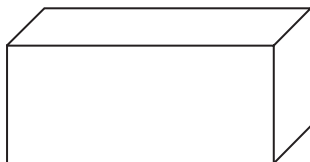
2 (d)



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(1 mark)

2 (e)

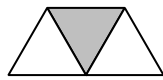


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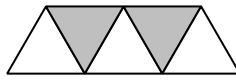
(1 mark)



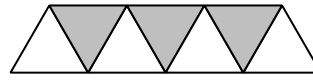
3 Here is a sequence of triangle patterns.



Pattern 1



Pattern 2



Pattern 3

3 (a) Draw Pattern 4.

(1 mark)

3 (b) Complete the table.

	Pattern 1	Pattern 2	Pattern 3	Pattern 4
Number of shaded triangles	1	2	3	
Total number of triangles	3	5		

(2 marks)

3 (c) Harry says that Pattern 10 has a total of 21 triangles.

Is he correct?  
Explain your answer.

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(2 marks)

3 (d) In Pattern 25 the total number of triangles is 51.

What is the total number of triangles in Pattern 26?

Answer ..... (1 mark)



4 Here are instructions for cooking a turkey.

Cook for 15 minutes at 220°C.  
Reduce the oven temperature to 160°C.  
Then cook for 40 minutes per kilogram.

Kirsty has a 7 kilogram turkey.

4 (a) Show that it takes 4 hours and 55 minutes to cook.

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(3 marks)

4 (b) Kirsty plans to take the turkey out of the oven at 12:45

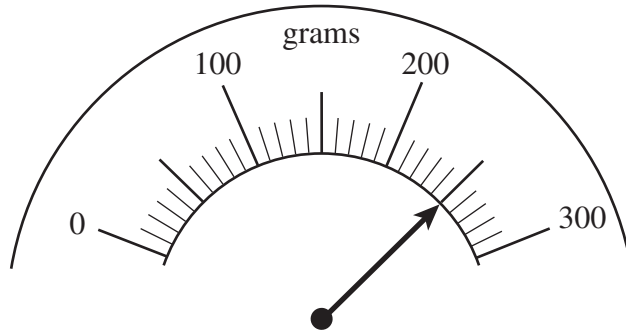
At what time must she start to cook it?

.....  
.....

Answer ..... (2 marks)



5 Ashley is using kitchen scales to weigh flour for a cake.



5 (a) What is the weight of flour shown by the scales?

Answer ..... grams (1 mark)

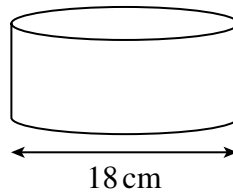
5 (b) The recipe says that Ashley needs half a pound of flour.  
1 kilogram is equal to 2.2 pounds.

Has Ashley weighed out enough flour?  
Explain your answer.

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(3 marks)

5 (c) Ashley puts the cake mixture into a circular tin with diameter 18 cm.



What is the circumference of a circle with diameter 18 cm?

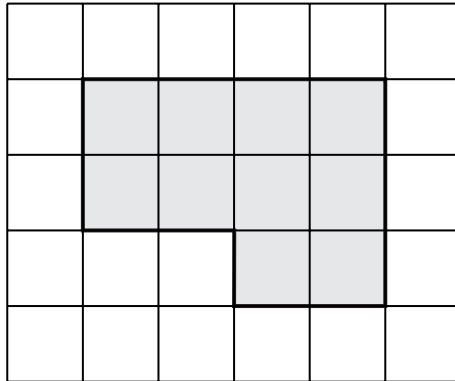
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Answer ..... cm (2 marks)



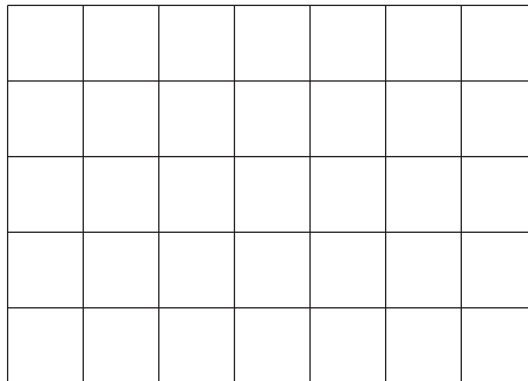
6 The grids in this question are made of one centimetre squares.

6 (a) Find the perimeter of the shaded shape.



.....  
Answer ..... cm (1 mark)

6 (b) On the grid, draw a rectangle which has a perimeter equal to 10 cm.

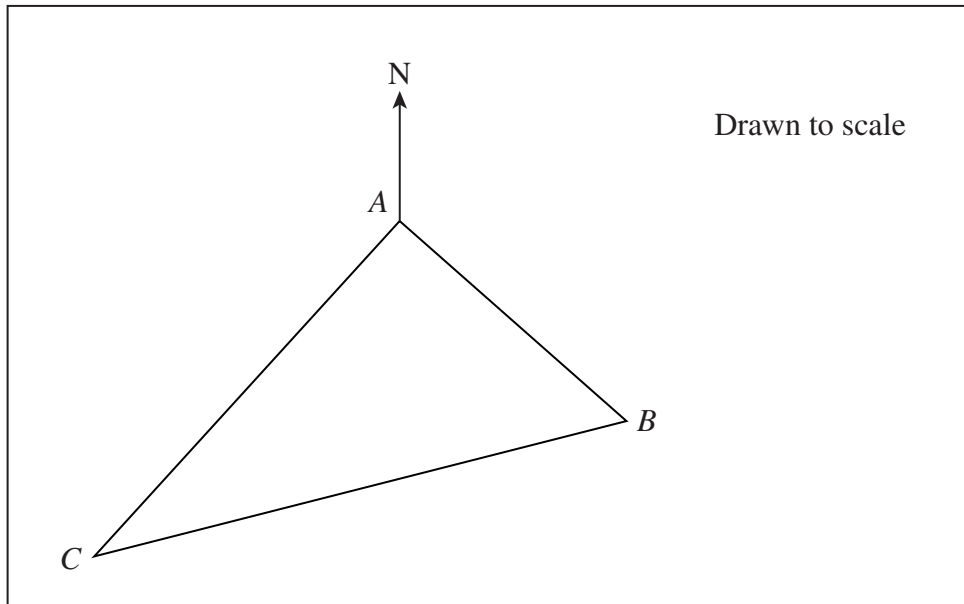


(2 marks)





7 The positions of three towns, *A*, *B* and *C* are shown on the map.  
The distance from town *A* to town *B* is 12 kilometres.



7 (a) (i) Measure and write down the length of *AB*.

Answer ..... cm (1 mark)

7 (a) (ii) Use your answer to part (i) to complete the scale for the map.

.....

Answer 1 cm represents ..... km (1 mark)

7 (b) Work out the actual distance from town *A* to town *C*.

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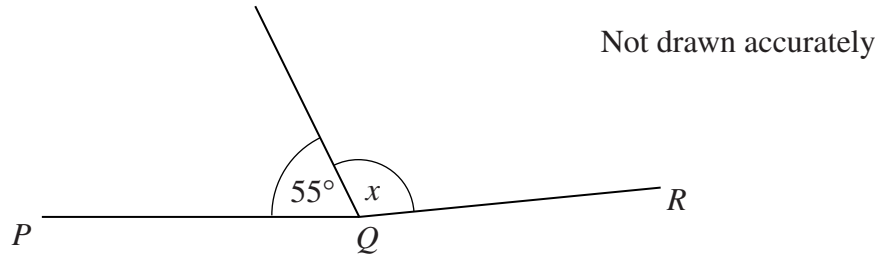
Answer ..... km (2 marks)

7 (c) Measure and write down the three-figure bearing of *B* from *A*.

Answer ..... ° (1 mark)



8 (a) In the diagram, angle  $x$  is  $115^\circ$ .



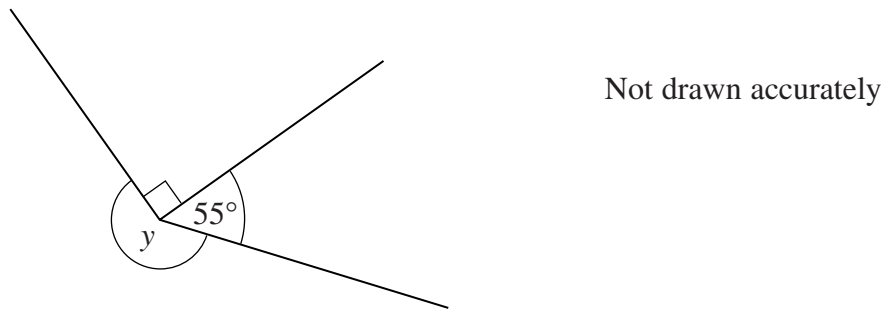
Explain why  $PQR$  is **not** a straight line.

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(2 marks)

8 (b)



Calculate angle  $y$ .

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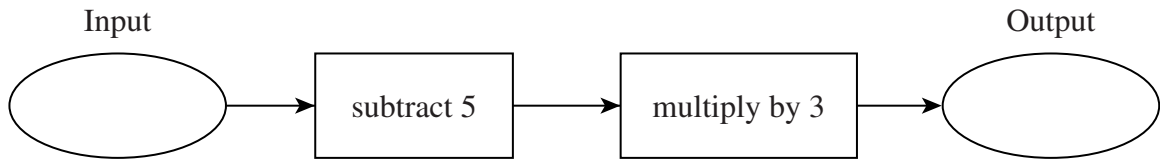
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.....

Answer ..... degrees (2 marks)



9 Here is a number machine.



9 (a) The input is 4.

What is the output?

.....

Answer ..... (1 mark)

9 (b) The output is 96.

What is the input?

.....

Answer ..... (2 marks)

**Turn over for the next question**



- 10** The perimeter of a parallelogram is 21.6 cm.  
The length of each short side is 3.2 cm.



Not drawn accurately

Calculate the length of each long side.

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.....

Answer ..... cm (3 marks)

- 11** (a) Simplify  $5c + 3c - c$

.....

Answer ..... (1 mark)

- 11** (b) Simplify  $7x + 2y - 3x - 5y$

.....

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Answer ..... (2 marks)

- 11** (c) Marek can make  $x$  free calls a month on his mobile phone.  
Sue can make 20 more free calls a month than Marek.

Write down an expression for the number of free calls Sue can make.

Answer ..... (1 mark)



11 (d) Simplify  $m^3 \times m^5$   
Answer ..... (1 mark)

11 (e) Simplify  $x^8 \div x^2$   
Answer ..... (1 mark)

12 (a) Calculate the positive square root of 1156.  
Answer ..... (1 mark)

12 (b) Calculate the cube of 1.4  
Answer ..... (1 mark)

12 (c) Calculate  $\frac{8.3 + 11.9}{2.7^2}$

12 (c) (i) Write down your full calculator display.  
Answer ..... (1 mark)

12 (c) (ii) Write your answer to 1 decimal place.  
Answer ..... (1 mark)

12 (d) Write down the reciprocal of 32  
Answer ..... (1 mark)

**Turn over for the next question**



13 (a) Complete the table of values for  $y = x(x + 3)$

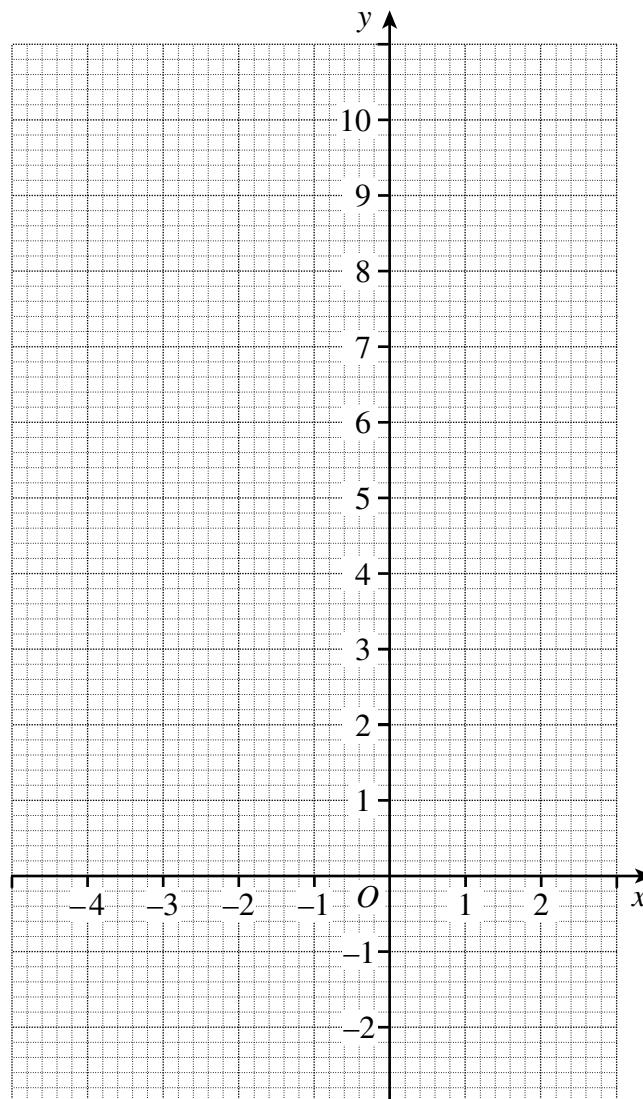
$x$	-4	-3	-2	-1	0	1	2
$y$	4	0		-2	0	4	

.....

.....

(2 marks)

13 (b) On the grid, draw the graph of  $y = x(x + 3)$  for values of  $x$  from -4 to +2.



(2 marks)



13 (c) Work out the coordinates of the lowest point on the graph.

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Answer (..... , ..... ) (2 marks)

14 Solve the equations.

14 (a)  $2(4x - 1) = 18$

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.....  
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Answer  $x =$  ..... (3 marks)

14 (b)  $5 + \frac{1}{4}y = 7$

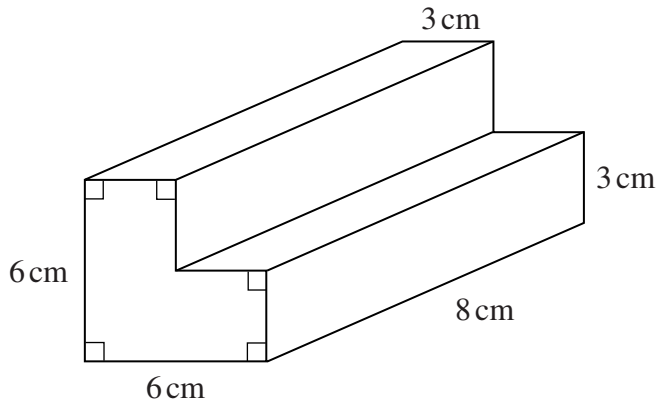
$y =$  .....  
.....  
.....

Answer  $y =$  ..... (2 marks)

**Turn over for the next question**



15 Sam has made wooden play blocks for a nursery class. Each block is a prism with an L-shaped cross-section.



Not drawn accurately

Work out the total surface area of the prism.

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Answer ..... cm<sup>2</sup> (4 marks)

**END OF QUESTIONS**

