General Certificate of Secondary Education
November 2009

MATHEMATICS (MODULAR) (SPECIFICATION B)   **43055/1F**
Module 5 Foundation Tier
Paper 1 Non-calculator

F

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Thursday 5 November 2009   9.00 am to 10.15 am

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.

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.

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2}(a+b)h$
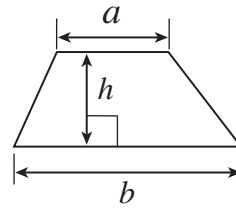
Volume of prism = area of cross-section × length
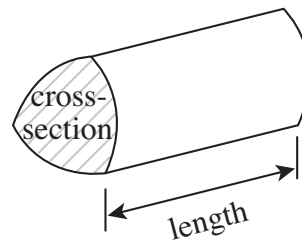
Answer **all** questions in the spaces provided.

1 (a)   Complete each sentence by writing in the correct metric unit.

1 (a)   (i)   The length of this page is 297 ....

(1 mark)

1 (a)   (ii)   The amount of paint in a large tin is 2.5 ....

(1 mark)

1 (a)   (iii)   The average speed of a bus is 35 .... per hour.

(1 mark)

1 (b)   Convert 5 kilometres into centimetres.

....

....

Answer .... cm   *(2 marks)*

Turn over for the next question

Turn over ▶

2 Jill buys some potatoes.
The scale shows the amount she buys.
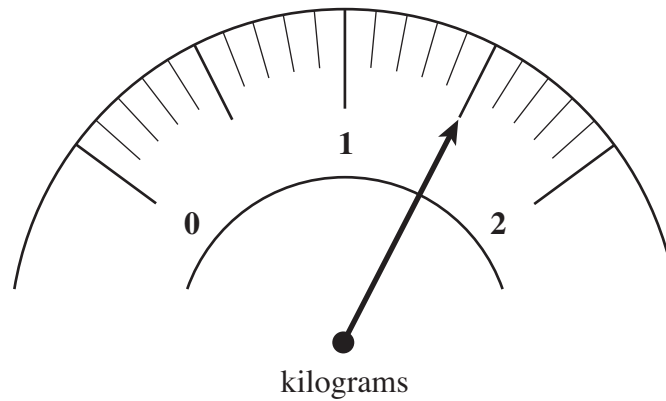
kilograms

2 (a) What amount of potatoes does she buy?

2 (a) (i) Give your answer in kilograms.

Answer .... kg   *(1 mark)*

2 (a) (ii) Give your answer in grams.

Answer .... g   *(1 mark)*

2 (b) Jill can use the scales to weigh 5 kilograms of flour.

Explain how.

....

....

....
(1 mark)

*Areas outside
the box will
not be scanned
for marking*

2 (c)

<div style="border:1px solid">

Chilli Potato Cakes

800 g potatoes
2 tablespoons flour
1 tablespoon olive oil
1 red chilli
1 teaspoon paprika
100 g Cheddar cheese
20 g coriander
Oil for frying

Serves 4 people

</div>

Jill makes Chilli Potato Cakes for six people.

2 (c) (i) How many tablespoons of flour does she use?

....

Answer .... *(1 mark)*

2 (c) (ii) Has Jill bought enough potatoes?
Show clearly how you use your answer from part (a) to decide.

....

....

....

....
(3 marks)

Turn over for the next question

7

Turn over ▶

3 Here is a method to divide numbers by four.

```
┌─────────────────────┐
│   Starting number   │
└─────────────────────┘
           │
           ▼
┌─────────────────────┐
│      Halve it       │
└─────────────────────┘
           │
           ▼
┌─────────────────────┐
│   Halve it again    │
└─────────────────────┘
           │
           ▼
┌─────────────────────┐
│    Final answer     │
└─────────────────────┘
```
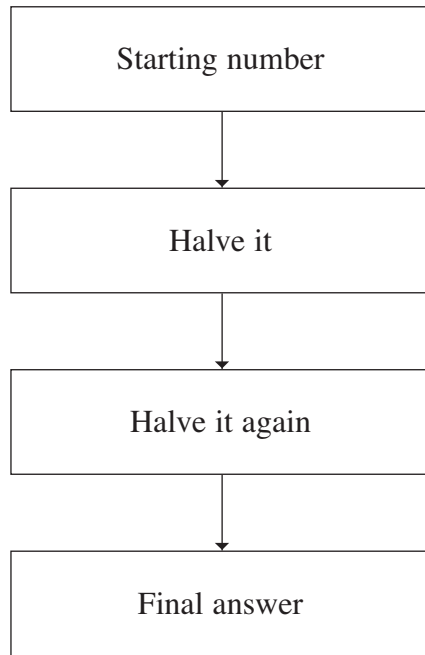
3 (a) (i) Dave's starting number is 18

What is his final answer?

....

Answer .... *(1 mark)*

3 (a) (ii) Trevor's final answer is $11\frac{1}{4}$

What is his starting number?

....

Answer .... *(1 mark)*

3 (b) (i) Sue's starting number is 20

What is her final answer?

....

Answer .... *(1 mark)*

*Areas outside
the box will
not be scanned
for marking*

3 (b) (ii) Find a different starting number to give a final answer that is a whole number.

....

Answer ....   *(1 mark)*

3 (c) Only **one** of the following statements is always true for the flow chart.

Tick the statement that is always true.

When the final answer is a whole number, the starting number is odd.

When the final answer is a whole number, the starting number ends in 0

When the final answer is a whole number, the starting number is
a multiple of 4

(1 mark)

4 (a) Complete the following.

4 (a) (i) $\dfrac{5}{6} = \dfrac{\boxed{}}{18}$

(1 mark)

4 (a) (ii) $\dfrac{6}{5} = \dfrac{30}{\boxed{}}$

(1 mark)

4 (b) Use **one** word to complete the sentence.

$\dfrac{6}{5}$ is the .... of $\dfrac{5}{6}$

(1 mark)

5   Here is a list of ten numbers.

   15   16   20   24   28   30   32   45   60   75

5   (a)   (i)   Use any four of these numbers to make a sequence.

   ....

   Answer ....   *(1 mark)*

5   (a)   (ii)   Describe the rule for continuing your sequence.

   ....
   (1 mark)

5   (b)   (i)   Use four different numbers from the list to make another sequence.

   ....

   Answer ....   *(1 mark)*

5   (b)   (ii)   Describe the rule for continuing this sequence.

   ....
   (1 mark)

5   (c)   The first term of a sequence is x.
   The term-to-term rule for the sequence is 'Add 7'.

5   (c)   (i)   Write an expression for the second term in this sequence.

   Answer ....   *(1 mark)*

5   (c)   (ii)   The sum of the first three terms of this sequence is 45.

   Work out the value of x.

   ....

   ....

   ....

   Answer ....   *(3 marks)*

6 Here is a centimetre grid.
$A(4, 2)$, $B(4, 10)$ and $C(11, 10)$ are the coordinates of three vertices of a rectangle.
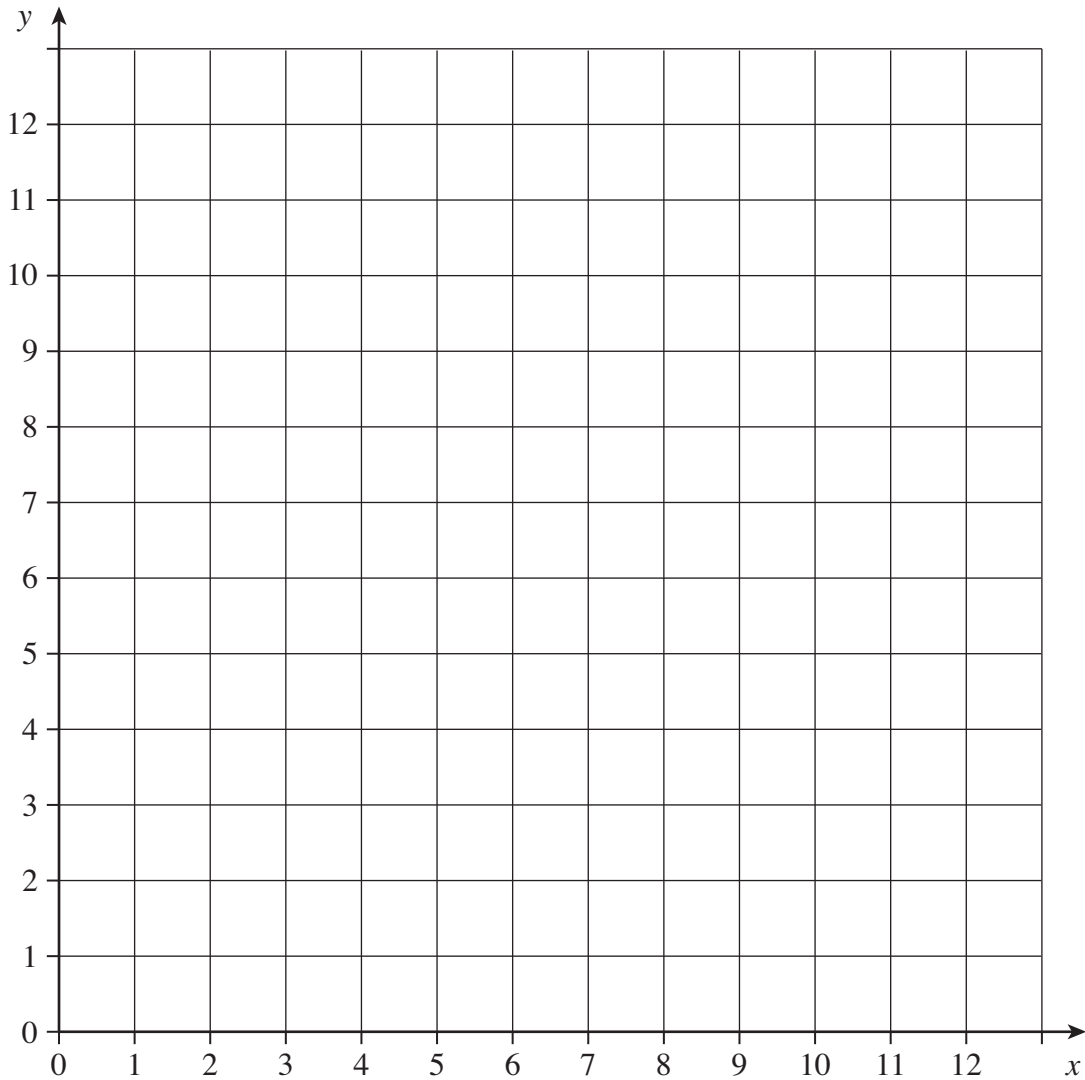
6 (a) Work out the perimeter of the rectangle.

....

....

Answer .... cm   *(3 marks)*

6 (b) Work out the area of the rectangle.

....

....

Answer .... cm^2 *(2 marks)*

13

Turn over ▶

7 The diagram shows a map.

7 (a) Which of the cities shown is furthest East?

Answer .... *(1 mark)*

7 (b) Which of the cities shown is South-West of Rome?

Answer .... *(1 mark)*

7 (c) Venice is 260 km from Florence.

Use this fact to work out the distance from Venice to Naples.
You **must** state any measurements you make.

....

....

....

....

Answer .... km *(3 marks)*

8 (a)   The front and side elevations of a solid shape are both circles.
The plan view is also a circle.

Write down the name of the shape.

Answer ....   *(1 mark)*

8 (b)   The shadow of a solid shape is a rectangle.
The solid shape could be some of the shapes in the list.

Circle **all** the shapes it could be.

Cuboid   Prism   Cone   Tetrahedron   Cube

(2 marks)

Turn over for the next question

8

9 The diagram shows a cuboid.

2 cm

3 cm

5 cm
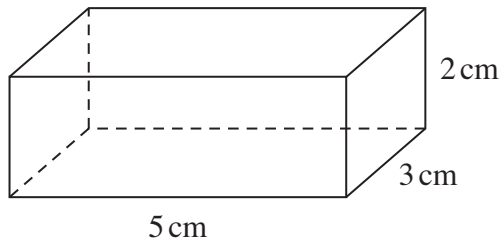
9 (a) Work out the volume of the cuboid.

....

....

Answer .... cm³   *(2 marks)*

9 (b) An incomplete net of the cuboid is shown on the centimetre grid.

Complete the net.
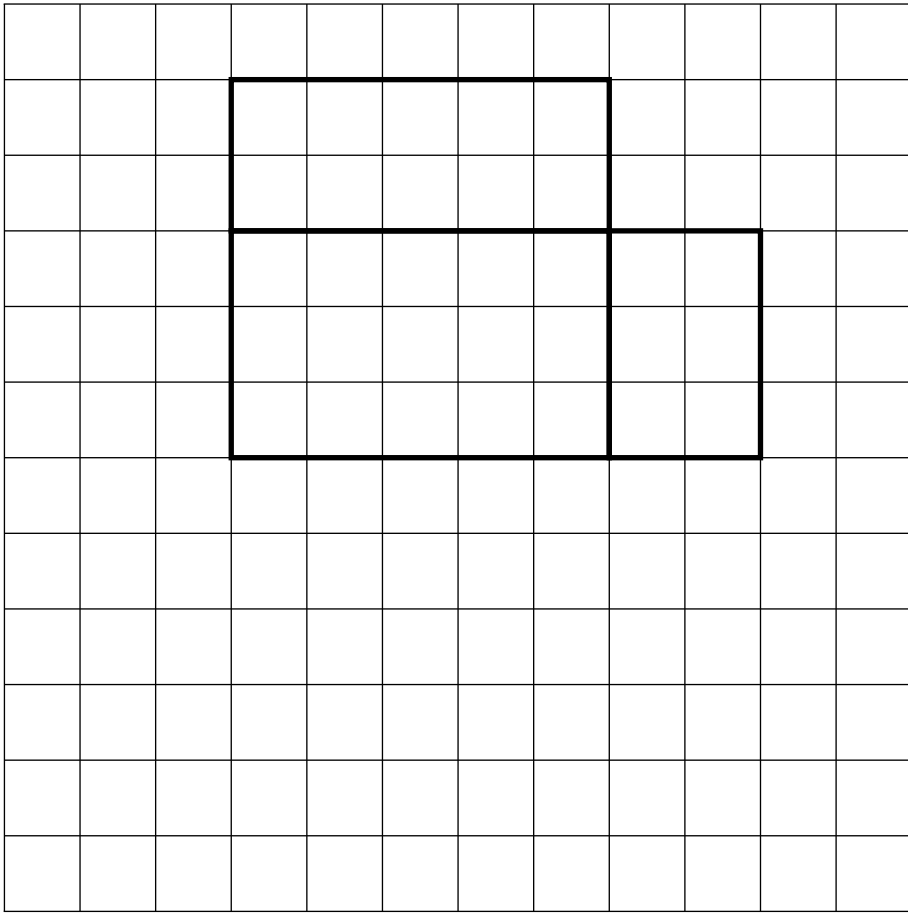
(3 marks)

9 (c) Work out the total surface area of the cuboid.
State the units of your answer.

....

....

....

....

Answer .... *(4 marks)*

9

Turn over ▶

10 (a) Simplify $3a + 6a - a$

....

Answer .... *(1 mark)*

10 (b) Work out the value of $5c - 4h$ when $c = 4$ and $h = 25$

....

....

....

Answer .... *(2 marks)*

10 (c) Solve $7x + 11 = 4(x - 7)$

....

....

....

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

11 (a) Rearrange the formula $r = \dfrac{C}{2\pi}$ to make C the subject.

....

....

Answer $C =$ .... *(1 mark)*

11 (b) Use $\pi = 3.14$ to work out the circumference of a circle of radius 3 cm.

....

....

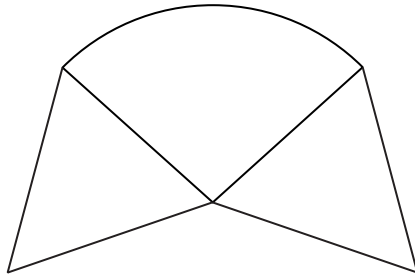Answer .... cm *(2 marks)*

11 (c)   This shape is made from a quarter-circle of radius 3 cm
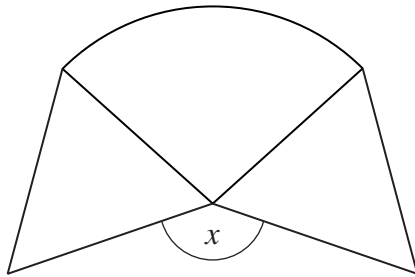and two equilateral triangles as shown.

Not drawn accurately

11 (c)   (i)   Work out the perimeter of the shape.

....

....

....

Answer .... cm   *(3 marks)*

11 (c)   (ii)   Work out angle *x*.

Not drawn accurately

x

....

....

....

Answer .... degrees   *(3 marks)*

Turn over for the next question

Turn over ▶

15

12 (a) Circle the answer which describes the graph of $y = 2x - 1$

Smooth curve   Straight sloping line   Jagged line   Straight horizontal line

(1 mark)

12 (b) Work out the coordinates of **two** points that the graph of $y = 2x - 1$ passes through.

....

....

....

Answer (............ , ...) and (............ , ...)   *(2 marks)*

12 (c) Use the equation $y = 2x - 1$ to find the value of x when $y = 2.8$

....

....

....

Answer $x = $ ....   *(2 marks)*

END OF QUESTIONS

5