General Certificate of Secondary Education
June 2005

MATHEMATICS (MODULAR) (SPECIFICATION B)   **33005/F2**
Module 5 Foundation Tier
Paper 2 Calculator

F

Wednesday 15 June 2005 9.00 am to 10.00 am

**ASSESSMENT and
QUALIFICATIONS
ALLIANCE**

In addition to this paper you will require:
 • a calculator
 • mathematical instruments.

Time allowed: 1 hour

For Examiner's Use	
Pages	**Mark**
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
TOTAL	
Examiner's Initials	

Instructions
 • Use blue or black ink or ball-point pen. Draw diagrams in pencil.
 • Fill in the boxes at the top of this page.
 • Answer **all** questions in the spaces provided.
 • Do all rough work in this booklet.
 • If your calculator does not have a π button, take the value of π to be
   3.14 unless otherwise instructed in the question.

Information
 • The maximum mark for this paper is 60.
 • Mark allocations are shown in brackets.
 • Additional answer paper, graph paper and tracing paper will be issued
   on request and must be tagged securely to this answer booklet.
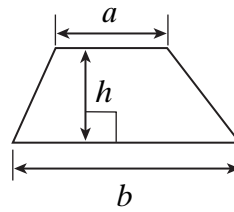 • You are expected to use a calculator where appropriate.

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

33005/F2

Formula Sheet: Foundation Tier

You may need to use the following formula:

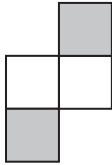**Area of trapezium** $= \frac{1}{2}(a+b)h$

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

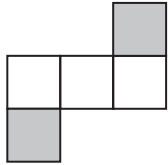**1** Patterns are made from shaded and unshaded squares.

Pattern 1   Pattern 2   Pattern 3   Pattern 4   Pattern 5
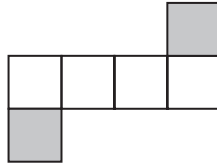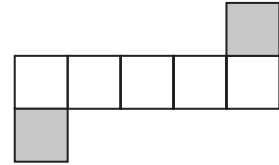
(a)   Draw Pattern 6.

(1 mark)

(b)   How many shaded squares will there be in Pattern 20?

....

Answer ....   *(1 mark)*

(c)   How many unshaded squares will there be in Pattern 20?

....

....

Answer ....   *(1 mark)*

(d)   Which pattern will have 30 squares altogether?

....

....

Answer ....   *(1 mark)*

Turn over ▶

2 Give the values shown by the arrows on these scales.

(a)

60   70   80   90

cm

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

(b)

500

400

300

kg

200
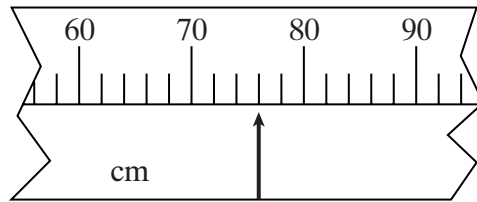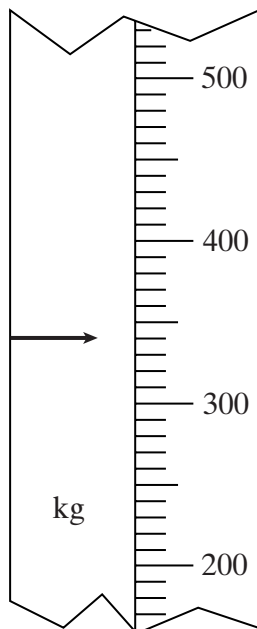
Answer .... kg   *(1 mark)*

(c)
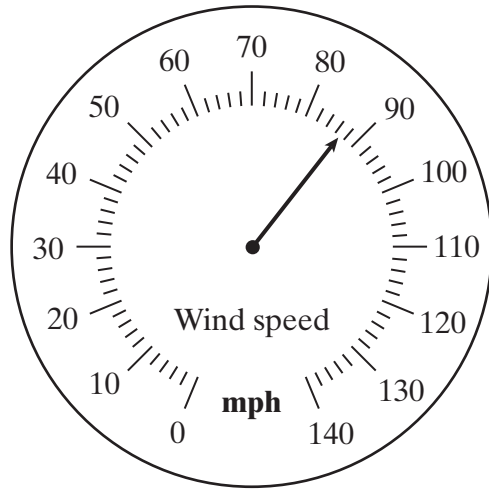
Answer .... mph   *(1 mark)*

TURN OVER FOR THE NEXT QUESTION

3 Some shapes are drawn on a 1 centimetre triangular grid.
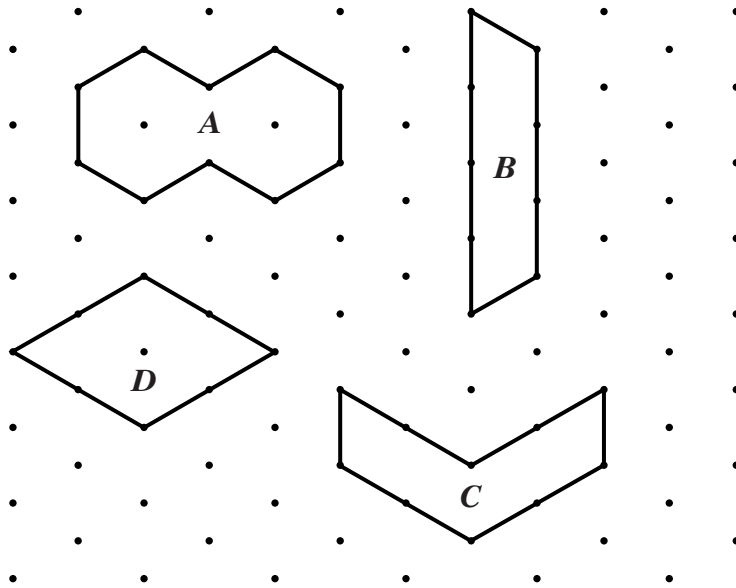
(a) Which **two** shapes have the same perimeter?

....

Answer .... *(1 mark)*

(b) Which **two** shapes have the same area?

....

Answer .... *(2 marks)*

(c) Which shape is a rhombus?

Answer .... *(1 mark)*

(d) Which shape is a trapezium?

Answer .... *(1 mark)*

4 (a) What fraction of this rectangle is shaded?
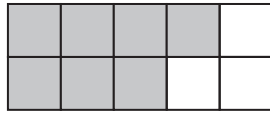
Answer .... *(1 mark)*

(b) Shade $\frac{1}{5}$ of this rectangle.
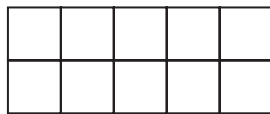
(1 mark)

(c) Shade in the rectangles to complete the fraction sum.
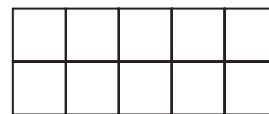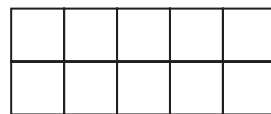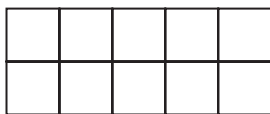
$\frac{1}{2}$ + $\frac{2}{5}$ = ...

(3 marks)

TURN OVER FOR THE NEXT QUESTION

$\dfrac{}{10}$

Turn over ▶

5 Two sides of a square are shown on the grid.
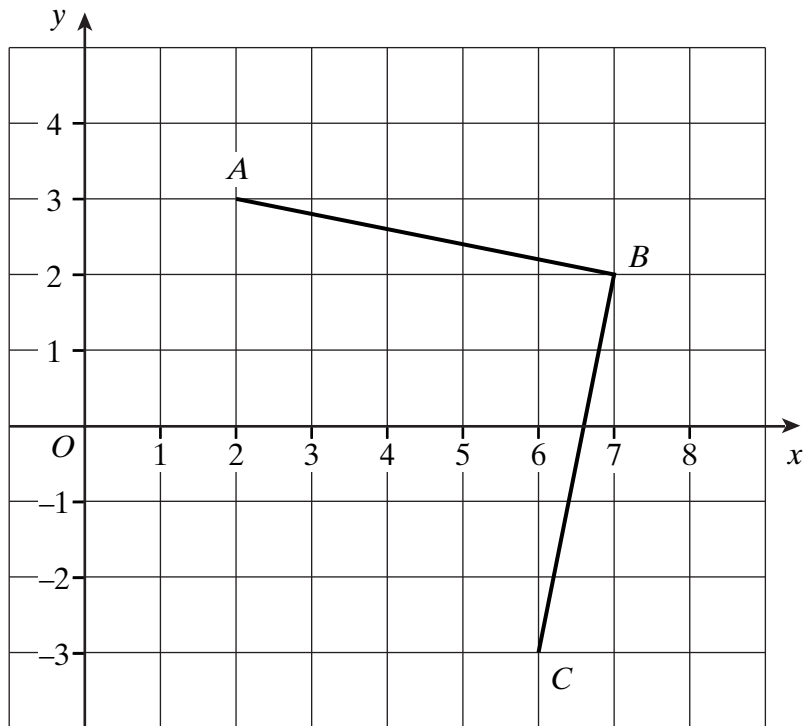
(a) Write down the coordinates of *A*.

Answer (............................. , ...)   *(1 mark)*

(b) Write down the coordinates of *C*.

Answer (............................. , ...)   *(1 mark)*

(c) Draw two more lines to complete the square *ABCD*.

(1 mark)

(d) *M* is the mid-point of *AC*.

Work out the coordinates of *M*.

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

6 Here is a list of numbers.

$$3 \qquad 7 \qquad 12 \qquad 16 \qquad 19 \qquad 30 \qquad 44$$

(a) Which number in this list is a multiple of 5?

Answer .... *(1 mark)*

(b) Which **three** numbers in this list are factors of 132?

....

....

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

7 Simplify

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

....

Answer .... *(1 mark)*

(b) $7p + 2q - p + 2q$

....

Answer .... *(2 marks)*

8 The price of a white fridge is £250.
A silver fridge costs 8% more than the white fridge.

Calculate the **extra** cost of the silver fridge.

....

....

....

Answer £ .... *(2 marks)*

Turn over ▶

9 (a)

Not drawn accurately

x / 62°
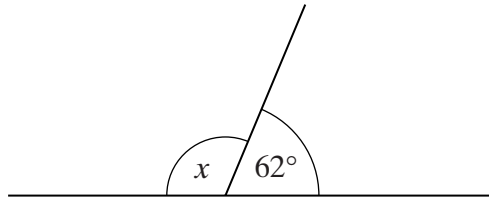
(i) Which of these words describes angle x?

acute   alternate   obtuse   opposite   reflex   right angle

Answer .... *(1 mark)*

(ii) Calculate the value of x.

....

....

Answer .... degrees   *(2 marks)*

(b) The diagram shows a quadrilateral *PQRS*.
Angle $P = 145°$, angle $Q = 92°$ and angle $S = 74°$.

Q

P   92°

145°

Not drawn accurately

74°   *y*

S   *R*
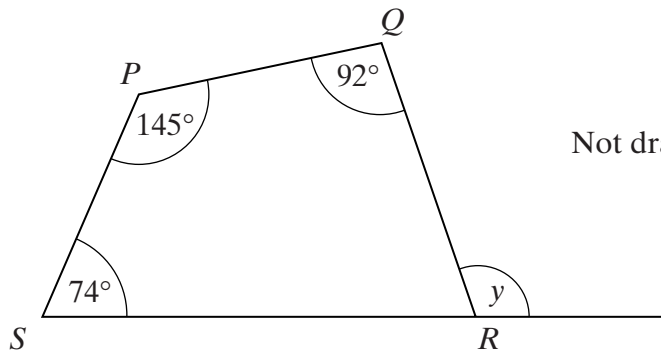
Calculate the value of the exterior angle at *R*, marked *y* on the diagram.

....

....

....

....

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

10 Solve the equations.

(a) $5x = 35$

....

....

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

(b) $y - 7 = 18$

....

....

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

(c) $4z - 5 = 11$

....

....

....

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

(d) $7(2t + 1) = 35$

....

....

....

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

Turn over ▶

11 The diagram shows the plan of a field *ABCD*.
$AB = 8$ m, $AD = 12$ m and $CD = 10$ m.
Angle $A = 60°$ and angle $D = 90°$

Not to scale
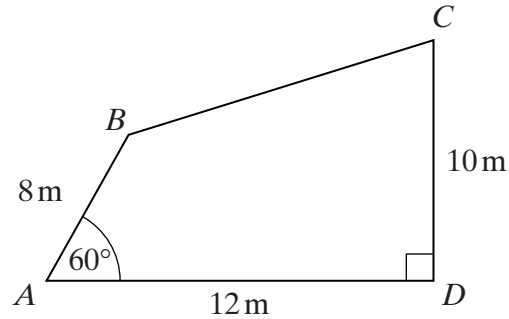
Make a scale drawing of the field.
Use the scale 1 cm represents 2 m.
The line *AD* has been drawn for you.

| Scale:
1 cm represents 2 m |
|---|

A _____ *D*
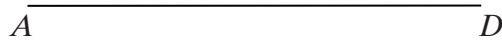
(3 marks)

12 Calculate

(a) 3^6

Answer .... *(1 mark)*

(b) $\dfrac{1}{12.5}$

Answer .... *(1 mark)*

(c) $5.4^2 - \sqrt{3.24}$

Answer .... *(1 mark)*

13 A circular flowerbed has a radius of 1.7 m.

Not drawn accurately

1.7 m
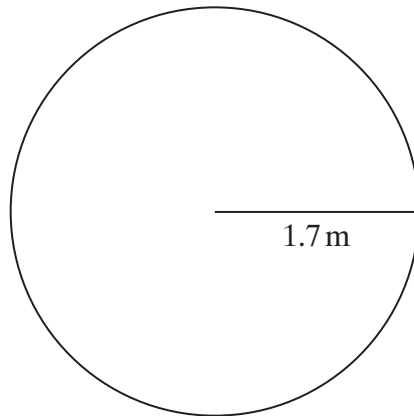
Calculate the area of the flowerbed.
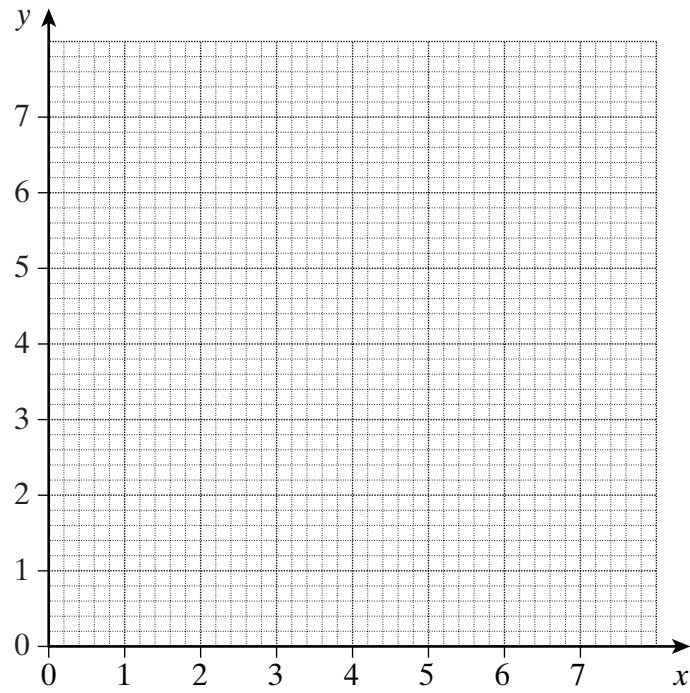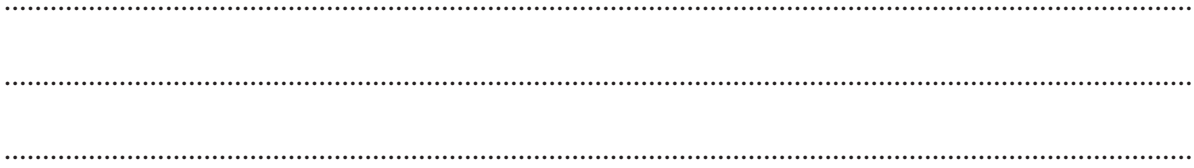State the units of your answer.

....

....

....

Answer .... *(3 marks)*

$\dfrac{}{9}$

Turn over ▶

14 On the grid below, draw the graph of $y = 7 - x$ for values of x from 0 to 7.

....

....

....

(3 marks)

15 The diagram shows a shaded flag.
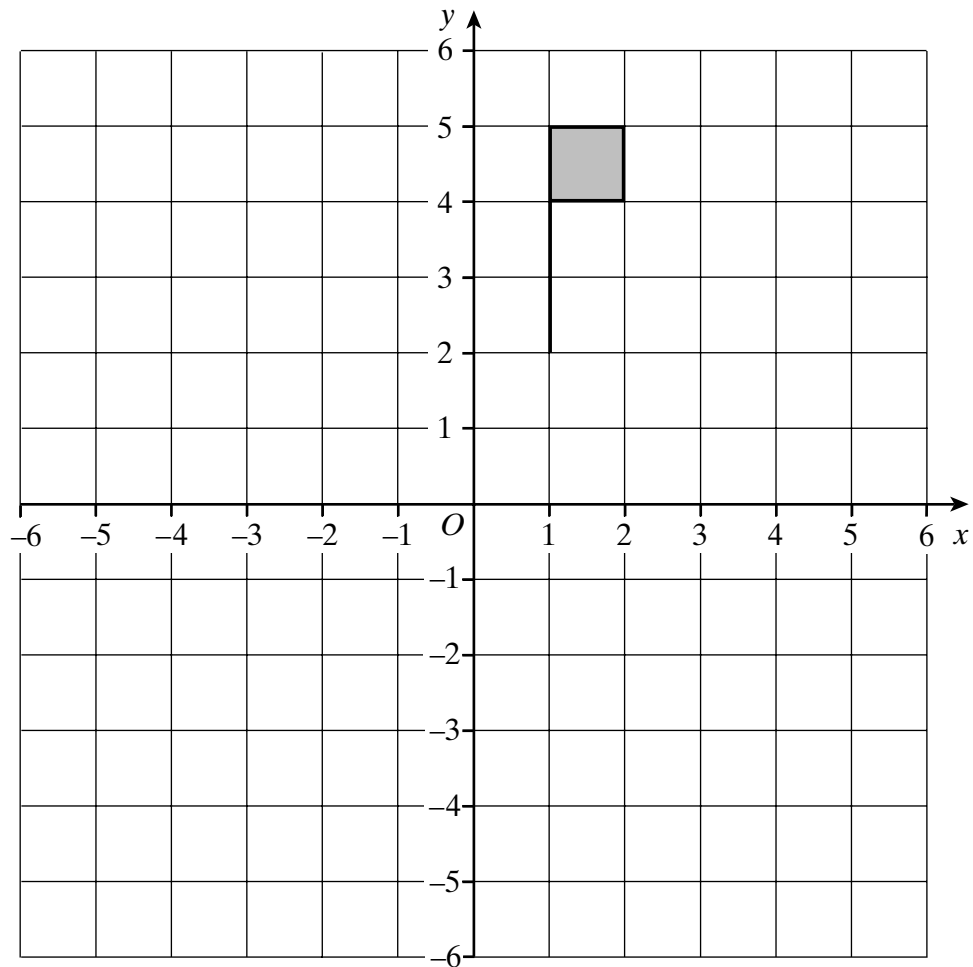
(a) Rotate the shaded flag 90° anticlockwise about the origin.
Label this new flag with the letter *A*.

(3 marks)

(b) Reflect the original shaded flag in the line $y = 1$.
Label this new flag with the letter *B*.

(2 marks)

END OF QUESTIONS

THERE ARE NO QUESTIONS PRINTED ON THIS PAGE