Surname

Other Names

Candidate Signature

AQA

General Certificate of Secondary Education
Foundation Tier
June 2010

Mathematics (Specification A)

4306/1F

F

Paper 1 Non-calculator

Monday 7 June 2010   1.30 pm to 3.00 pm

For this paper you must have:
● mathematical instruments.

You may **not** use a calculator.

Time allowed
● 1 hour 30 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 100.
● You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.
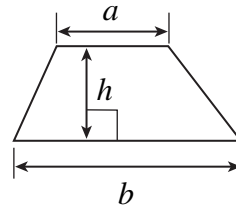
Advice
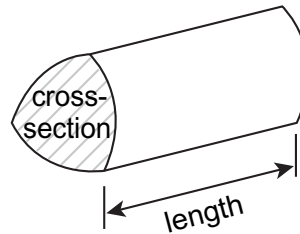● In all calculations, show clearly how you work out your answer.

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) (i) Write the number fourteen thousand, five hundred and twenty three in figures.

Answer .... *(1 mark)*

1 (a) (ii) Write the number 50 000 in words.

Answer .... *(1 mark)*

1 (b) Write down the value of the figure 7 in the number 5768

Answer .... *(1 mark)*

1 (c) Write the number 5281

1 (c) (i) to the nearest ten,

Answer .... *(1 mark)*

1 (c) (ii) to the nearest hundred.

Answer .... *(1 mark)*

1 (d) Write 1000 as a power of 10

Answer .... *(1 mark)*

2 The scale shows the probability that three events A, B and C will happen.
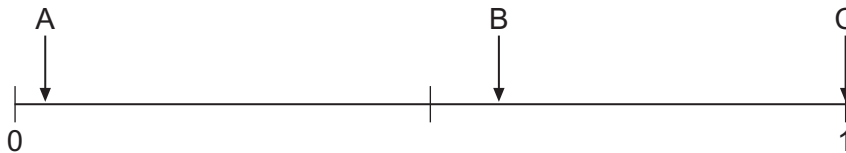
Choose the correct word to complete each statement.

Unlikely	Impossible	Very likely
Certain	Very unlikely	Likely

It is .... that event A will happen.

It is .... that event B will happen.

It is .... that event C will happen.

(3 marks)

9

3 (a)   On the circles, draw
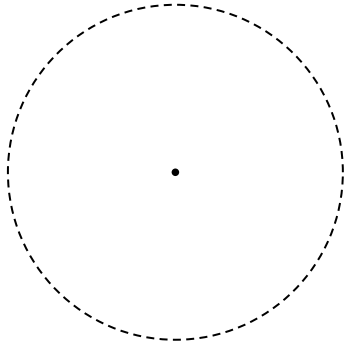
a radius   an arc
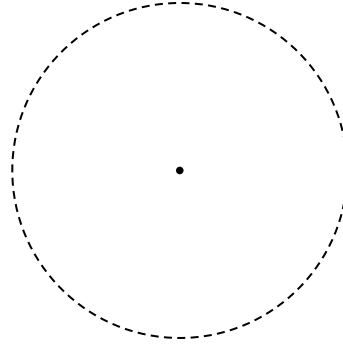
(2 marks)

3 (b)   Complete the sentences.
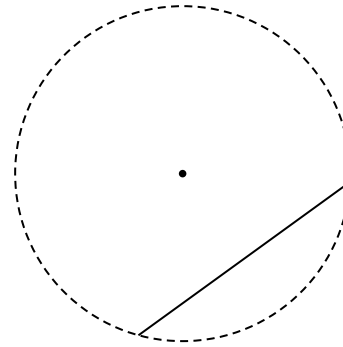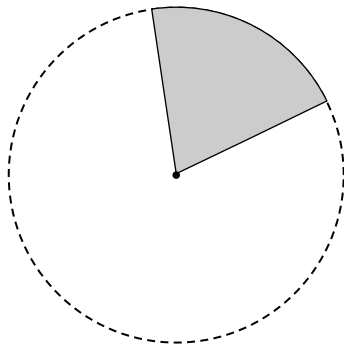
The shaded area is a ....   The straight line is a ....

(2 marks)

4   Complete the table by putting each of the following numbers in the correct box.

4   10   30   36   49   125

	Square number	Multiple of 5
Odd number		
Factor of 20		
Multiple of 6		

(4 marks)

5 The first three odd numbers are 1, 3 and 5

5 (a) (i) Write down the fourth odd number.

Answer .... *(1 mark)*

5 (a) (ii) Find the tenth odd number.

....

Answer .... *(1 mark)*

5 (b) Show how you could find the 100th odd number without writing down a list.

....

....

(1 mark)

6 Ceri finds these distance measures in an old mathematics text book.

22 yards = 1 chain
10 chains = 1 furlong
8 furlongs = 1 mile

Use the table to find the number of yards there are in one mile.

....

....

....

Answer .... yards *(3 marks)*

14

Turn over ▶

7 Here is a calendar for May 2010.

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

This 2 by 2 square is taken from the calendar.

3	4
10	11

Multiply the diagonal numbers together. $4 \times 10 = 40$
$3 \times 11 = 33$

Then find the difference. $40 - 33 = 7$

Difference = 7

Do the same for this 2 by 2 square taken from the calendar.

5	6
12	13

Show your working.

....

....

....

....

Difference = ...   *(3 marks)*

8 (a) Coryn estimates the answer to 22×39
His answer is 800

Show how he could have obtained this answer.

....

....

(1 mark)

8 (b) Estimate $596 \div 31$
Show your working.

....

....

Answer .... *(2 marks)*

Turn over for the next question

Turn over ▶

9 (a)   The pie chart shows the destinations of 300 students from Year 11 in 1980.
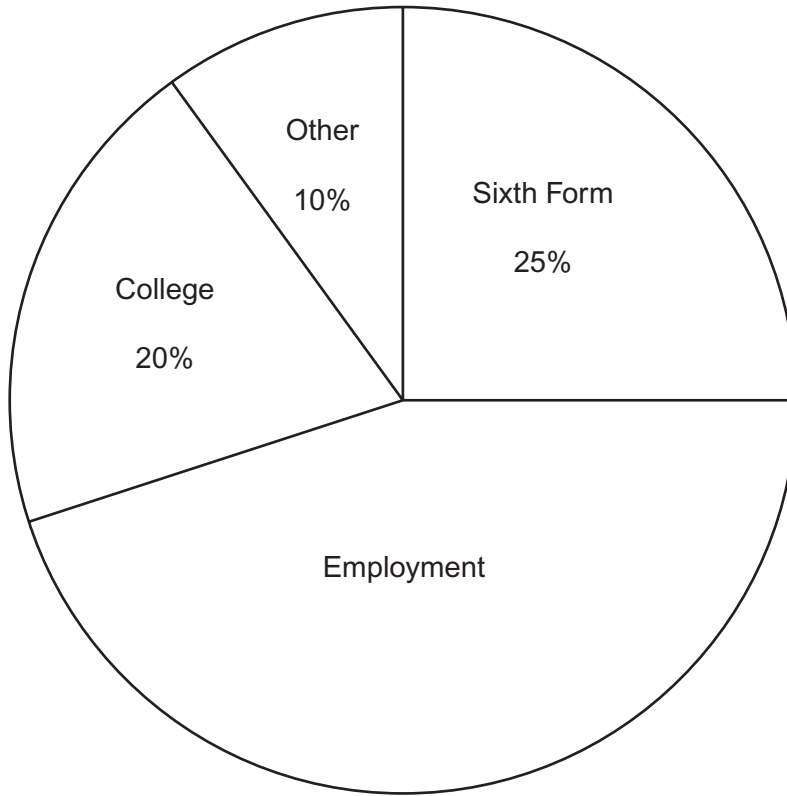
9 (a) (i)   Work out the percentage of the students who went into Employment.

....

....

Answer .... %   *(2 marks)*

9 (a) (ii)   Work out the number of students who went to College.

....

....

Answer ....   *(2 marks)*

9 (b) The pie chart shows the destinations of 300 students from Year 11 in 2009.

Other

10%

Sixth Form

40%

College

30%

Employment

20%
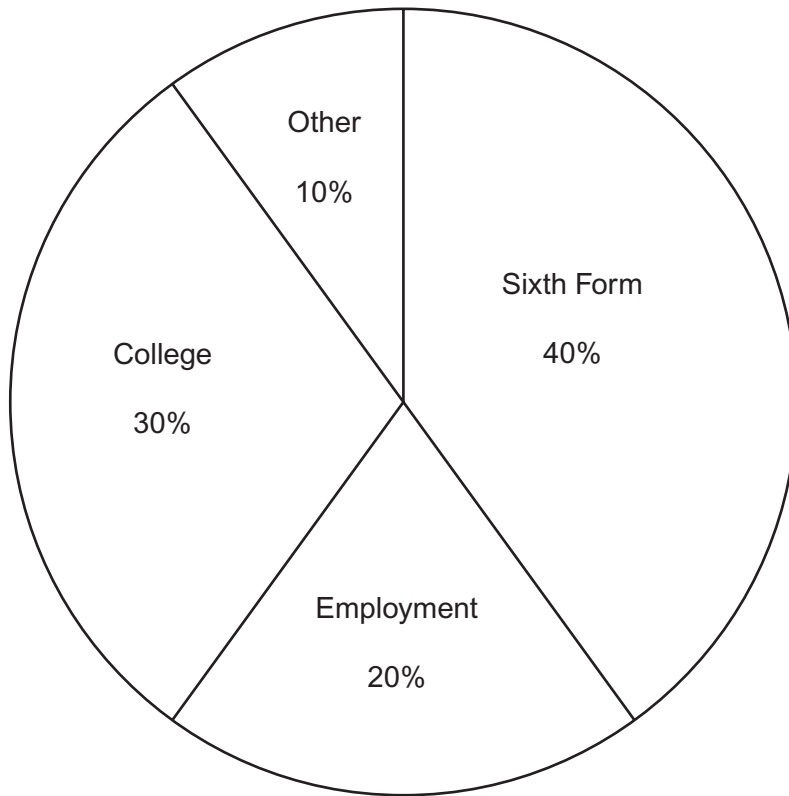
9 (b) What was the most popular destination in 2009?

Answer .... *(1 mark)*

9 (c) The pie charts show changes in the destinations of the students.

Write down **two** changes that have happened by 2009.

Change 1 ....

....

Change 2 ....

....

(2 marks)

7

Turn over ▶

10 (a)   Here is a number machine.

Work out the output.

Input   Output

(8) → [× 9] → (..........)
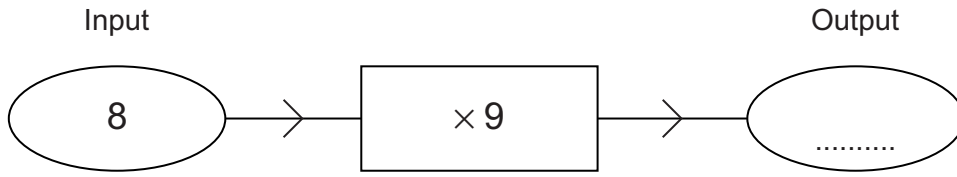
(1 mark)

10 (b)   Here is a different number machine.

Work out the output.

Input   Output

(100) → [− 83] → (..........)
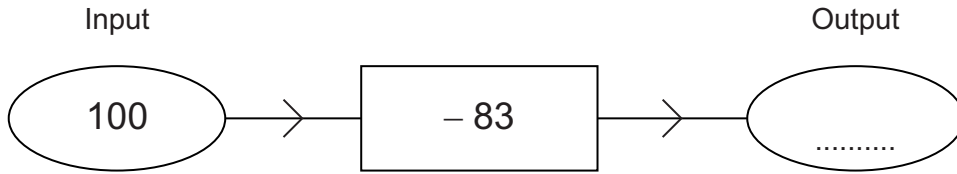
(1 mark)

10 (c)   Here are another two number machines.
They both have an input of 9 and an output of 11

Complete each number machine to make it work.

Input   Output

(9) → [× ....] → [− ....] → (11)

Input   Output

(9) → [+ ....] → [÷ ....] → (11)

....

....

....

....
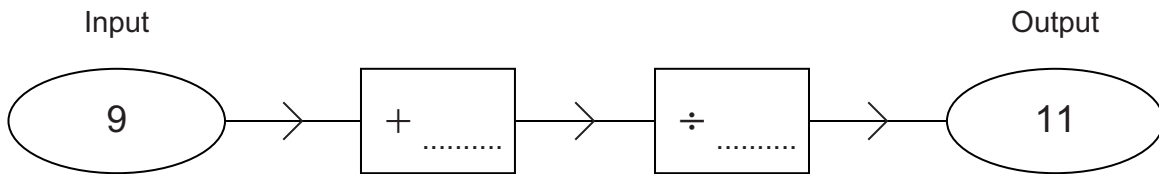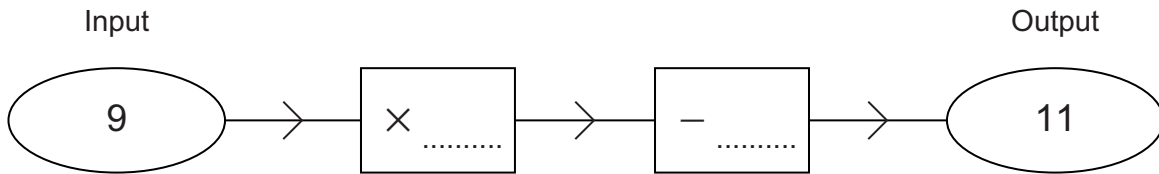
(2 marks)

11 Here is a conversion graph.
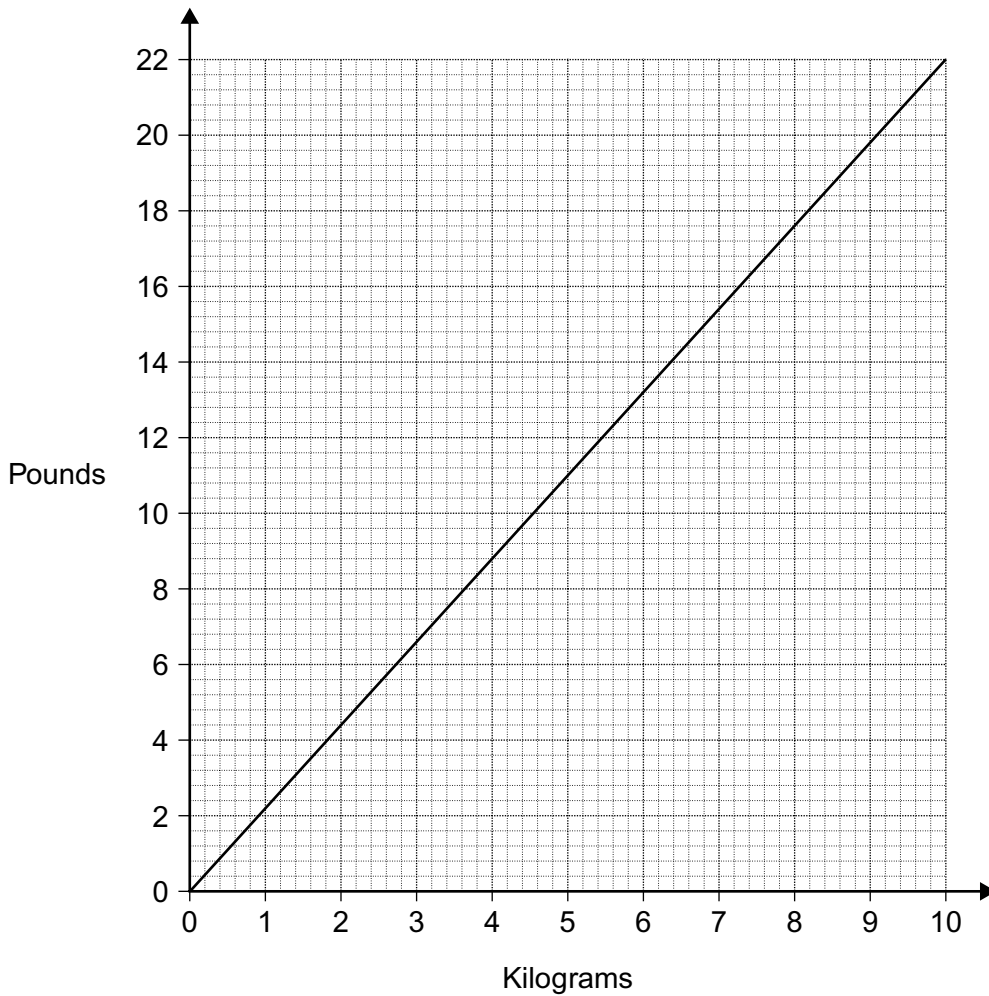
11 (a) Use the graph to convert

11 (a) (i) 5 kilograms to pounds,

Answer .... pounds *(1 mark)*

11 (a) (ii) 14 pounds to kilograms.

Answer .... kilograms *(1 mark)*

11 (b) Use the graph to convert 40 kilograms to pounds.
Explain your method.

....

....

....

(2 marks)

8

Turn over ▶

12 (a) The diagram shows a regular hexagon.
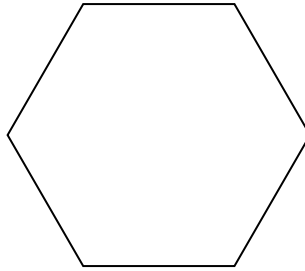
12 (a) (i) By measuring the length of one side, work out the perimeter.

....

....

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

12 (a) (ii) On the diagram above draw in all the lines of symmetry.

(2 marks)

12 (b) Three regular hexagons are joined together as shown.
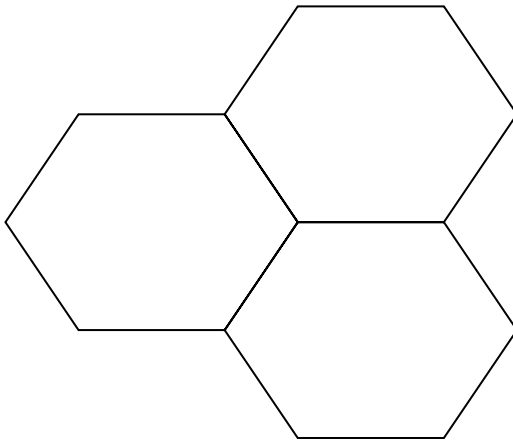
Not drawn accurately

Work out the size of an interior angle of a regular hexagon.
You must show your working.

....

....

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

13 (a) *ABC* is a straight line.

Not drawn accurately

70°   *x*   30°

A   B   C
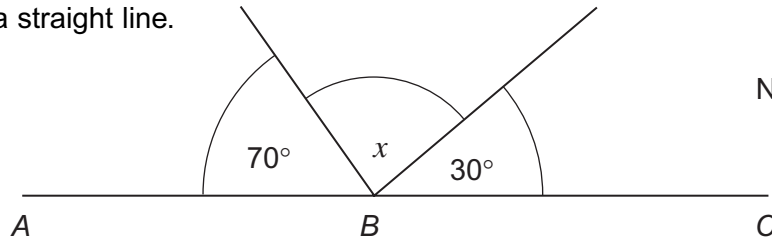
Ben says that the angle *x* is 90°.

13 (a) (i) Explain why he is wrong.

....

....

(1 mark)

13 (a) (ii) Write down the correct value of *x*.

....

....

Answer .... degrees   *(1 mark)*

13 (b) The diagram shows a right-angled triangle.

y

Not drawn accurately

65°

Work out the value of *y*.

....

....

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

14 Liz buys three cans of cola.
The total cost is £1.65

Work out the cost of five cans of cola.

....

....

....

Answer £ ....   *(3 marks)*

13

Turn over ▶

15 Jack has a box of 100 coloured discs.
The discs are Red, Blue, Green and Yellow.
The table shows some of the probabilities of choosing a colour.

Colour	Red	Blue	Green	Yellow
Probability	0.6	0.1		0.1

15 (a) Which coloured disc is the most common?

Answer .... *(1 mark)*

15 (b) Jack chooses a disc at random from the box.

15 (b) (i) Work out the probability that he chooses a Green disc.

....

....

Answer .... *(2 marks)*

15 (b) (ii) Write down the probability that he chooses a White disc.

Answer .... *(1 mark)*

15 (c) Jack says: 'There must be 60 Red discs in the box.'

Is Jack correct?
Tick the correct box.

☐ ☐

Yes No

Give a reason for your answer.

Reason ....

....

....
(2 marks)

16 There are 600 people at a conference.

$\frac{1}{4}$ of the people meet in Conference Room 1.

$\frac{1}{3}$ of the people meet in Conference Room 2.

The rest meet in Conference Room 3.

How many people meet in Conference Room 3?

....

....

....

....

....

Answer .... *(4 marks)*

Turn over for the next question

10

Turn over ▶

17 The shape is a drawing of a house.

8 cm

3 cm

Not drawn
accurately

6 cm

12 cm

Work out the area of this shape.
State the units of your answer.

....

....

....

....

....

....

Answer .... *(4 marks)*

18 (a) Work out the value of $\frac{1}{2}x - 3y$ when $x = 10$ and $y = 2$

....

....

Answer .... *(2 marks)*

18 (b) Write down the value of abc when $a = 10$, $b = 2$ and $c = 0$

....

Answer .... *(1 mark)*

18 (c) (i) Solve $w + 4 = 10$

....

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

18 (c) (ii) Solve $7x - 2 = 3x + 8$

....

....

....

....

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

18 (c) (iii) Solve $\dfrac{3y + 11}{4} = 2$

....

....

....

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

14

Turn over ▶

19 (a) The L-shape has an area of $5\,cm^2$.
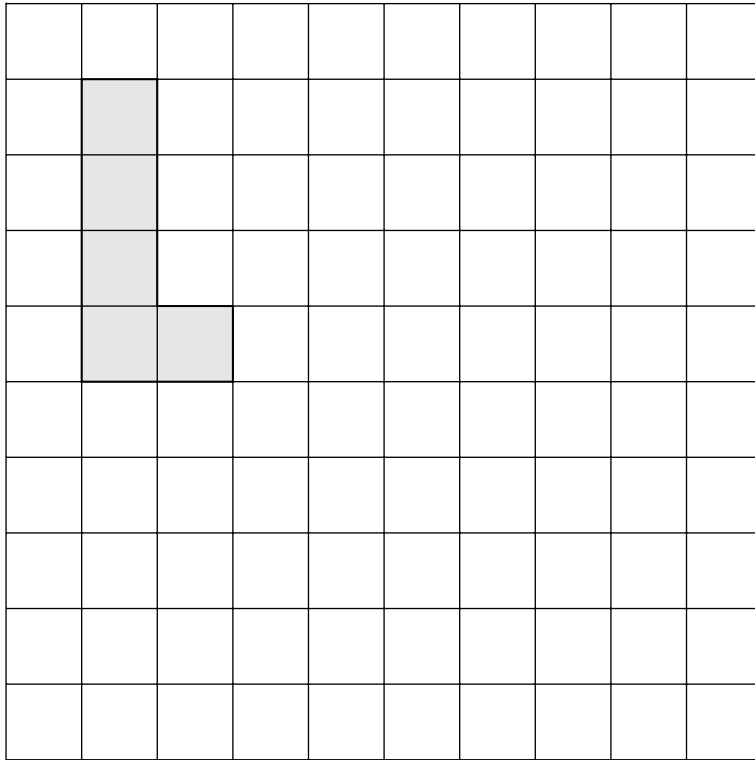
Work out the area of the L-shape after an enlargement of scale factor 2

....

....

....

....

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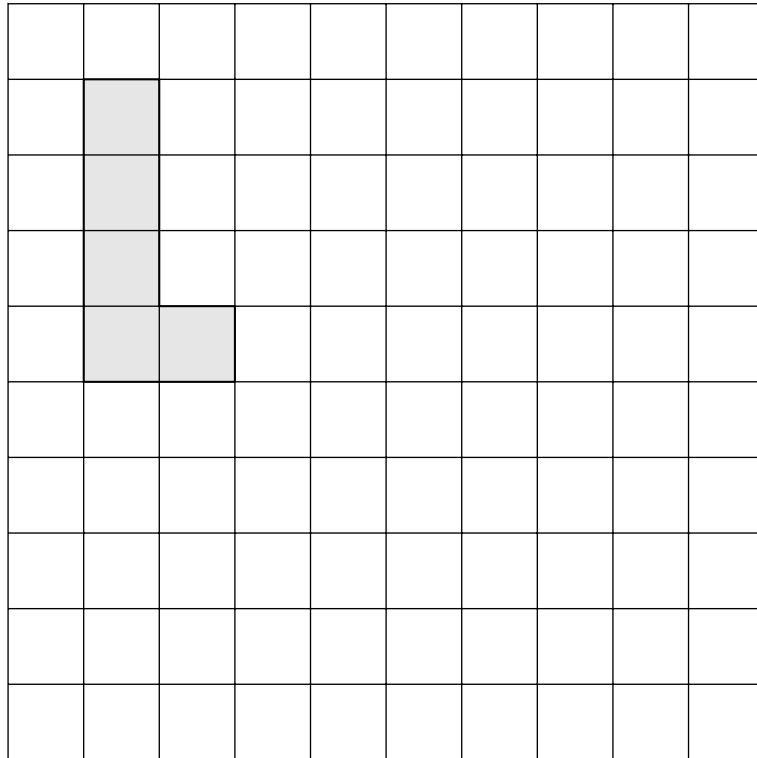
Answer .... cm^2 *(2 marks)*

19 (b)　　Rotate the L-shape clockwise by a quarter of a turn.
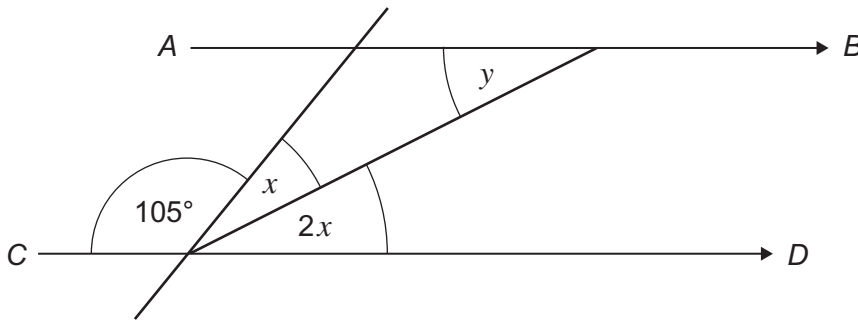Mark with a cross your centre of rotation.

(3 marks)

Turn over for the next question

Turn over ▶

20   In the diagram *AB* is parallel to *CD*.

Not drawn accurately

20 (a)   Work out the value of *x*.

....

....

....

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

20 (b)   Work out the value of *y*.
Give a reason for your answer.

....

....

....

Answer .... degrees

Reason ....

(2 marks)

21   Pam wants to collect information about the total number of hours of homework the students in her class did last week.

Design a suitable question she could use to find out this information.
Remember to include response boxes.

Question ....

....

....

Response

(2 marks)

22   A restaurant offers a family discount.
The Taylor family have a meal at this restaurant.
Before the discount the meal costs £140
After the discount the cost is £112

Calculate the percentage discount.

....

....

....

....

Answer .... %   *(3 marks)*

9

Turn over ▶

23 (a) Complete the table of values for $y = x^2 - 4x + 2$

x	−1	0	1	2	3	4	5
y		2	−1		−1	2	7

....

....

....

....
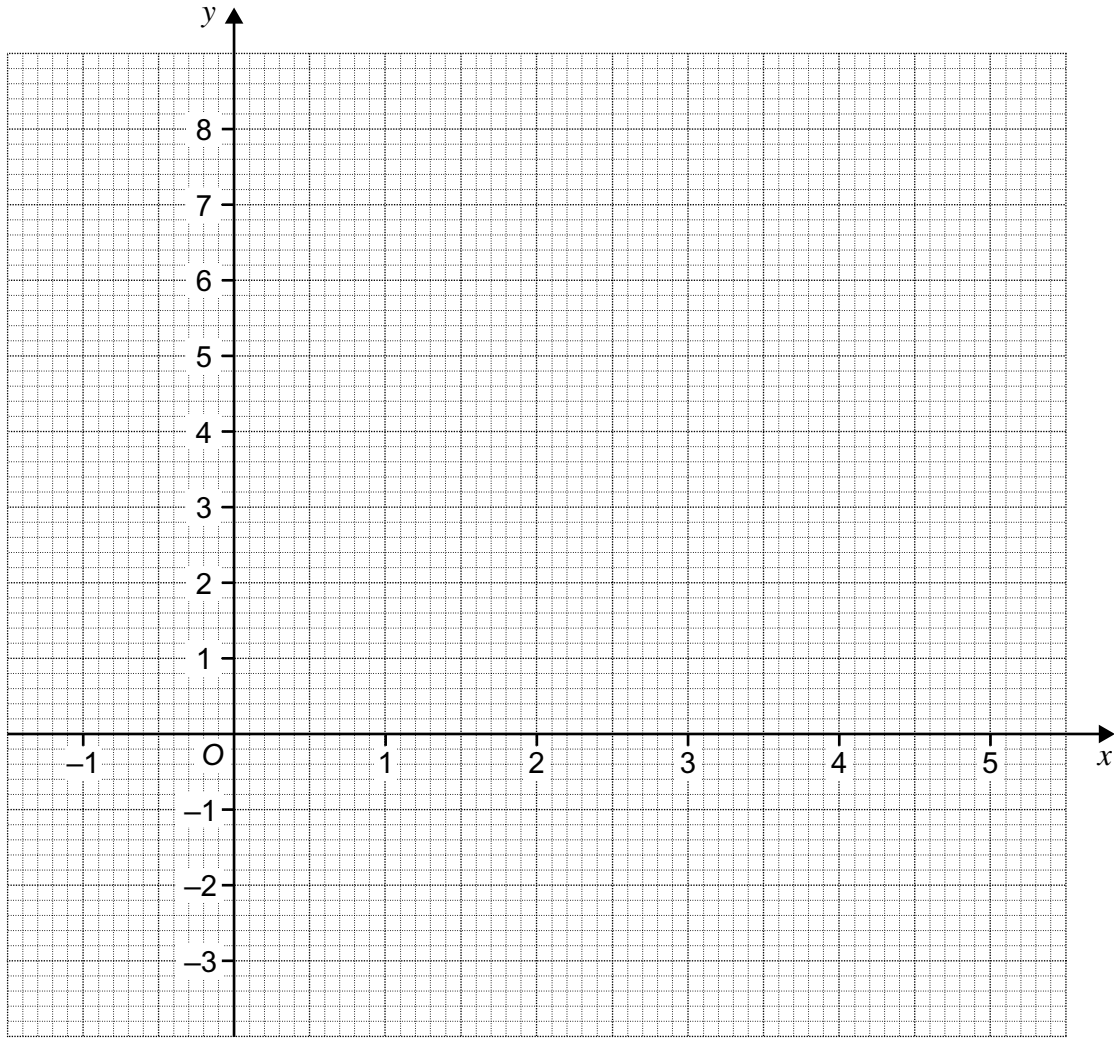
(2 marks)

23 (b) On the grid opposite, draw the graph of $y = x^2 - 4x + 2$ for values of x from −1 to 5

(2 marks)

23 (c) Use the graph to solve the equation $x^2 - 4x + 2 = 0$

....

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

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED