

Write your name here

Surname

Other names

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International GCSE

Centre Number

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Candidate Number

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Mathematics A

Paper 2F



Foundation Tier

Tuesday 19 January 2016 – Morning
Time: 2 hours

Paper Reference

4MA0/2F
KMA0/2F

You must have:

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ►

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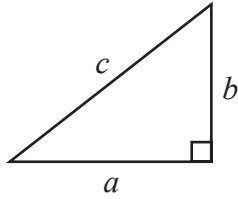
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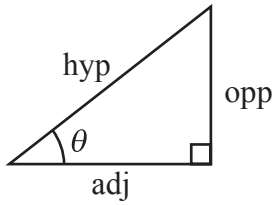
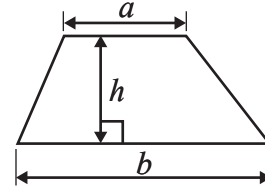
International GCSE MATHEMATICS

FORMULAE SHEET – FOUNDATION TIER

Pythagoras' Theorem
 $a^2 + b^2 = c^2$

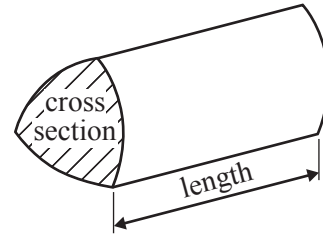


Area of a trapezium = $\frac{1}{2}(a + b)h$



adj = hyp \times cos θ
 opp = hyp \times sin θ
 opp = adj \times tan θ

Volume of prism = area of cross section \times length



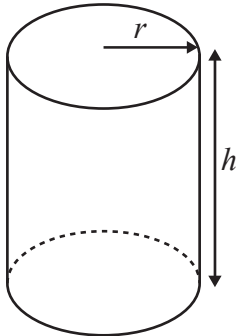
or $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\tan \theta = \frac{\text{opp}}{\text{adj}}$

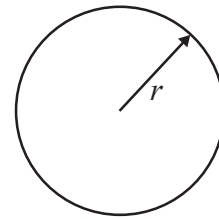
Circumference of circle = $2\pi r$

Area of circle = πr^2



Volume of cylinder = $\pi r^2 h$

Curved surface area
 of cylinder = $2\pi r h$



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Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1

6	11	25	52	90
---	----	----	----	----

(a) From the numbers in the box, write down

(i) an even number greater than 10

(ii) the square number

(iii) the multiple of 13

(iv) two numbers that make this calculation correct.

$$\dots\dots\dots + \dots\dots\dots = 58$$

(4)

(b) Work out the difference between the smallest number in the box and the largest number in the box.

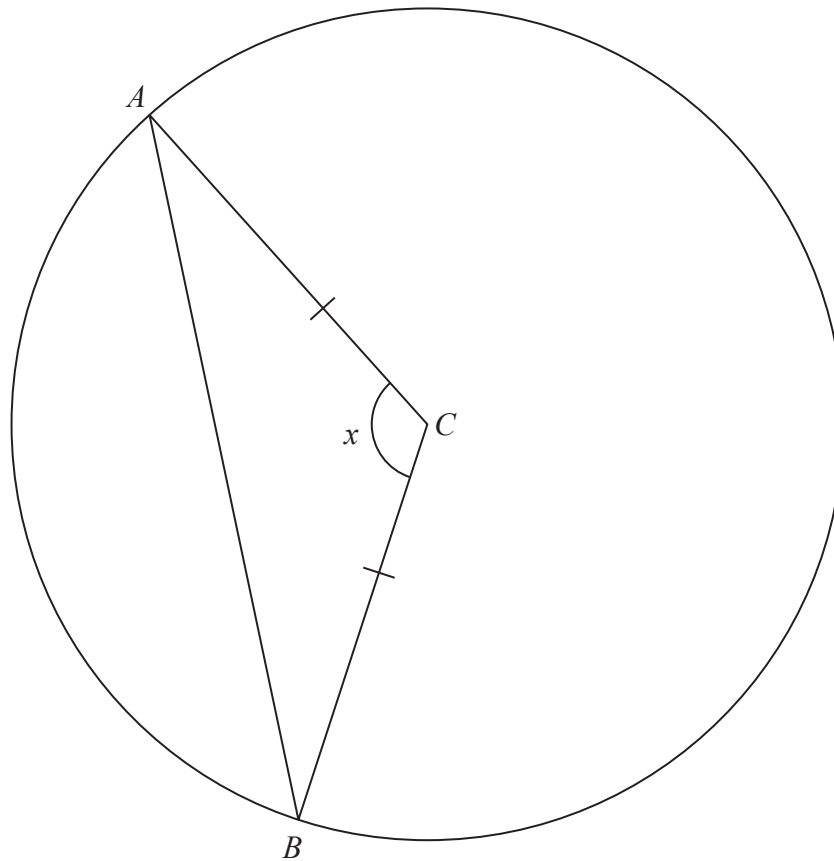
(1)

(Total for Question 1 is 5 marks)



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2



A and B are points on a circle, centre C .
 $AC = BC$.

(a) (i) Measure the size of angle x .

..... °

(ii) Write down the mathematical name for angle x .

.....
 (2)

(b) Write down the mathematical name for triangle ABC .

.....
 (1)

(Total for Question 2 is 3 marks)

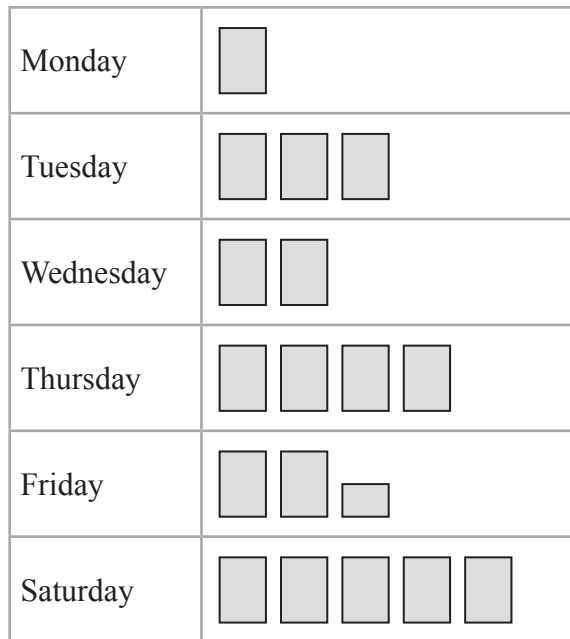
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- 3 The pictogram shows information about the number of books sold in a shop on each of six days.



- (a) On which day was the least number of books sold in the shop?

.....
(1)

The number of books sold in the shop on one of these days was twice the number of books sold on Wednesday.

- (b) On which day was this?

.....
(1)

The number of books sold in the shop on Tuesday was 18

- (c) Work out the number of books sold in the shop on Friday.

.....
(2)

(Total for Question 3 is 4 marks)



4 (a) On the rectangle, draw all the lines of symmetry.

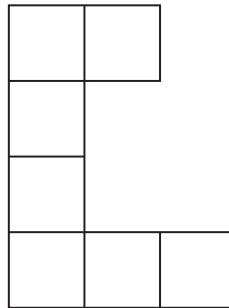


(2)

(b) Write down the order of rotational symmetry of a rectangle.

.....
(1)

Here is a shape made from centimetre squares.



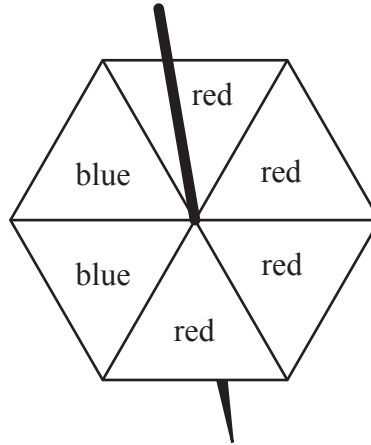
(c) Find the perimeter of the shape.

.....cm
(1)

(Total for Question 4 is 4 marks)



- 5 The diagram shows a fair 6-sided spinner.



Shaun spins the spinner once.

- (a) Write down the probability that the spinner lands on green.

.....
(1)

- (b) Find the probability that the spinner lands on red.

.....
(1)

Karen has a different spinner.

When the spinner is spun once, the probability that it will land on yellow is $\frac{2}{5}$
Karen spins the spinner 30 times.

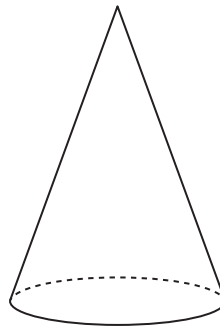
- (c) Work out an estimate for the number of times the spinner lands on yellow.

.....
(2)

(Total for Question 5 is 4 marks)

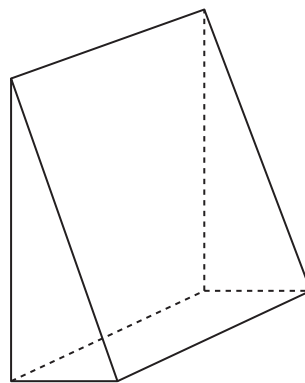


6



(a) Write down the mathematical name of this 3-D shape.

.....
(1)



(b) (i) Write down the mathematical name of this 3-D shape.

.....

(ii) How many edges has this shape?

.....

(iii) How many vertices has this shape?

.....
(3)

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(c) Here is a cuboid.

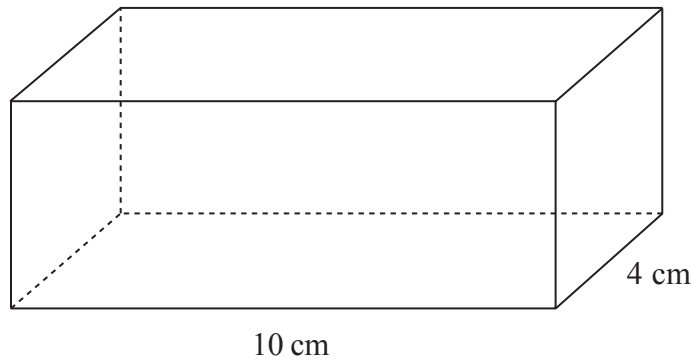


Diagram **NOT** accurately drawn

The volume of the cuboid is 280cm^3
The cuboid has length 10cm and width 4cm .

Work out the height of the cuboid.

.....cm

(2)

(Total for Question 6 is 6 marks)

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7 (a) Write down all the factors of 20

.....
(2)

(b) 3 -6 7 -10 -4

Write these numbers in order of size.
Start with the smallest number.

.....
(1)

(c) Work out

(i) $-4 \div -2$

(ii) $2 - (-3)$

.....
(2)

(d) Work out 15% of 80

.....
(2)

(Total for Question 7 is 7 marks)

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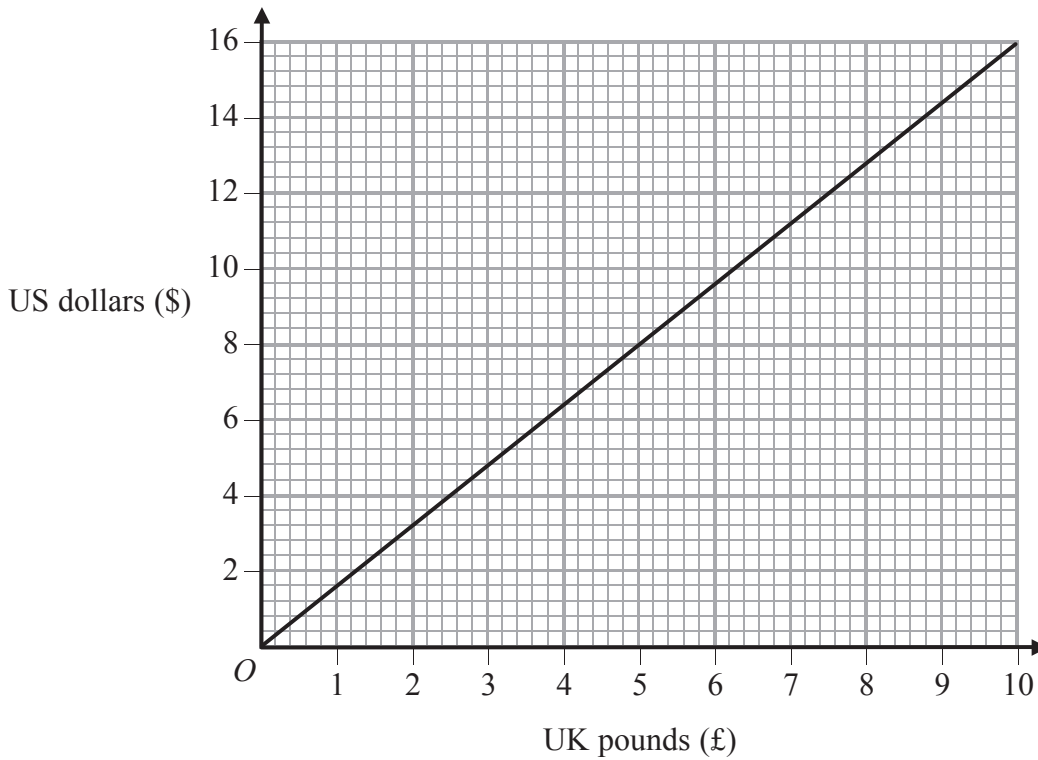


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8 You can use this graph to change between UK pounds (£) and US dollars (\$).



(a) Use the graph to change £5 to US dollars.

\$.....
(1)

(b) Use the graph to change \$14 to UK pounds.

£.....
(1)

(c) Change £37.50 to US dollars.

\$.....
(2)

(Total for Question 8 is 4 marks)



- 9 (a) Write these numbers in order of size.
Start with the smallest number.

$$\frac{7}{9} \quad \frac{8}{11} \quad 0.79 \quad 84\% \quad \frac{4}{5}$$

.....
(3)

- (b) Find the value of 3^5

.....
(1)

- (c) Find the square of -2.1

.....
(1)

- (d) Find the value of $\sqrt[3]{17.576}$

.....
(1)

(Total for Question 9 is 6 marks)

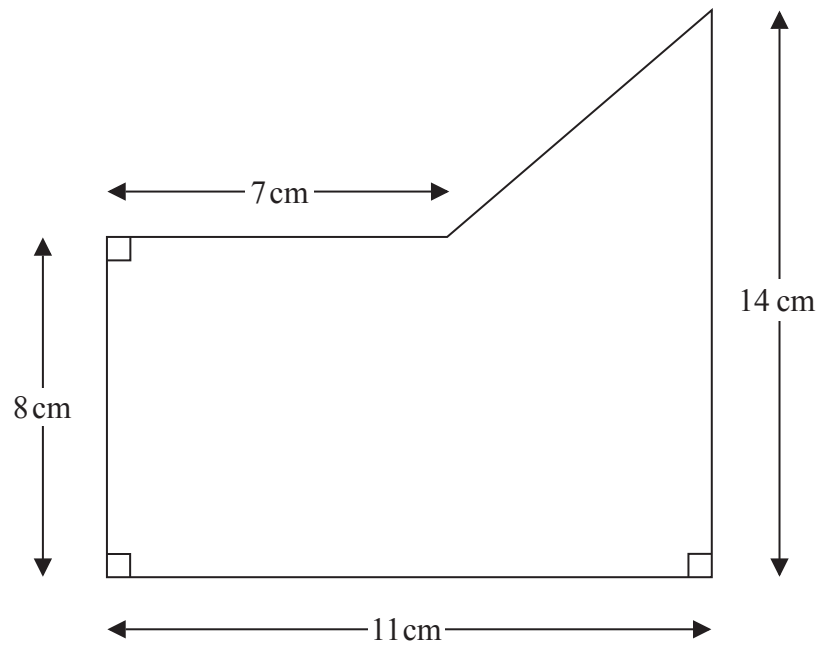
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10

Diagram NOT
accurately drawn

Work out the area of this shape.

.....cm²

(Total for Question 10 is 4 marks)



- 11 Here are 6 cards.
Each card has a number on it.



- (a) Find the median of the numbers on the cards.

.....
(2)

Uzma places two extra cards next to the six cards.



She wants the mean of the numbers on the 8 cards to be 4
She wants the range of the numbers on the 8 cards to be 9

- (b) Find the numbers that she should write on the two extra cards.

..... and
(3)

(Total for Question 11 is 5 marks)

- 12 Derek went to bed.
He fell asleep at 21 30
He woke up at 07 20 the next day.

For how long was Derek asleep?
Give your answer in hours and minutes.

..... hours minutes

(Total for Question 12 is 2 marks)

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13 Mr and Mrs Sandhu take their 3 children to a museum.

The cost of a ticket for one adult is €8.60

The total cost of the 5 tickets is €30.40

Work out the cost of a ticket for one child.

€

(Total for Question 13 is 3 marks)

14

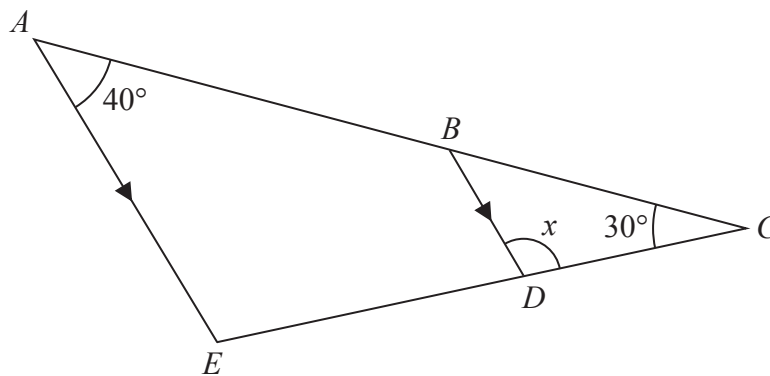


Diagram **NOT**
accurately drawn

ABC and EDC are straight lines.

AE is parallel to BD .

Angle $EAC = 40^\circ$

Angle $ACE = 30^\circ$

Work out the size of angle x .

Give reasons for your answer.

$x =$

(Total for Question 14 is 3 marks)



15 (a) Solve $9 + x = 48$

$$x = \dots\dots\dots (1)$$

(b) Solve $4y = 11$

$$y = \dots\dots\dots (1)$$

(c) Solve $\frac{3 - 5m}{4} = 8$

Show clear algebraic working.

$$m = \dots\dots\dots (3)$$

(Total for Question 15 is 5 marks)

16 (a) Work out the value of $\frac{\sqrt{4.6}}{8.1 - 3.7}$

Give your answer as a decimal.
Write down all the figures on your calculator display.

$$\dots\dots\dots (2)$$

(b) Write your answer to part (a) correct to 3 significant figures.

$$\dots\dots\dots (1)$$

(Total for Question 16 is 3 marks)

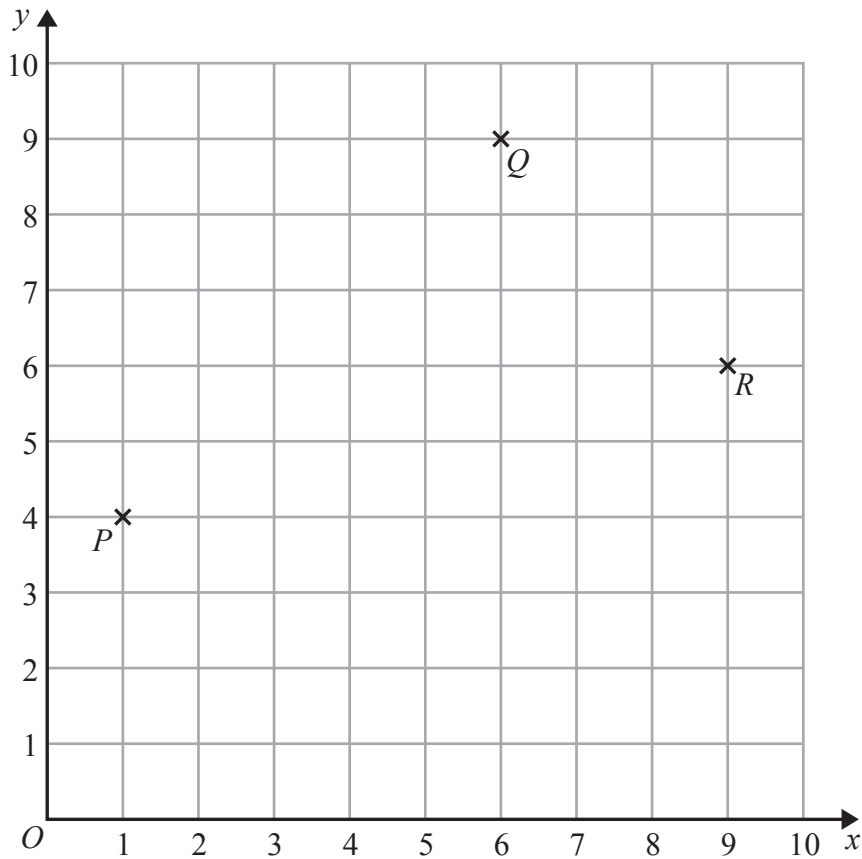
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17 The diagram shows three points P , Q and R on a centimetre grid.



(a) Write down the coordinates of R .

(.....,)
(1)

(b) Measure the distance between P and R .
Give your answer in millimetres.

..... mm
(1)

(c) On the diagram, mark with a cross (\times) the position of the point S so that $PQRS$ is a rectangle.
Label your point S .

(1)

(d) Find the coordinates of the midpoint of PQ .

(.....,)
(2)

(Total for Question 17 is 5 marks)



18 $D = 3e^2 + 4e$

Work out the value of D when $e = -5$

$D = \dots\dots\dots$

(Total for Question 18 is 2 marks)

- 19 The lengths of the sides of a triangle are in the ratios $2 : 6 : 7$
The length of the longest side of the triangle is 24.5 cm.

Work out the perimeter of the triangle.

$\dots\dots\dots$ cm

(Total for Question 19 is 3 marks)

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20 A clothes shop has a sale.

In the sale, normal prices are reduced by 12%
The normal price of a shirt is £30

(a) Work out the sale price of the shirt.

£
(3)

The price of a coat is reduced by £9 in the sale.

(b) Work out the normal price of the coat.

£
(3)

(Total for Question 20 is 6 marks)



- 21 A box contains toy cars.
Each car is red or blue or black or silver.

Emily takes at random a car from the box.
The table shows the probabilities that Emily takes a red car or a blue car or a black car.

Colour of car	Probability
red	0.20
blue	0.05
black	0.15
silver	

- (a) Work out the probability that Emily takes a silver car.

.....
(2)

Emily puts the car back into the box.
There are 6 blue cars in the box.

- (b) Work out the total number of cars in the box.

.....
(2)

(Total for Question 21 is 4 marks)



22 (a) Expand $x(x + 2)$

.....
(1)

(b) Simplify $6t - 3 - 8t + 7$

.....
(2)

(c) Solve the inequality $4x - 7 > 3$

.....
(2)

(Total for Question 22 is 5 marks)



23 Solve the simultaneous equations

$$5x + y = 17$$

$$x + y = 3$$

Show clear algebraic working.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 23 is 3 marks)

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24 Here is a regular 10-sided polygon.

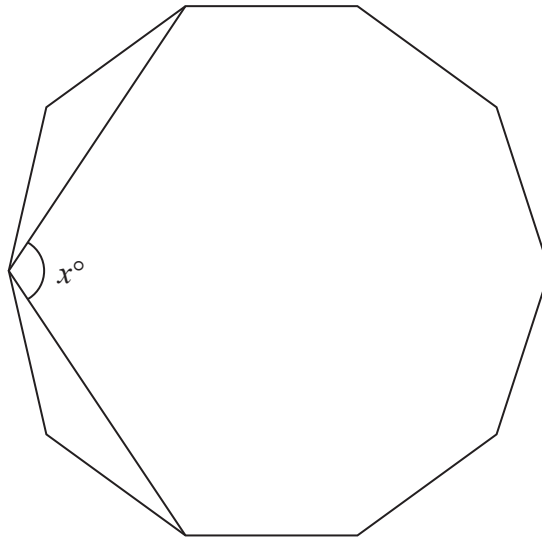


Diagram **NOT** accurately drawn

Work out the value of x .
Show your working clearly.

$x = \dots\dots\dots$

(Total for Question 24 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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