



THIRD SPACE
LEARNING

Mathematics

Paper 1

(Calculator)

Foundation Tier

OCR GCSE

SET 3

Mathematics Paper 1 (Calculator) Foundation Tier OCR

GCSE SET 3

Name

Total marks

Paper length: 1hr 30mins



Question	Mark
1	
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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.
- Answer the questions in the spaces provided – there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may be used.

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

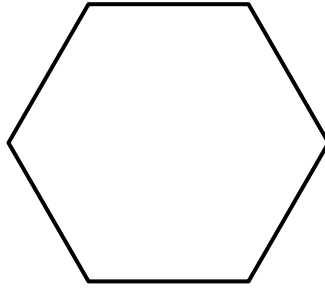
- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

This practice paper is based on the topics from the **advanced information for the November 2024 exam series.**

Please note, this practice paper is an example to help revision, these topics can be tested in other ways and other topics may be included in the actual papers

- 1** (a) Write down the mathematical name of this polygon.



(a) ----- **[1]**

- (b) Write down the order of rotational symmetry of the polygon.

(b) _____ [1]

- 2** (a) Write down the value of the 7 in the number 672.1

(a) _____ **[1]**

- (b) Write the following numbers in order of size.

Start with the smallest number.

0.43

4.03

4.3

0.403

0.34

smallest

largest

[1]

3 (a) Change 3250g to *kg*

(a) *kg* [1]

(b) Change $1\frac{1}{2}$ *kg* to *g*

(b) *g* [1]

4 Here is a list of numbers.

4 5 8 4 6 2 1 1 5 2 5

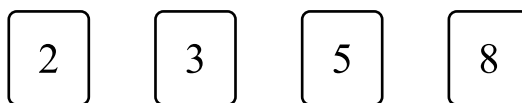
(a) Write down the mode.

(a) [1]

(b) Work out the range.

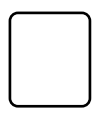
(b) [1]

5 Here are four tiles.

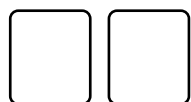


(a) Which one of the tiles shows a cube number?

Write the number on the blank tile on the answer line.

(a)  [1]

(b) Write down a two-digit square number that can be made using two of the tiles.

(b)  [1]

(c) Using each tile once, fill in the boxes below to give the sum with the greatest possible answer.

$$\square \square - \square \square$$

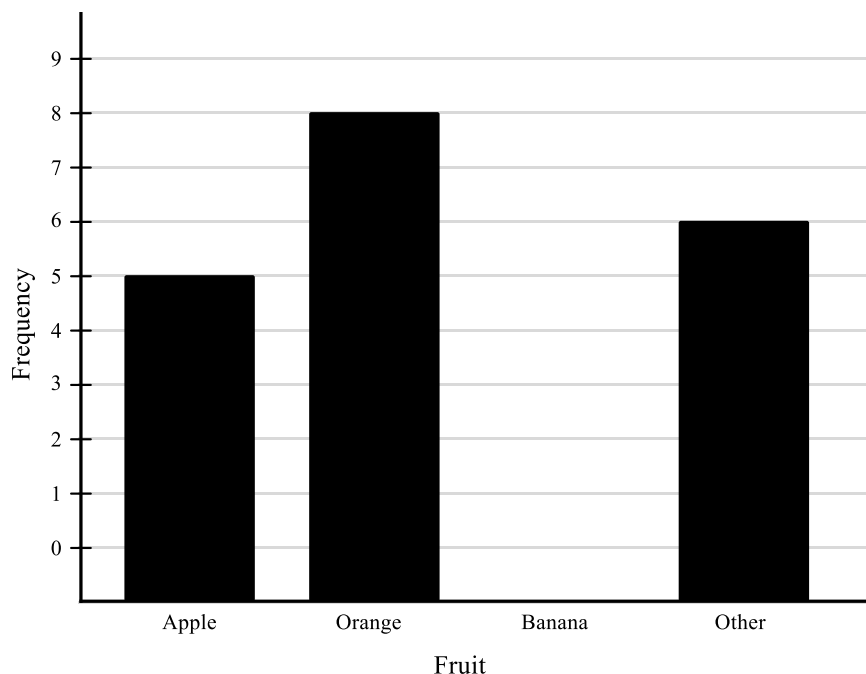
[2]

6 There are 28 students in Katie's class.

On Monday, each student brought one piece of fruit as a snack.

Katie recorded the fruit that each student brought.

This chart shows Katie's results. One bar is missing.



Use the chart to work out how many students brought a banana.

Show this information on the bar chart.

[3]

7 Solve.

(a) Solve $p + 2 = 11$

(a) $p =$ _____ [1]

(b) Solve $5q = 30$

(b) $q =$ _____ [1]

8 Lesley is running a cheerleading class.
The costs of running the class are shown in the table.

Hall hire	£18
Insurance	£6
Snacks	£3

10 children attend the class. Each child pays £5.
Work out the profit Lesley makes from her class.

----- [2]

9 A farmer keeps sheep and pigs.
There are p pigs on the farm.
There are twice as many sheep as pigs on the farm.

Write an expression, in terms of p , for the total number of animals on the farm.

[1]

10 Use your calculator to work out $\sqrt{\frac{51.2}{5}}$.

----- [2]

11 Find the value of n in each of the following.

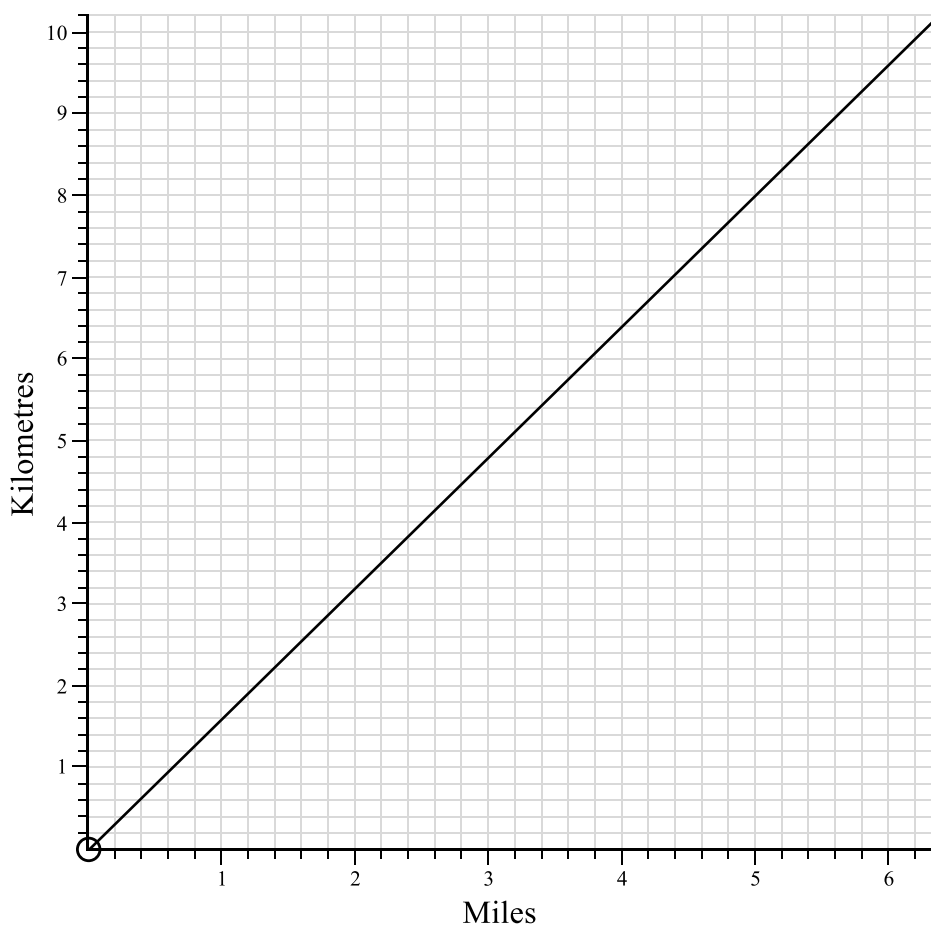
(a) $4 \times 4 \times 4 \times 4 \times 4 = 4^n$

(a) $n =$ ----- [1]

(b) $3^2 \times 3^5 = 3^n$

(b) $n =$ ----- [1]

12 You can use this graph to convert between *miles* and *kilometres*.



- (a) Explain fully how the graph shows that the number of miles is directly proportional to the number of *kilometres*.

[2]

- (b) Use the conversion graph to change 3 *miles* to *km*.

(b) *km* **[1]**

- (c) Ifan's house is 6 *miles* from his Grandma's house.

One day, Ifan cycles to his Grandma's house.

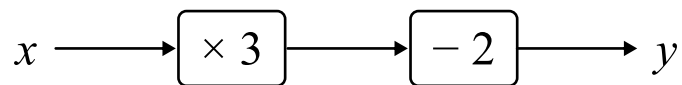
He stops for a rest after cycling 3.2*km*.

How much further does Ifan have to cycle?

Give your answer in miles.

(c) *miles* **[2]**

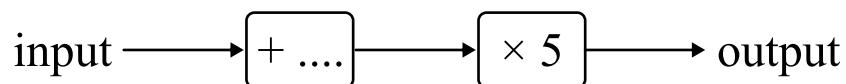
13 Here is a function machine.



(a) Write an expression for y in terms of x

(a) $y =$ [2]

Here is a different function machine.



When the input is 6, the output is 85.

(b) Complete the function machine.

[2]

- 14** The same bike is sold in two shops.

Both shops have an offer on.

Shop A

Usual price: £145

Offer: 20% off

Shop B

Usual price: £130

Offer: 15% off

Ben wants to purchase the bike.

Which shop is selling the bike at the lowest price?

You must show your working.

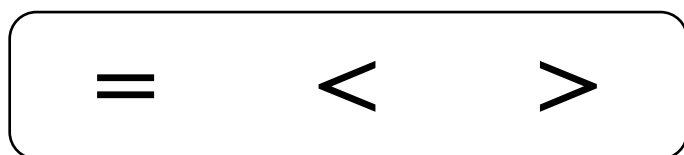
----- [3]

- 15** $C = 2m + 5n$

Work out the value of C when $m = 10$ and $n = -3$

$C =$ ----- [2]

16 The box below contains three mathematical symbols.



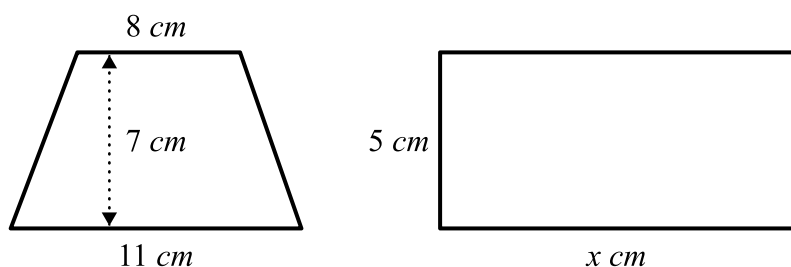
From the box, choose a symbol to make each of the following statements correct.

(a) $\frac{3}{8}$ $\frac{5}{8}$ [1]

(b) $\frac{5}{7}$ $\frac{16}{21}$ [1]

(c) $\frac{9}{4}$ $2\frac{1}{4}$ [1]

17 The diagram shows a trapezium and a rectangle.



The area of the rectangle is double the area of the trapezium.

Find the value of x .

$x =$ [3]

18 Strawberries are sold in containers of 250g, 400g or 600g.

Strawberries
250g
£1.90

Strawberries
400g
£2.20

Strawberries
600g
£3.60

Which container is the best value for money?

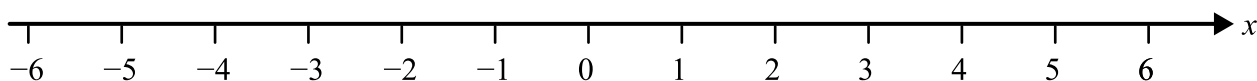
You must show all of your working.

----- [4]

19 (a) Solve $3(x - 2) < 6$

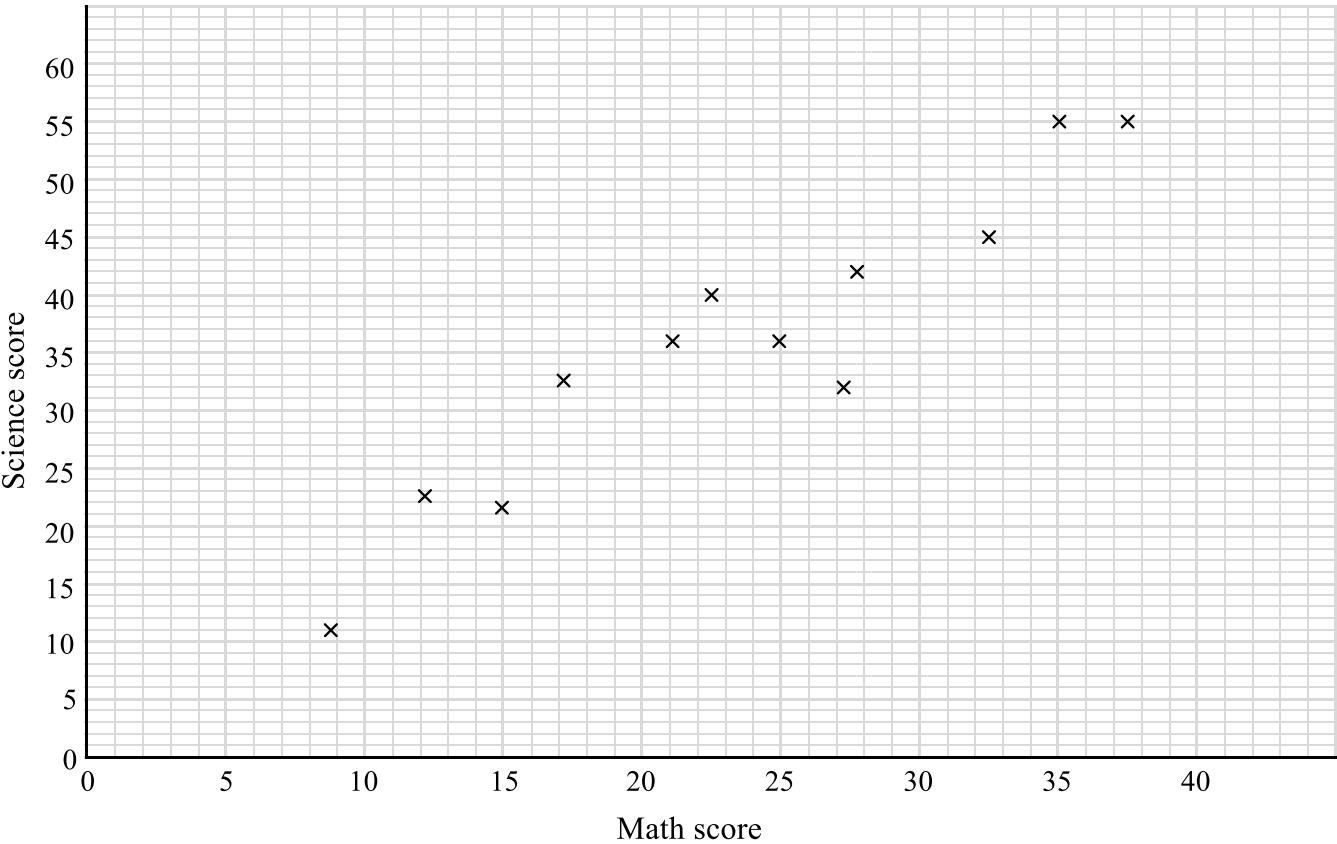
----- [2]

(b) Represent your solution on the number line below.



[2]

20 Some students each completed some maths homework and some science homework.
Both sets of homework were scored out of 40.
This scatter diagram shows the maths and science results of 12 students.



(a) The table shows the scores for two more students.
Plot these on the scatter diagram.

Maths	20	31	15
Science	38	32	30

[2]

(b) Describe the type of correlation shown in the scatter diagram.

(b) [1]

(c) By drawing a line of best fit, estimate the science score for a student who scored 30 on their maths test.

(c) [2]

- 21 Jake wants to plant a hedge.
- Jake wants his hedge to contain 4 plants per metre.
- Jake wants his hedge to be 60*m* long.
- Jake will plant hazel, hawthorn and oak trees in the ratio 2:2:1.
- The cost of each type of tree is shown in the table.

Hazel	Hawthorn	Oak
65 <i>p</i> per plant	59 <i>p</i> per plant	85 <i>p</i> per plant

Work out the total cost of the plants for the hedge.

Give your answer in pounds and pence.

£ [5]

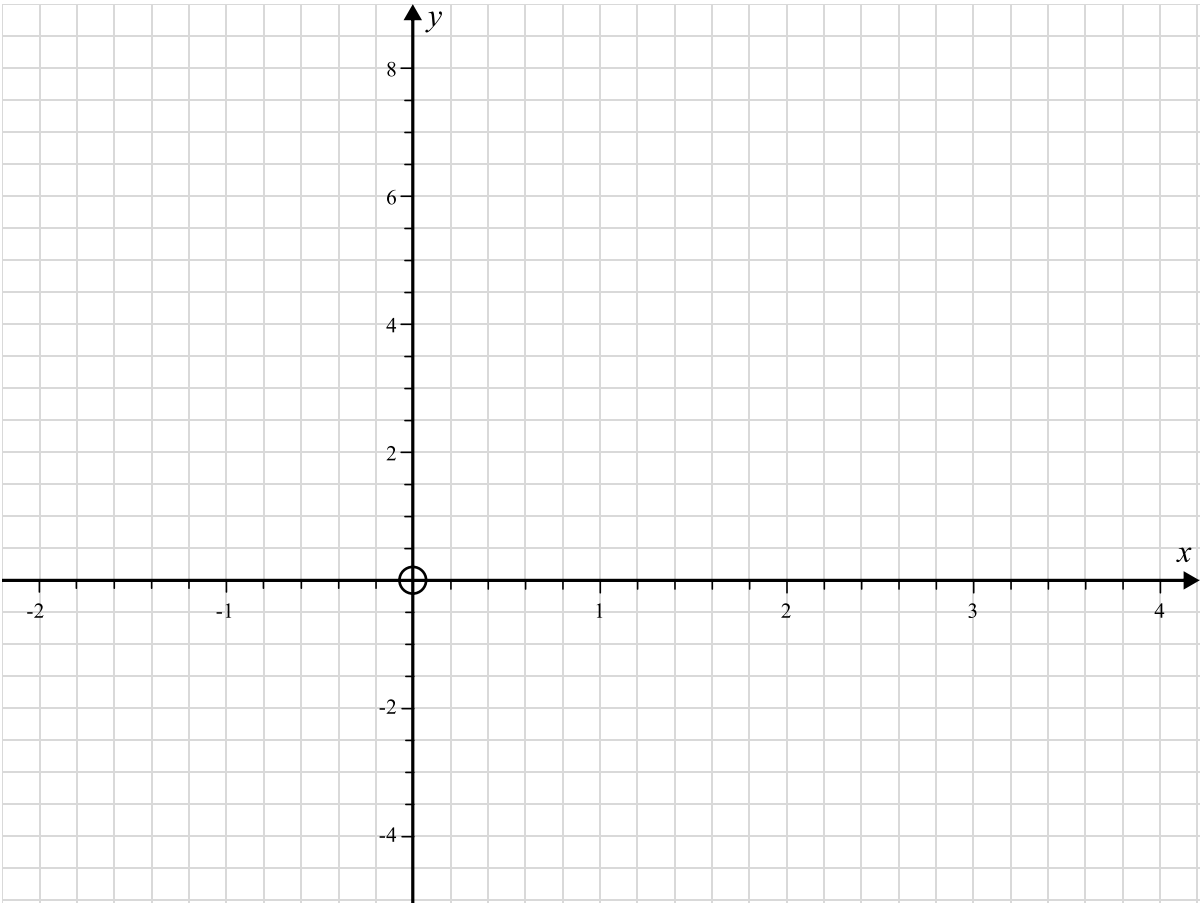
22 (a) Complete the table for $y = 4 - 2x$.

x	-2	-1	0	1	2	3	4
y	8			2	0		

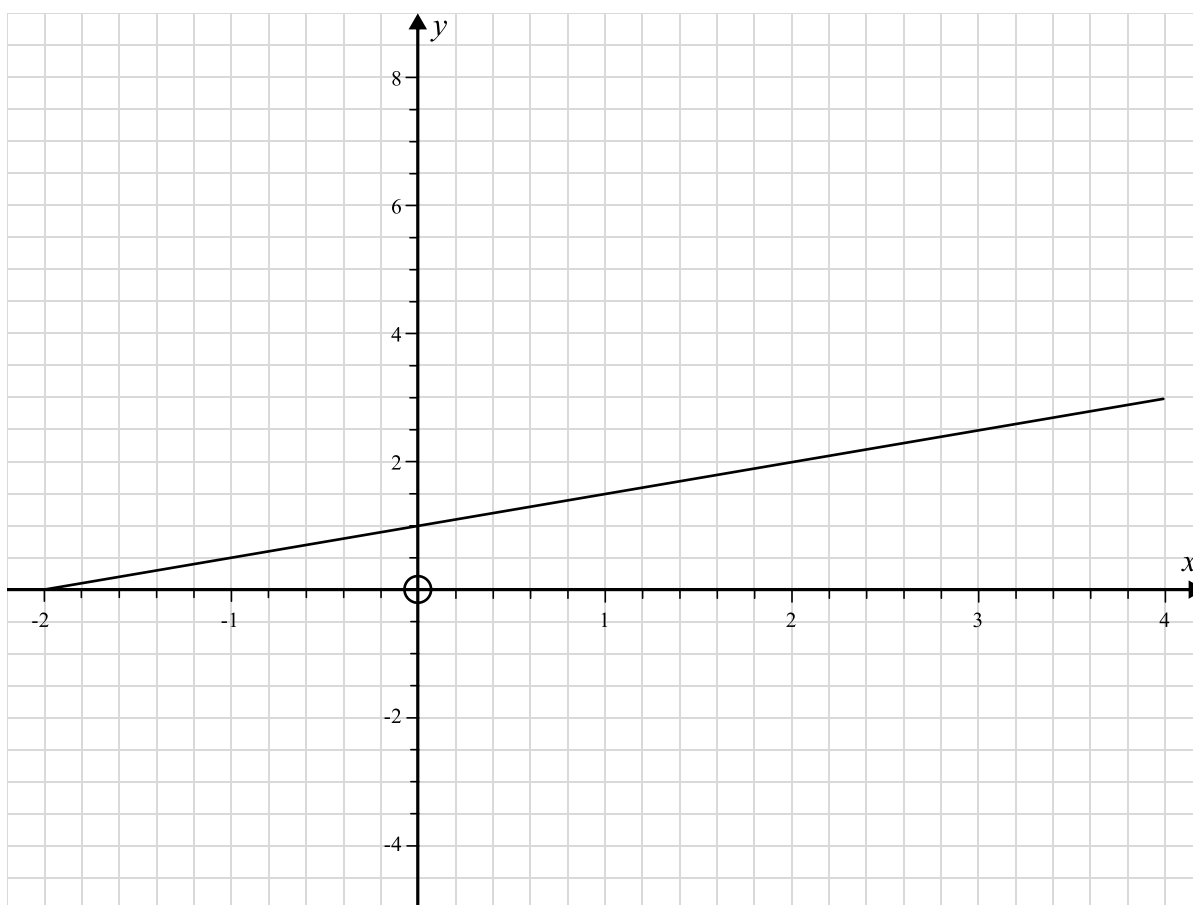
[1]

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

[2]



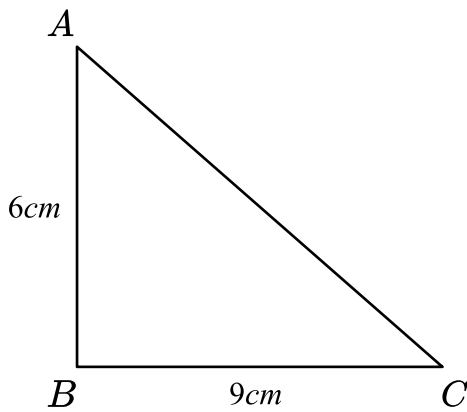
(c) The diagram below shows part of another straight line.



Find the equation of this straight line.

(c) [3]

23 Here is triangle ABC .



Not drawn
accurately

The perimeter of the triangle is $25cm$.

By calculation, determine whether triangle ABC is a right-angled triangle.

You must show how you decide.

because

[3]

24 Hollie, Izzy and Jess all roll the same dice a number of times.
They each record how many times they roll a 6.

The table below shows their results.

	Hollie	Izzy	Jess
Number of rolls	20	50	200
Number of 6s	1	14	31

(a) Whose results give the best estimate of the probability of rolling a 6 with this dice?
Explain your answer.

[1]

(b) Hollie says ‘I think the dice is biased’.

(i) Do Hollie’s results support this statement? Explain your answer.

[1]

(ii) Do the overall results support this statement? Explain your answer.

[1]

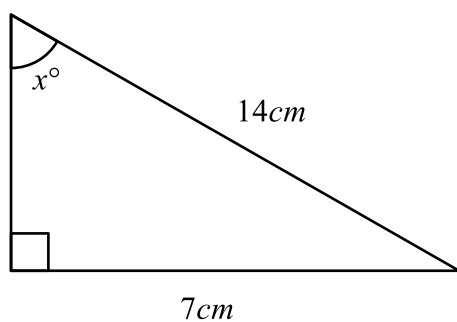
25 (a) Expand and simplify $(x + 4)(x - 7)$

(a) [2]

(b) Factorise $x^2 - 9$

(b) [2]

26 Here is a right-angled triangle.



Use trigonometry to work out the value of x .

.....° [3]

27 A factory has 12 machines.

When all 12 machines are running, the factory produces 345600 bars of chocolate over an 8 hour operating window.

One day, 3 of the machines are broken.

For how long must the remaining machines work to ensure the same number of chocolate bars are made?

Give your answer in hours and minutes.

----- hours ----- minutes **[3]**

28 Maizy and Iona buy some presents.

Maizy buys 4 mugs and 3 plants. She pays £29.

Iona buys 3 mugs and 2 plants. She pays £20.50.

Assume that each mug has the same cost and each plant has the same cost.

Work out the cost of one mug and the cost of one plant.

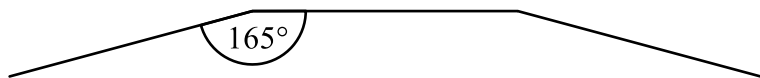
You must show your working.

Cost of one mug £ -----

Cost of one plant £ -----

[5]

29 Here is a section of a regular polygon



Not drawn
accurately

Work out the number of sides of the polygon.

----- [2]

30 (a) Write the number 0.00238 in standard form.

(a) ----- [1]

(b) Write 2.71×10^5 as an ordinary number.

(b) ----- [1]

(c) Work out $5.4 \times 10^4 - 3.7 \times 10^3$

Give your answer in standard form.

(c) ----- [2]

31 $\mathbf{a} = \begin{pmatrix} x \\ 5 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 1 \\ y \end{pmatrix}$

(a) Find $3\mathbf{a} - 2\mathbf{b}$ as a column vector, in terms of x and y

(a) $\begin{pmatrix} \\ \end{pmatrix}$ [2]

(b) Given that $\mathbf{a} + \mathbf{b} = \begin{pmatrix} 4 \\ 3 \end{pmatrix}$,

$\mathbf{a} + \mathbf{b} = \begin{pmatrix} 4 \\ 3 \end{pmatrix}$

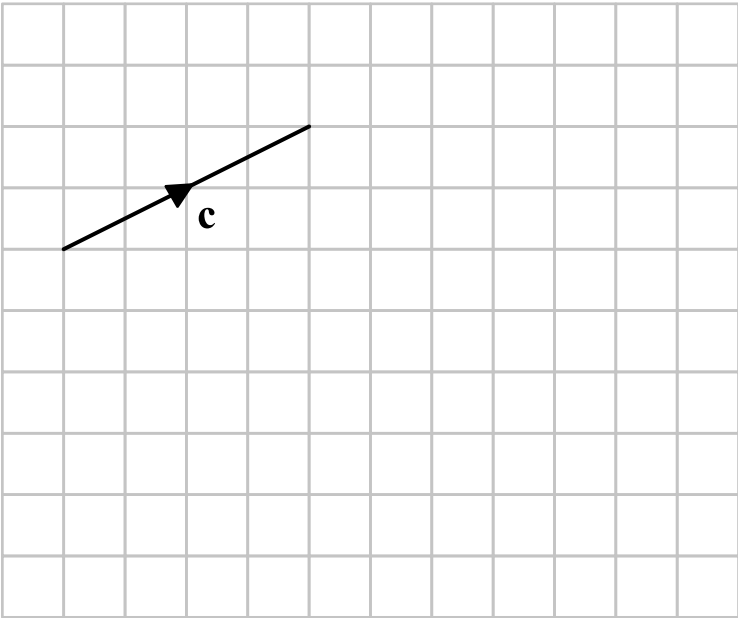
Find the values of x and y .

$x =$ _____

$y =$ _____

[2]

(c) Vector \mathbf{c} is shown on the grid below.



On the grid, draw the vector $2\mathbf{c}$

[1]

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