EXPERT TUITION

Maths Questions By Topic:

Algebra

Edexcel GCSE (Foundation)

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Table Of Contents

1 A number sequence starts 1 2 4

Emma says that the next term is 7

(a) Explain why Emma may be correct.

.....

.....

.....

(1)

Here are the first four terms of the sequence of triangle numbers.

1 3 6 10

(b) Find the 8th term of this sequence.

.....

(2)

(Total for Question 1 is 3 marks)

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2 (a) Expand $2(a + d)$

.....

(1)

(b) Factorise $6y^2 - 5y$

.....

(1)

(c) Solve $4x - 7 = 37$

$x =$.....

(2)

(Total for Question 2 is 4 marks)

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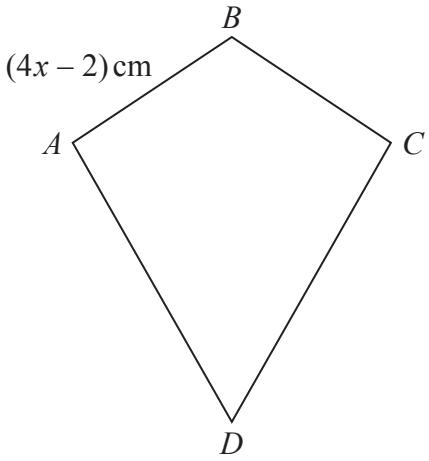
3 $ABCD$ is a kite.



$AB = (4x - 2)$ cm

Jasper says that x could be 0.5

(a) Explain why Jasper cannot be correct.

.....

.....

.....

(1)

$AD = 3AB$
The kite has a perimeter of 64 cm.

(b) Find the value of x.

$x =$.....

(3)

(Total for Question 3 is 4 marks)

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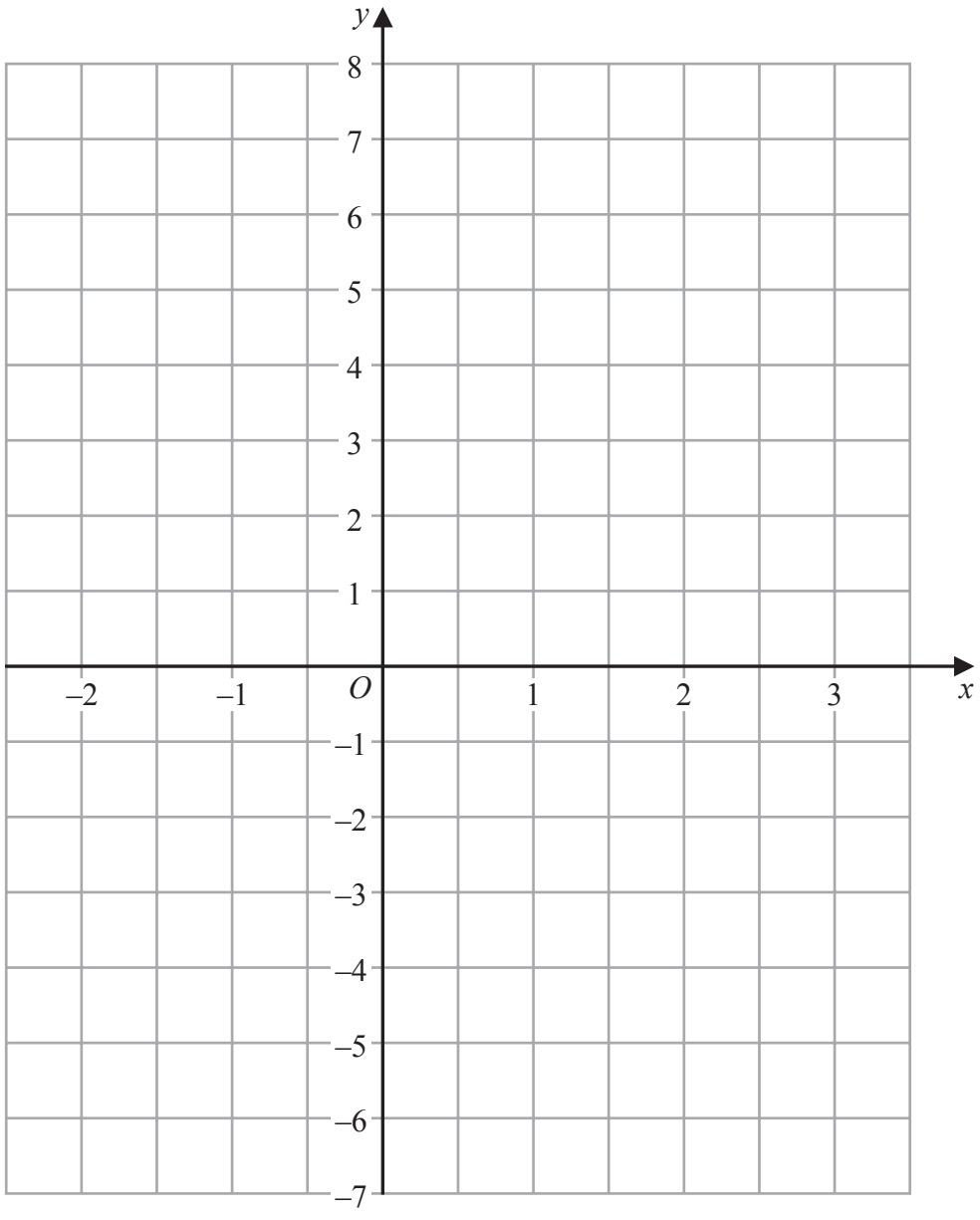
4 On the grid below, draw the graph of $y = 2x - 2$ for values of x from –2 to 3



(Total for Question 4 is 3 marks)

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5 The equation of a straight line **L** is $y = 3 - 4x$

(i) Write down the gradient of **L**.

.....

(1)

(ii) Write down the coordinates of the point where **L** crosses the y-axis.

(..... , ...)

(1)

(Total for Question 5 is 2 marks)

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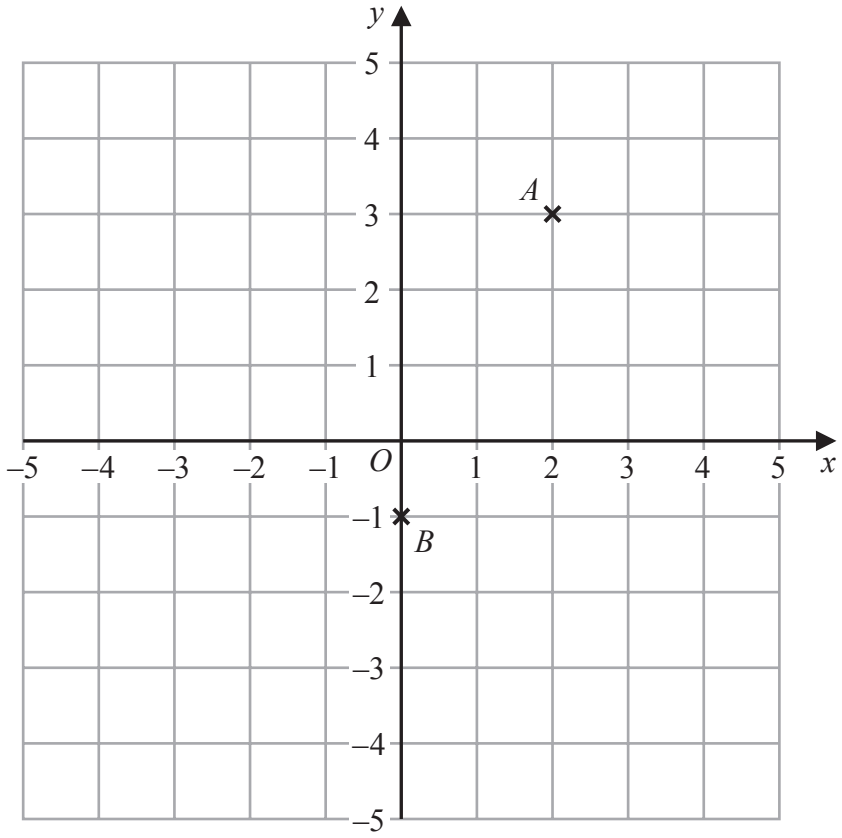
6



(a) Write down the coordinates of the point A.

(..... , ...)

(1)

(b) Write down the coordinates of the point B.

(..... , ...)

(1)

(c) On the grid, mark with a cross (×) the point (–2, 1)
Label this point C.

(1)

(Total for Question 6 is 3 marks)

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7 The diagram shows a number machine.

(a) Find the output when the input is 7

.....

(1)

(b) Find the input when the output is 41

.....

(2)

(Total for Question 7 is 3 marks)

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8 (a) Expand $x(x - 4)$

.....

(1)

(b) Factorise $15y - 10$

.....

(1)

(c) Solve $7(f - 5) = 28$

$f =$ .....

(2)

(Total for Question 8 is 4 marks)

9 The first five terms of an arithmetic sequence are

1 4 7 10 13

Write down an expression, in terms of n, for the nth term of this sequence.

.....

(Total for Question 9 is 2 marks)

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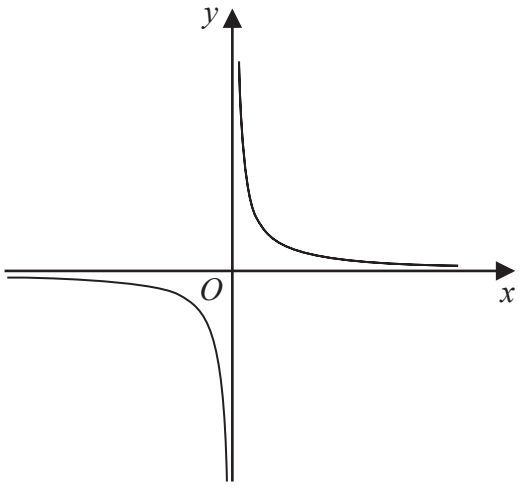
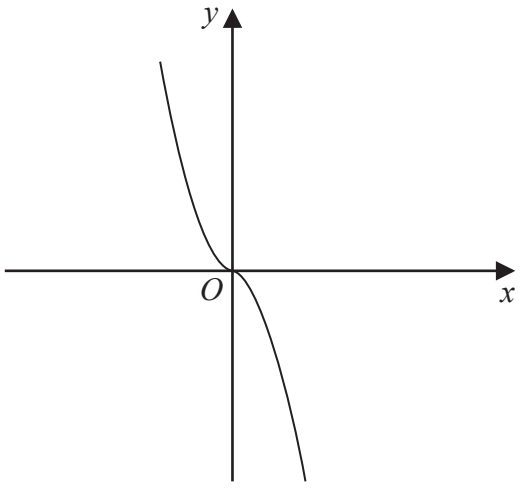
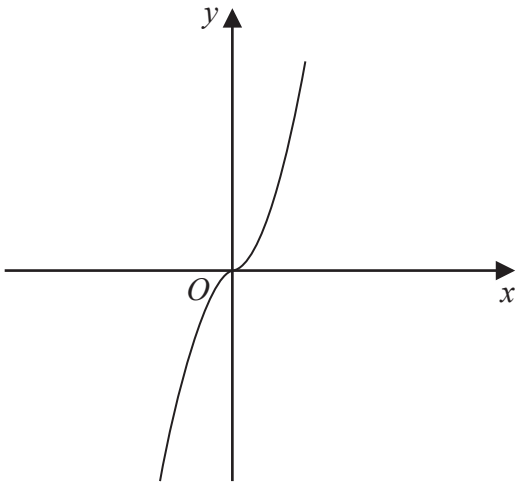
10 The diagram shows four graphs.



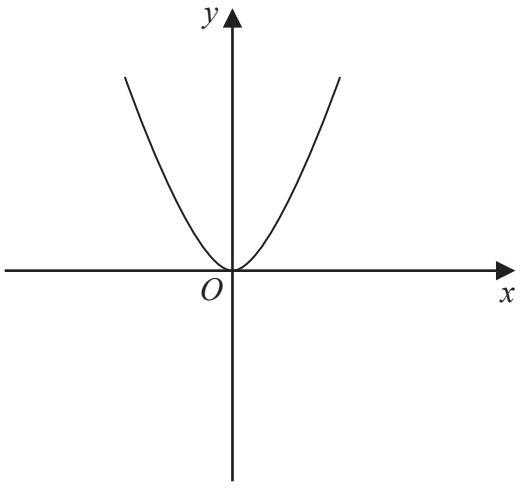
Graph **A**



Graph **B**



Graph **C**



Graph **D**

Each of the equations in the table is the equation of one of the graphs.

Complete the table.

Equation	Letter of graph
$y = -x^3$	
$y = x^3$	
$y = x^2$	
$y = \frac{1}{x}$	

(Total for Question 10 is 2 marks)

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11 (a) Make q the subject of $p = 6q + 7$

.....

(2)

(b) Simplify $(m^{-2})^{-3}$

.....

(1)

(Total for Question 11 is 3 marks)

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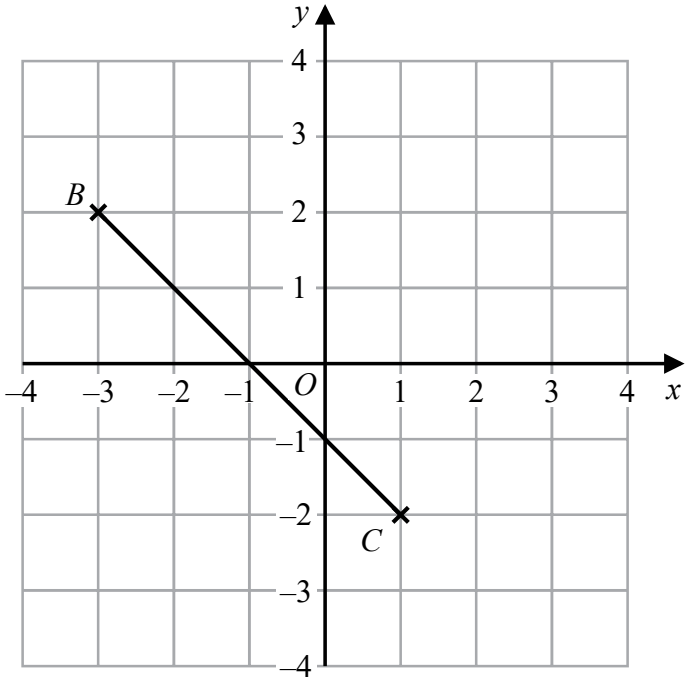
12



(a) Plot the point with coordinates (3, 2)
Label this point A.

(1)

(b) Write down the coordinates of the midpoint of BC.

(..... , ...)

(1)

(Total for Question 12 is 2 marks)

13 (a) Simplify $2a \times 5b$

.....

(1)

(b) Simplify $3x + 2y + 5x - y$

.....

(2)

(Total for Question 13 is 3 marks)

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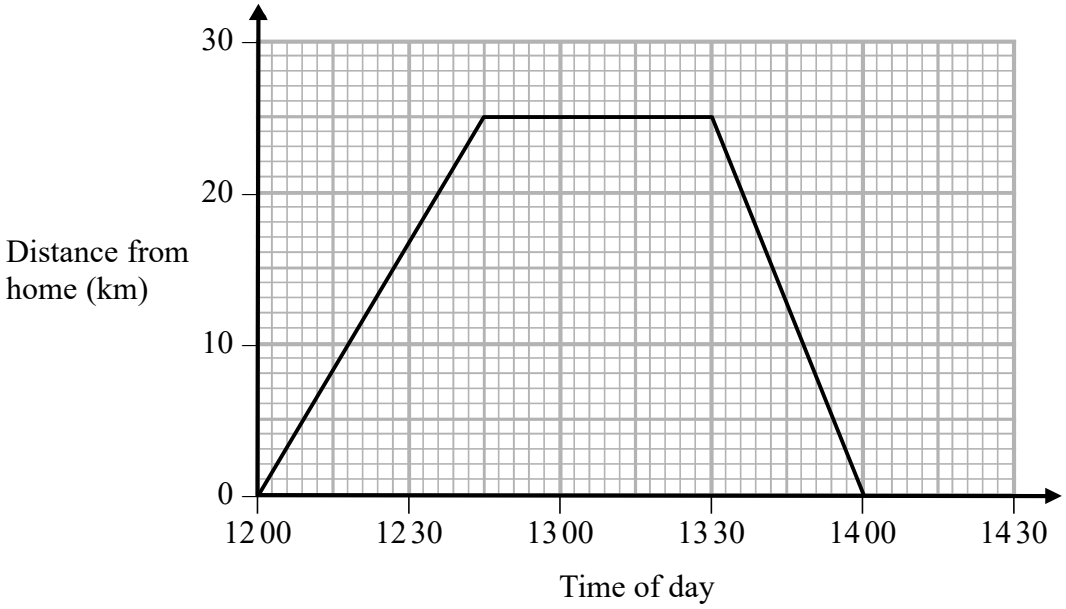
14 Steve drove from his home to his friend's house.
He stayed at his friend's house and then drove home.

Here is Steve's travel graph.



(a) For how many minutes did Steve stay at his friend's house?

..... minutes
(1)

(b) What was Steve's average speed on his journey home?

..... km/h
(2)

(Total for Question 14 is 3 marks)

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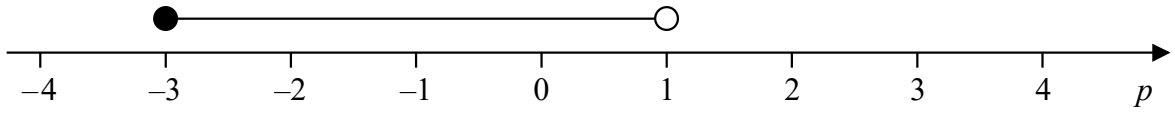
15 $x - 1 = 2$

Work out the value of $2x^2$

.....

(Total for Question 15 is 3 marks)

16 Here is a number line.



Write down the inequality shown on the number line.

.....

(Total for Question 16 is 2 marks)

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17 (a) Simplify $(p^2)^5$

.....

(1)

(b) Simplify $12x^7y^3 \div 6x^3y$

.....

(2)

(Total for Question 17 is 3 marks)

---

18 (a) Solve $t + t + t = 12$

$t =$ .....

(1)

(b) Solve $x - 2 = 6$

$x =$ .....

(1)

(c) Solve $6w + 2 = 20$

$w =$ .....

(2)

(Total for Question 18 is 4 marks)

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19 (a) Expand $5(2m - 3)$

.....

(1)

(b) Factorise $3n + 12$

.....

(1)

(Total for Question 19 is 2 marks)

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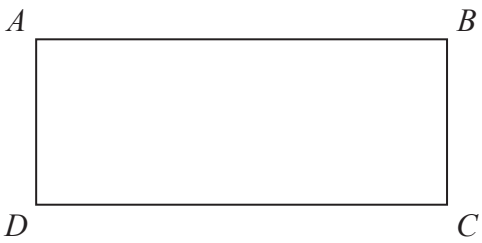
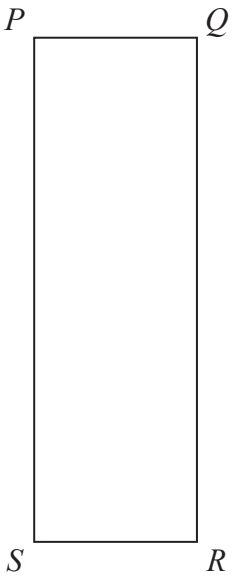
20 Here are two rectangles.





$QR = 10\,\text{cm}$
$BC = PQ$

The perimeter of $ABCD$ is 26 cm
The area of $PQRS$ is $45\,\text{cm}^2$

Find the length of AB.

..... cm

(Total for Question 20 is 4 marks)

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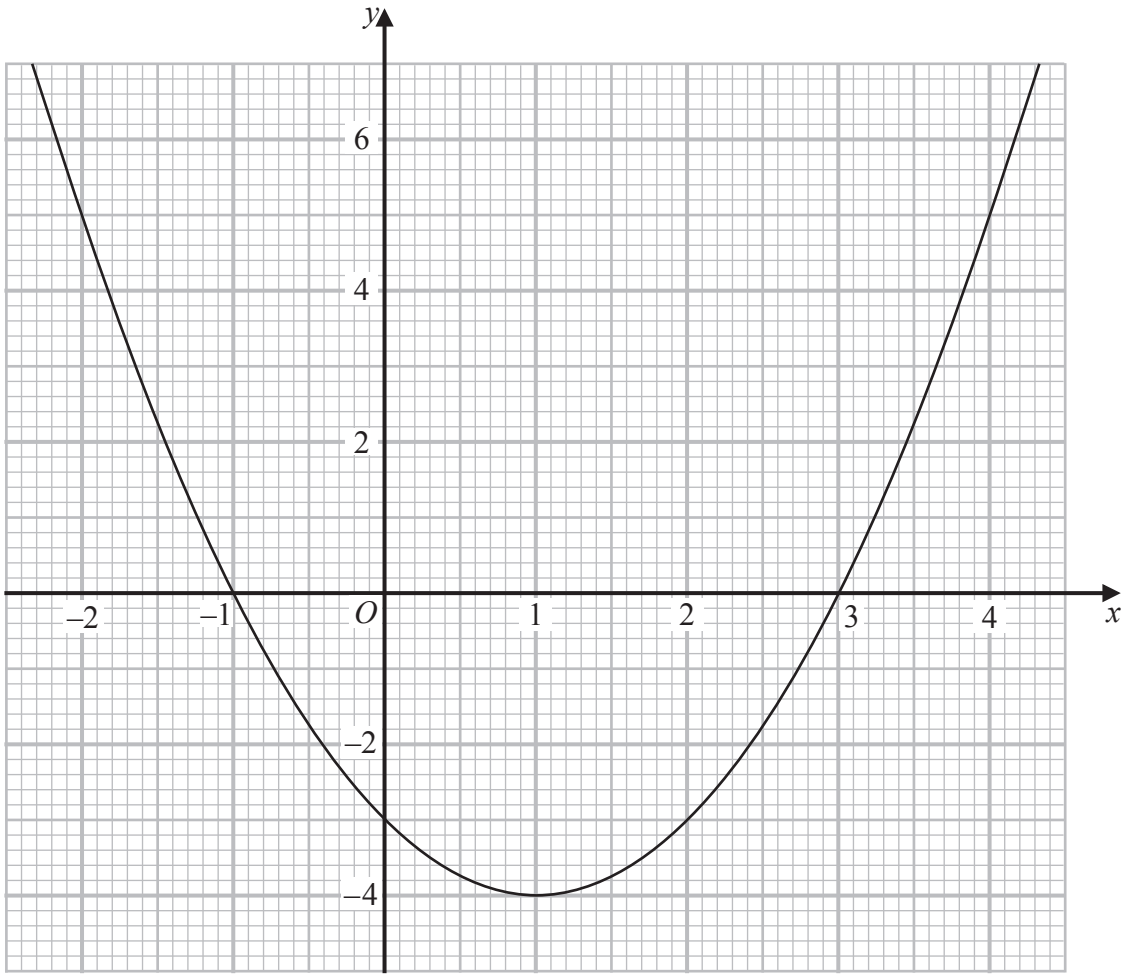
21 Here is the graph of $y = x^2 - 2x - 3$



(a) Write down the coordinates of the turning point on the graph of $y = x^2 - 2x - 3$

(..... , ...)

(1)

(b) Use the graph to find the roots of the equation $x^2 - 2x - 3 = 0$

.....

(2)

(Total for Question 21 is 3 marks)

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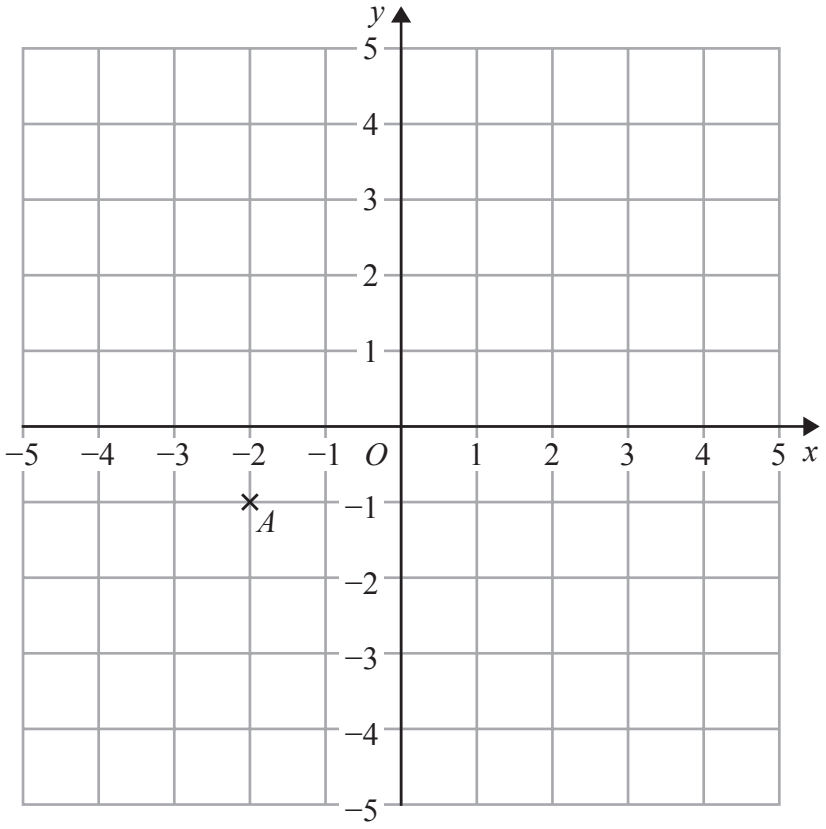
22



(a) Write down the coordinates of point A.

(..... , ...)

(1)

(b) On the grid, mark with a cross (×) the point (2, 3)
Label this point B.

(1)

(c) On the grid, draw the line with equation $x = -4$

(1)

(Total for Question 22 is 3 marks)

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23 $g = 9$
$h = 4$

Work out the value of $2g + 3h$

.....

(Total for Question 23 is 2 marks)

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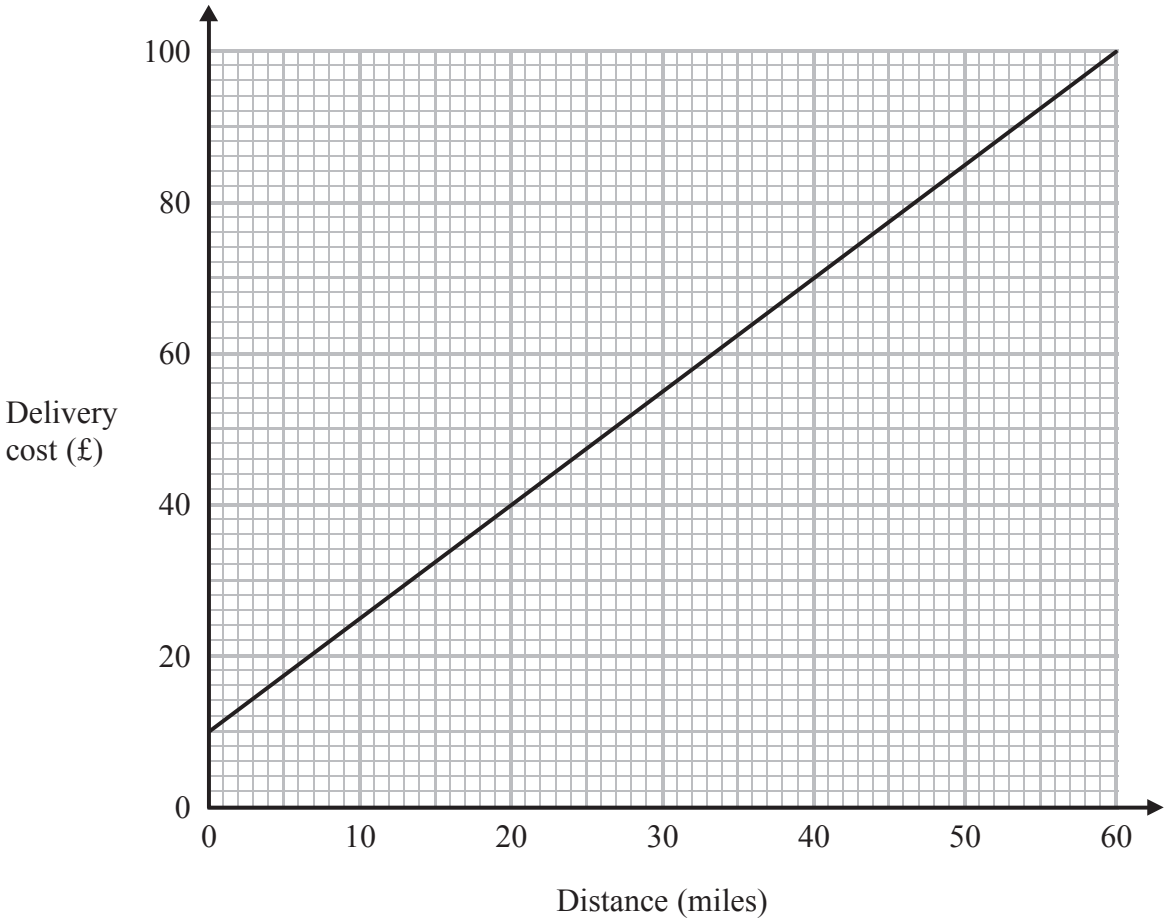
24 Tom uses his lorry to deliver bricks.

You can use this graph to find the delivery cost for different distances.



For each delivery, there is a fixed charge plus a charge for the distance.

How much is the fixed charge?

£ .....

(1)

(Total for Question 24 is 1 mark)

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25 $v^2 = u^2 + 2as$

$u = 12 \quad a = -3 \quad s = 18$

(a) Work out a value of v.

.....

(2)

(b) Make s the subject of $v^2 = u^2 + 2as$

.....

(2)

(Total for Question 25 is 4 marks)

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26 Solve the simultaneous equations

$$5x + y = 21$$
$$x - 3y = 9$$

$x =$ .....

$y =$ .....

(Total for Question 26 is 3 marks)

27 (a) Simplify $3 \times 4t$

.....

(1)

(b) Simplify $8a - 3a + 2a$

.....

(1)

(Total for Question 27 is 2 marks)

28 $P = 4x + 3y$

$x = 5$
$y = -2$

(a) Work out the value of P.

.....

(2)

(b) Expand $4e(e + 2)$

.....

(2)

(c) Solve $3(m - 4) = 21$

$m =$ .....

(2)

(Total for Question 28 is 6 marks)

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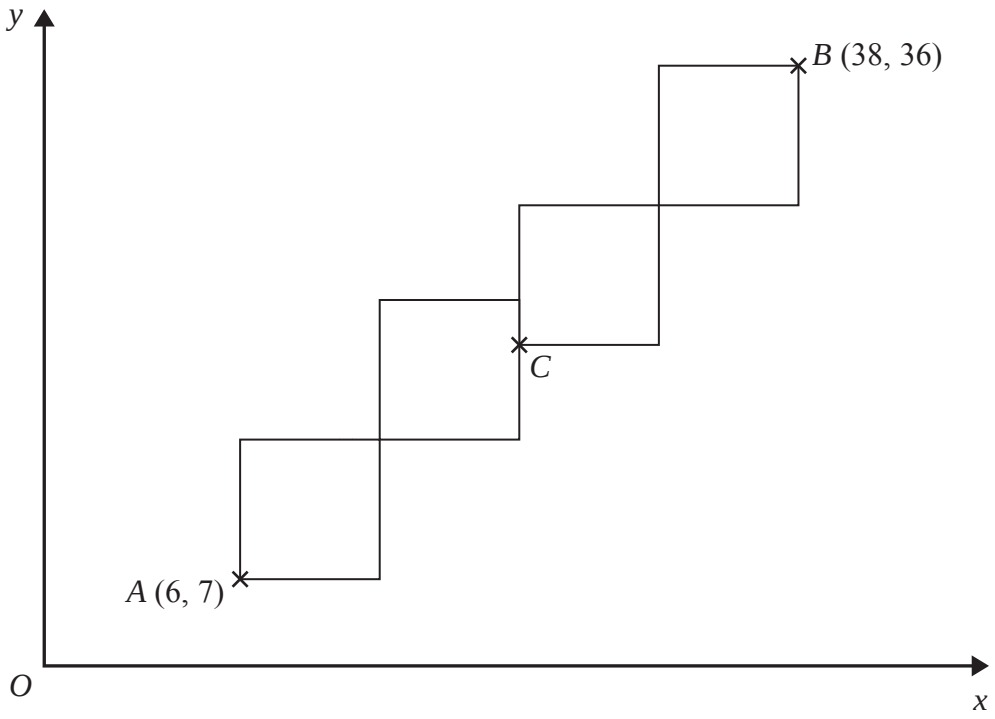
29 A pattern is made from four identical squares.

The sides of the squares are parallel to the axes.



Point A has coordinates (6, 7)
Point B has coordinates (38, 36)
Point C is marked on the diagram.

Work out the coordinates of C.

(..... , ...)

(Total for Question 29 is 5 marks)

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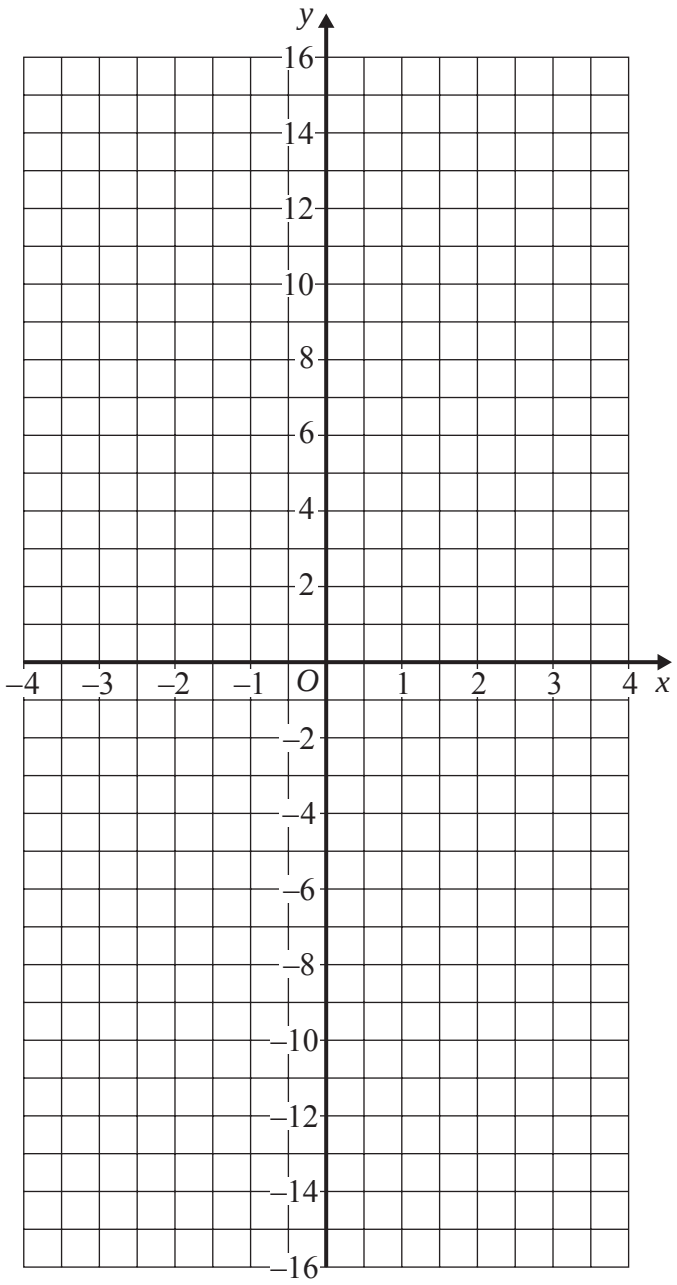
30 On the grid below, draw the graph of $y = 1 - 4x$ for values of x from -3 to 3



(Total for Question 30 is 3 marks)

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31 Solve $\frac{y}{4} = 10.5$

$y =$ .....

(Total for Question 31 is 1 mark)

32 Here are the first four terms of a number sequence.

2 5 11 23

The rule to continue this sequence is

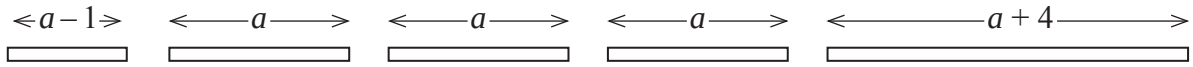
multiply the previous term by 2 and then add 1

Work out the 5th term of this sequence.

.....

(Total for Question 32 is 1 mark)

33 Here are five straight rods.



All measurements are in centimetres.

The total length of the five rods is L cm.

Find a formula for L in terms of a.
Write your formula as simply as possible.

.....

(Total for Question 33 is 3 marks)

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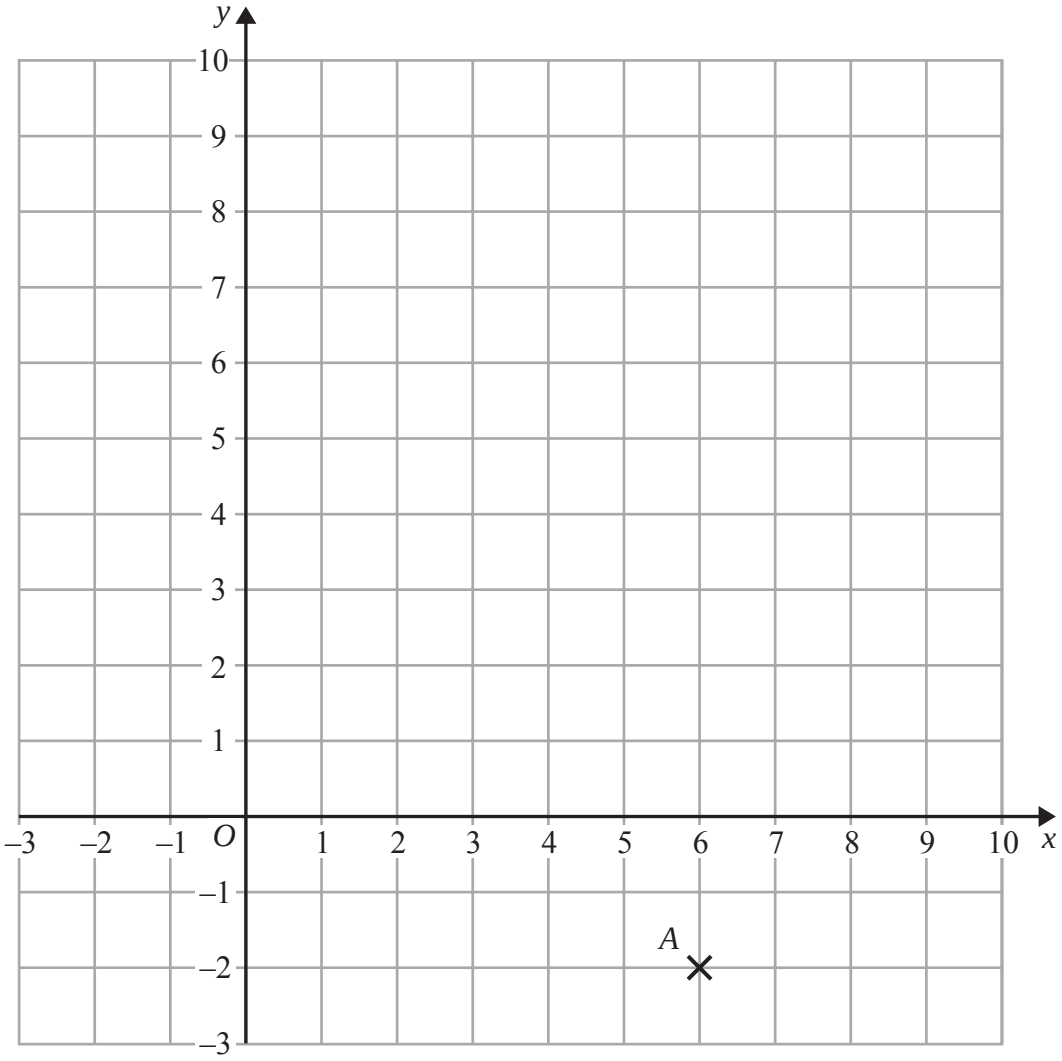
34



(a) Write down the coordinates of the point *A*.

(..... , ...)

(1)

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(b) (i) Plot the point with coordinates (2, 9).
Label this point *B*.

(1)

(ii) Does point *B* lie on the straight line with equation $y = 4x + 1$?
You must show how you get your answer.

.....

.....

(1)

(c) On the grid, draw the line with equation $x = -2$

(1)

(Total for Question 34 is 4 marks)

35 Kiaria is 7 years older than Jay.
Martha is twice as old as Kiaria.
The sum of their three ages is 77

Find the ratio of Jay's age to Kiaria's age to Martha's age.

.....

(Total for Question 35 is 4 marks)

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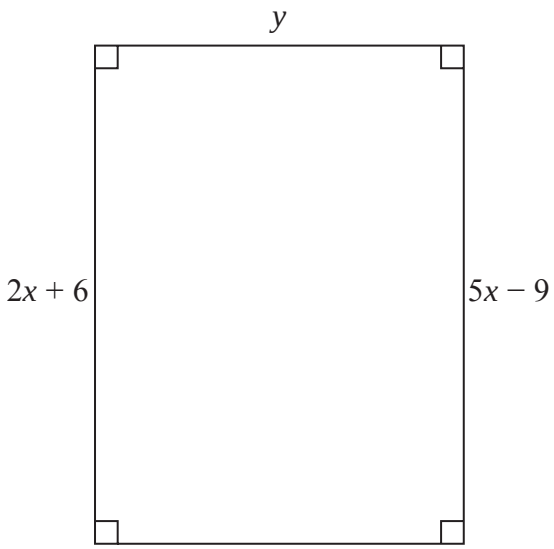
36 Here is a rectangle.



All measurements are in centimetres.

The area of the rectangle is 48 cm^2.

Show that $y = 3$

(Total for Question 36 is 4 marks)

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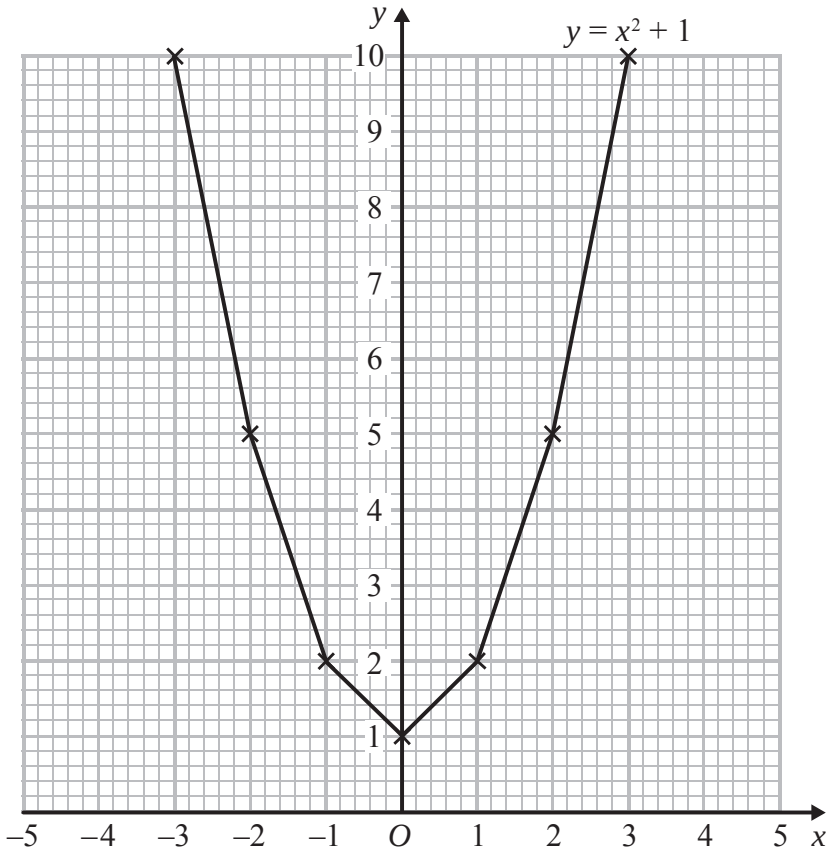
37 Brogan needs to draw the graph of $y = x^2 + 1$

Here is her graph.



Write down one thing that is wrong with Brogan's graph.

.....

.....

(Total for Question 37 is 1 mark)

EXPERT TUITION

38 (a) Simplify $7 \times e \times f \times 8$

.....

(1)

(b) Solve $\frac{x}{5} = 2\frac{1}{2}$

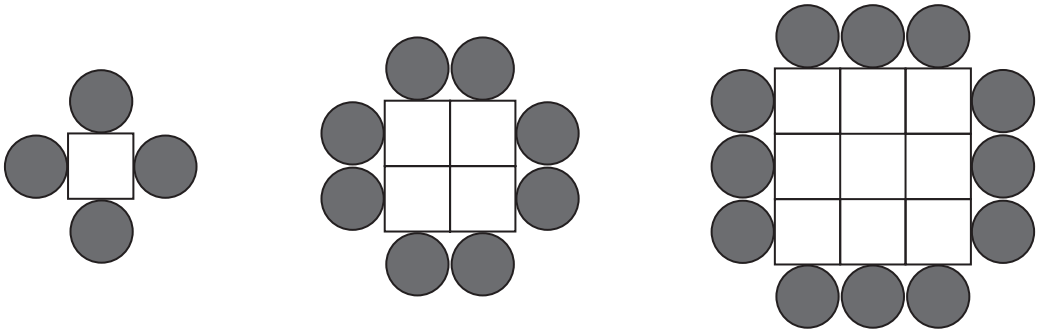
$x =$ .....

(1)

(Total for Question 38 is 2 marks)

39 A sequence of patterns is made from circular tiles ● and square tiles □

Here are the first three patterns in the sequence.



pattern number 1 pattern number 2 pattern number 3

(a) How many square tiles are needed to make pattern number 6?

.....

(2)

(b) How many circular tiles are needed to make pattern number 20?

.....

(2)

(Total for Question 39 is 4 marks)

EXPERT TUITION

40 $v = u + at$

$u = 1 \qquad a = -3 \qquad t = \frac{1}{2}$

Work out the value of v.

$v =$ .....

(Total for Question 40 is 2 marks)

41 (a) Solve $4(x - 5) = 18$

$x =$ .....

(2)

$-3 < t \leqslant 2$
t is an integer.

(b) Write down all the possible values of t.

.....

(2)

(Total for Question 41 is 4 marks)

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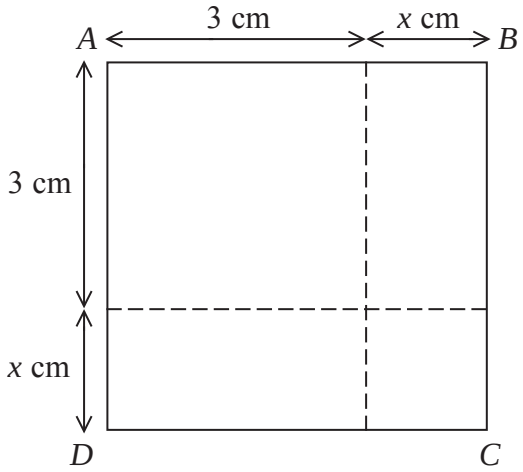
42



The area of square $ABCD$ is 10 cm^2.

Show that $x^2 + 6x = 1$

(Total for Question 42 is 3 marks)

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43 The equation of the line L_1 is $y = 3x - 2$
The equation of the line L_2 is $3y - 9x + 5 = 0$

Show that these two lines are parallel.

(Total for Question 43 is 2 marks)

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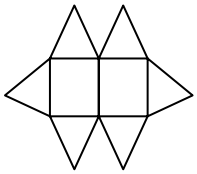
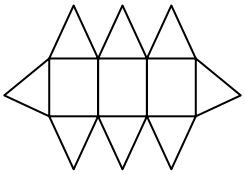
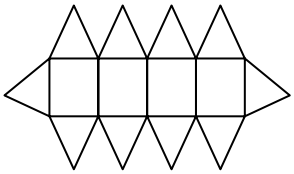
44 Here are the first three patterns in a sequence.
The patterns are made from triangles and rectangles.



pattern number 1



pattern number 2



pattern number 3

(a) How many triangles are there in pattern number 7?

.....

(2)

Charlie says

"There are 4 rectangles in pattern number 3 so there will be 8 rectangles in pattern number 6"

(b) Is Charlie right?
Give a reason for your answer.

.....

.....

(1)

(Total for Question 44 is 3 marks)

45 Solve $4x + 5 = x + 26$

$x =$ .....

(Total for Question 45 is 2 marks)

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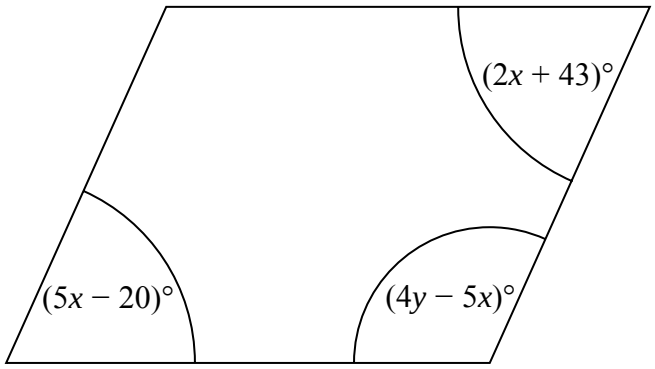
46 Expand and simplify $(m + 7)(m + 3)$

.....

(Total for Question 46 is 2 marks)

47 Here is a parallelogram.



Work out the value of x and the value of y.

$x =$ .....

$y =$ .....

(Total for Question 47 is 5 marks)

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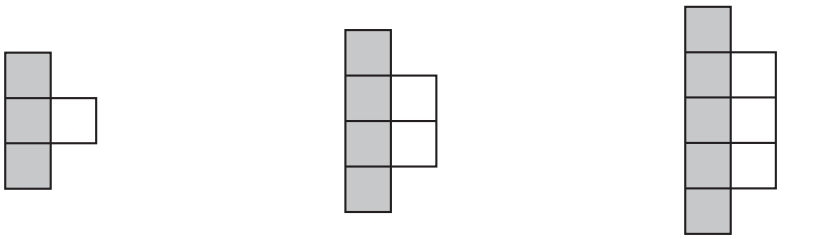
48 Here is a sequence of patterns made with grey square tiles and white square tiles.



pattern number 1 | pattern number 2 | pattern number 3

(a) In the space below, draw pattern number 4

(1)

(b) Find the total number of tiles in pattern number 20

.....

(2)

(c) Write an expression, in terms of n, for the number of grey tiles in pattern number n.

.....

(2)

(Total for Question 48 is 5 marks)

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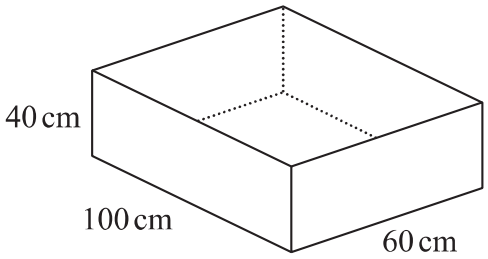
49 The diagram shows a sand pit.
The sand pit is in the shape of a cuboid.



Sally wants to fill the sand pit with sand.
A bag of sand costs £2.50
There are 8 litres of sand in each bag.

Sally says,

"The sand will cost less than £70"

Show that Sally is wrong.

(Total for Question 49 is 5 marks)

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50 Expand and simplify $(x + 3)(x - 1)$

.....

(Total for Question 50 is 2 marks)

51 Factorise $x^2 - 16$

.....

(Total for Question 51 is 1 mark)

52 Solve the simultaneous equations

$$4x + y = 25$$
$$x - 3y = 16$$

$x =$ ..... , $y =$ .....

(Total for Question 52 is 3 marks)

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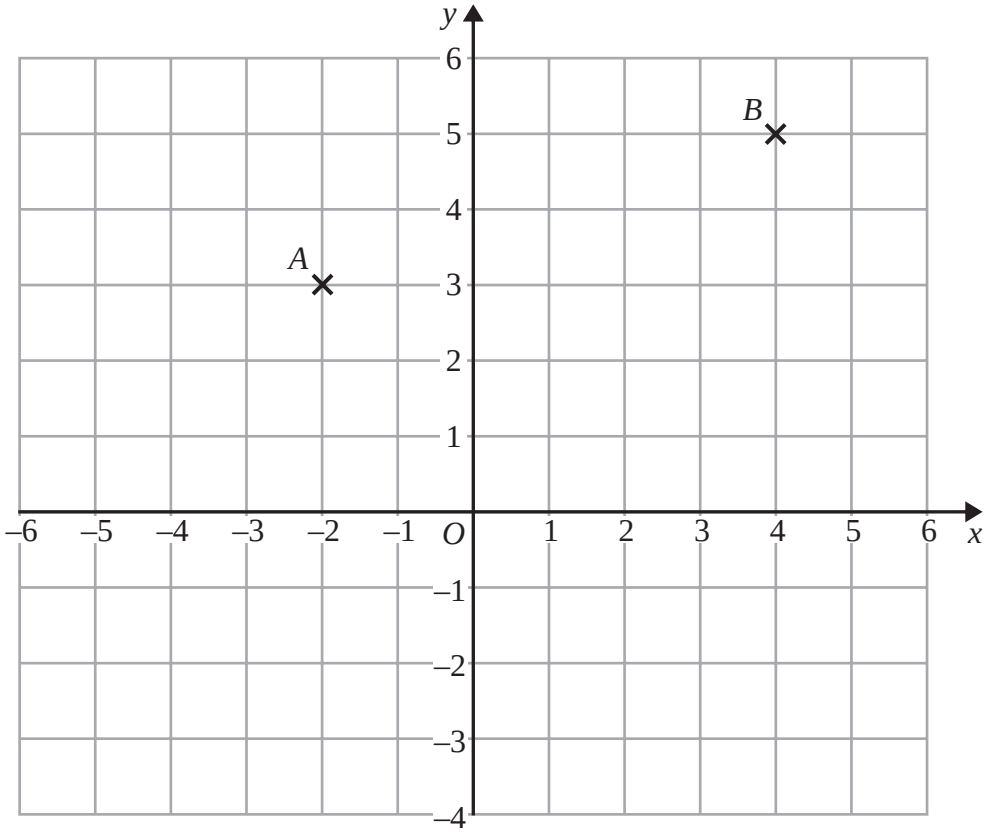
53



(a) Write down the coordinates of point *B*.

(..... , ...)

(1)

(b) Find the coordinates of the midpoint of *AB*.

(..... , ...)

(1)

(c) On the grid, draw the line with equation $y = -3$

(1)

(Total for Question 53 is 3 marks)

EXPERT TUITION

54 (a) Solve $3x + 7 = 1$

$x =$ .....

(2)

(b) $f = 6$
$g = 5$

Work out the value of $3f - 2g$

.....

(2)

(Total for Question 54 is 4 marks)

55 Dimitar has 20 sweets.
Pip also has 20 sweets.

Dimitar gives Pip x sweets.

Dimitar then eats 5 of his sweets.
Pip then eats half of her sweets.

Write expressions for the number of sweets Dimitar and Pip now have.

Dimitar ..... Pip .....

(Total for Question 55 is 3 marks)

EXPERT TUITION

56 (a) Factorise $y^2 + 27y$

.....

(1)

(b) Simplify $(t^3)^2$

.....

(1)

(c) Simplify $\frac{w^9}{w^4}$

.....

(1)

(Total for Question 56 is 3 marks)

57 Here are the first five terms of a sequence.

2 8 18 32 50

(a) Find the next term of this sequence.

.....

(1)

The nth term of a different sequence is $3n^2 - 10$

(b) Work out the 5th term of this sequence.

.....

(1)

(Total for Question 57 is 2 marks)

EXPERT TUITION

58 (a) Simplify $m + m + m + m$

.....

(1)

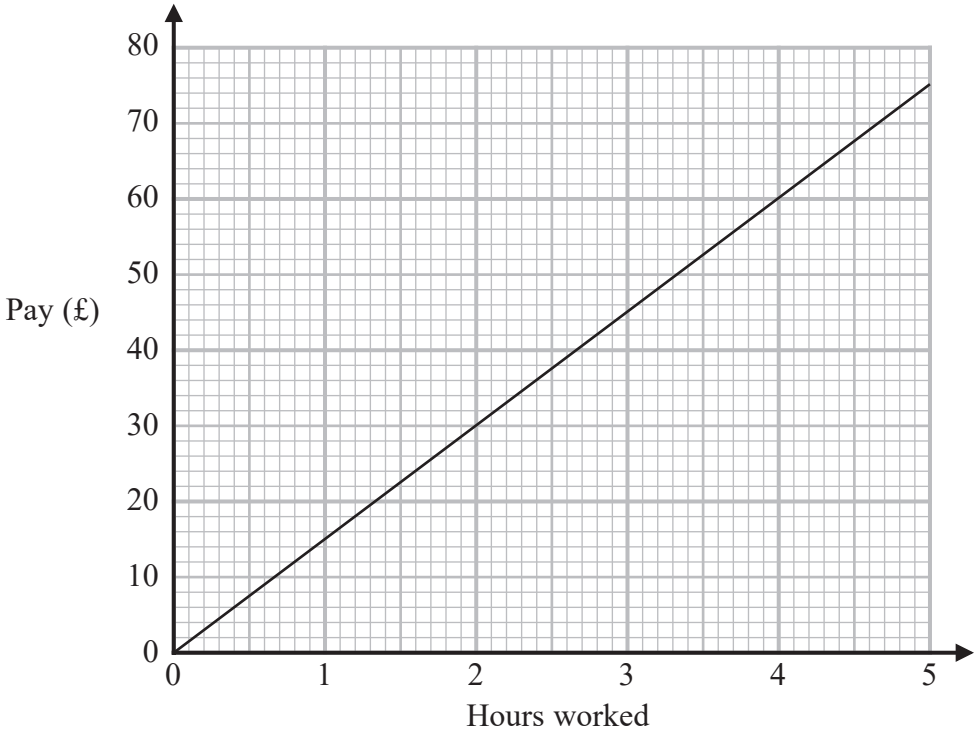
(b) Simplify $12p \div 4$

.....

(1)

(Total for Question 58 is 2 marks)

59 Nazima uses this graph to find out how much money she is paid for the number of hours she has worked.



(a) How much money is Nazima paid for each hour she works?

£.....

(1)

(Total for Question 59 is 1 mark)

EXPERT TUITION

60 (a) Simplify $c^5 \div c^2$

.....

(1)

(b) Simplify $(d^4)^3$

.....

(1)

(Total for Question 60 is 2 marks)

EXPERT TUITION

61 (a) Find the Highest Common Factor (HCF) of 60 and 84

.....

(2)

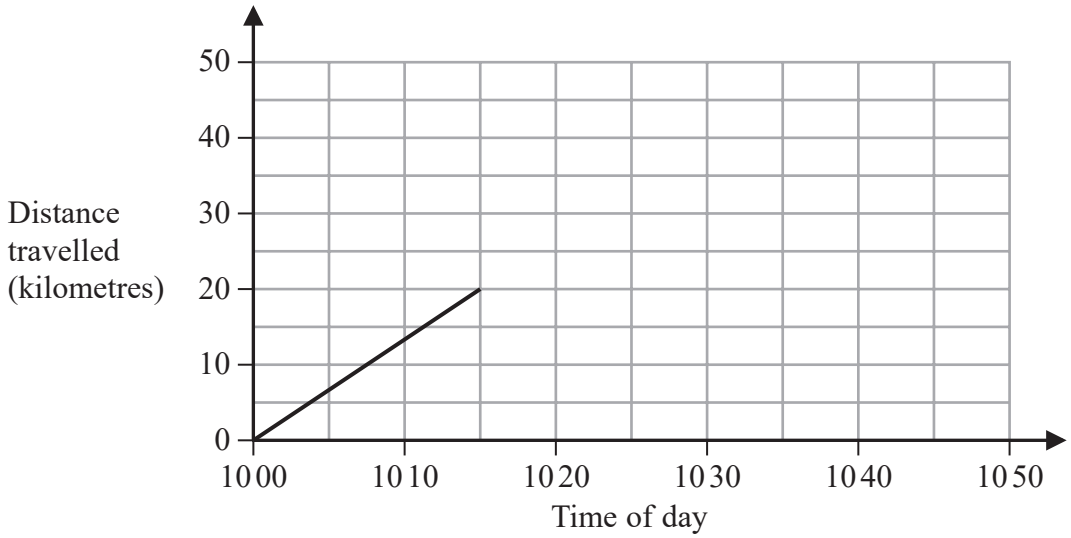
(b) Find the Lowest Common Multiple (LCM) of 24 and 40

.....

(2)

(Total for Question 61 is 4 marks)

62 Sam drives his car on a journey.
Here is the travel graph for the first 15 minutes of his journey.



(a) Work out Sam's speed, in km/h, for the first 15 minutes of his journey.

..... km/h

(2)

(Total for Question 62 is 2 marks)

EXPERT TUITION

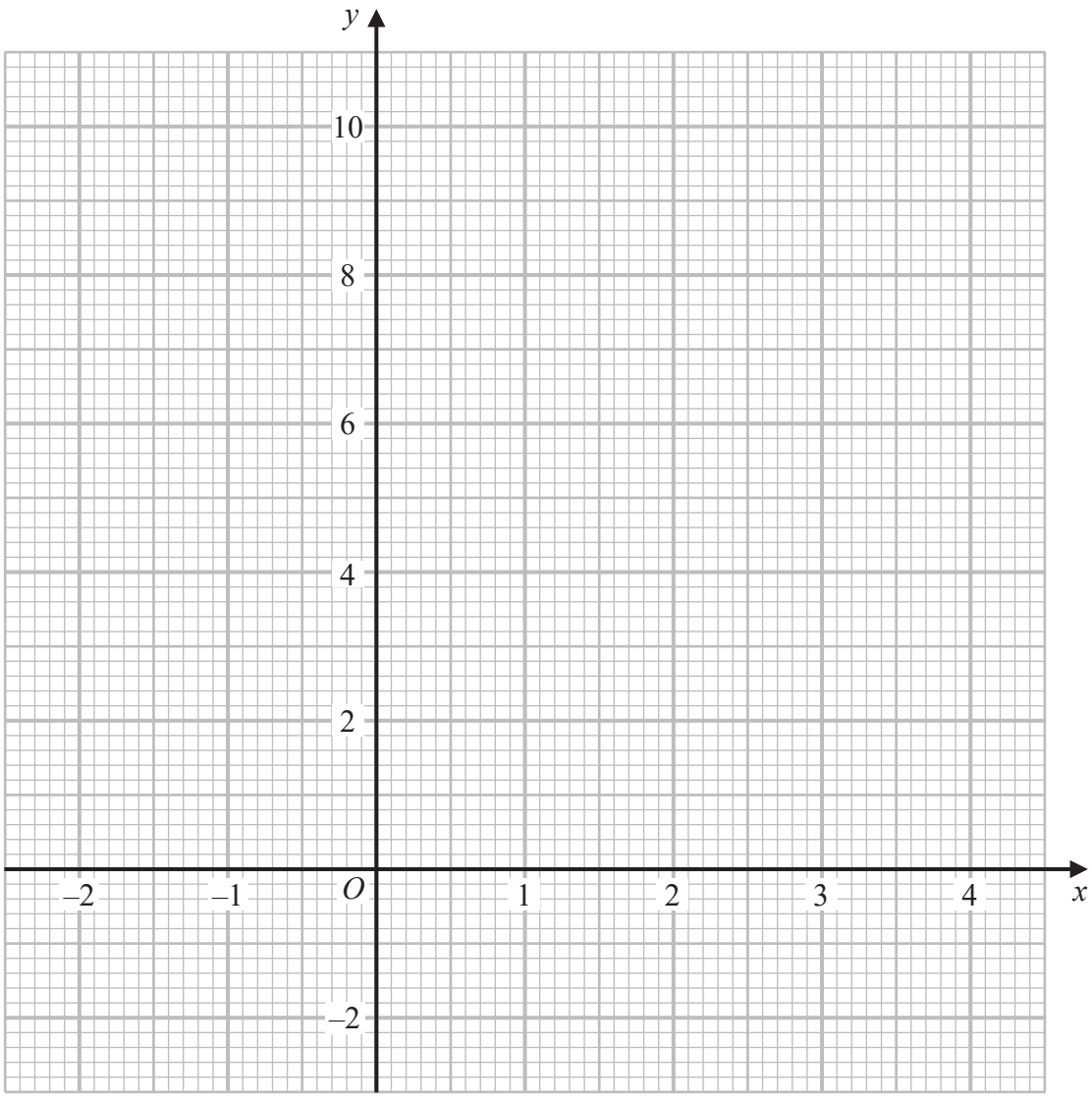
63 (a) Complete the table of values for $y = x^2 - 2x + 2$

x	–2	–1	0	1	2	3	4
y	10		2			5	

(2)

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

(2)



(c) Use your graph to find estimates of the solutions of the equation $x^2 - 2x + 2 = 4$

.....

(2)

(Total for Question 63 is 6 marks)

EXPERT TUITION

64 Solve $x^2 - 7x - 18 = 0$

.....

(Total for Question 64 is 3 marks)

EXPERT TUITION

65 Simplify $3e - e + 4e$

.....

(Total for Question 65 is 1 mark)

66 (a) Solve $3m = 36$

$m =$ .....

(1)

(b) Solve $7 - x = 3$

$x =$ .....

(1)

(Total for Question 66 is 2 marks)

EXPERT TUITION

67 $T = 3x + 4y$

(a) Work out the value of T when $x = 5$ and $y = -7$

.....

(2)

(b) Work out the value of y when $T = 38$ and $x = 6$

.....

(2)

(Total for Question 67 is 4 marks)

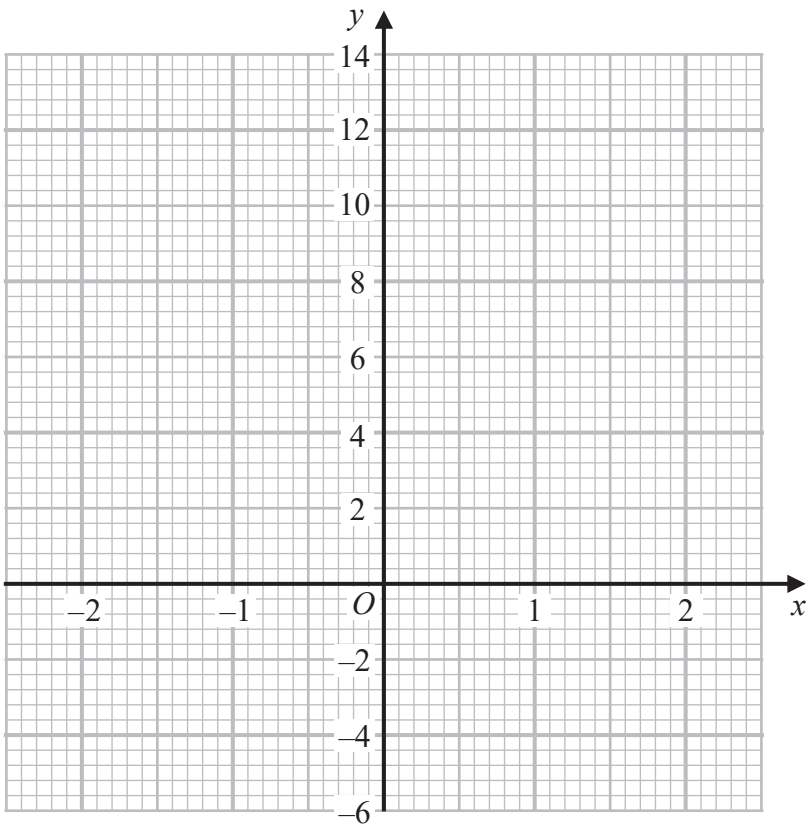
EXPERT TUITION

68 (a) Complete the table of values for $y = 5 - x^3$

x	–2	–1	0	1	2
y		6			

(2)

(b) On the grid below, draw the graph of $y = 5 - x^3$ for values of x from –2 to 2



(2)

(Total for Question 68 is 4 marks)

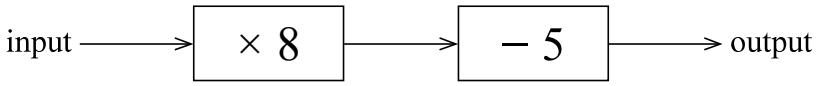
69 Write down the gradient of the line with equation $y = 2x + 3$

.....

(Total for Question 69 is 1 mark)

EXPERT TUITION

70 Here is a number machine.

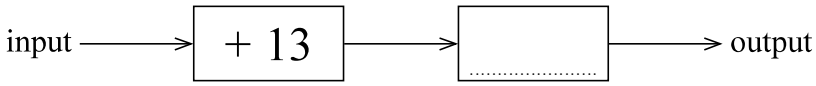


(a) Work out the output when the input is 6

.....

(1)

Here is a different number machine.



When the input is 17, the output is 10

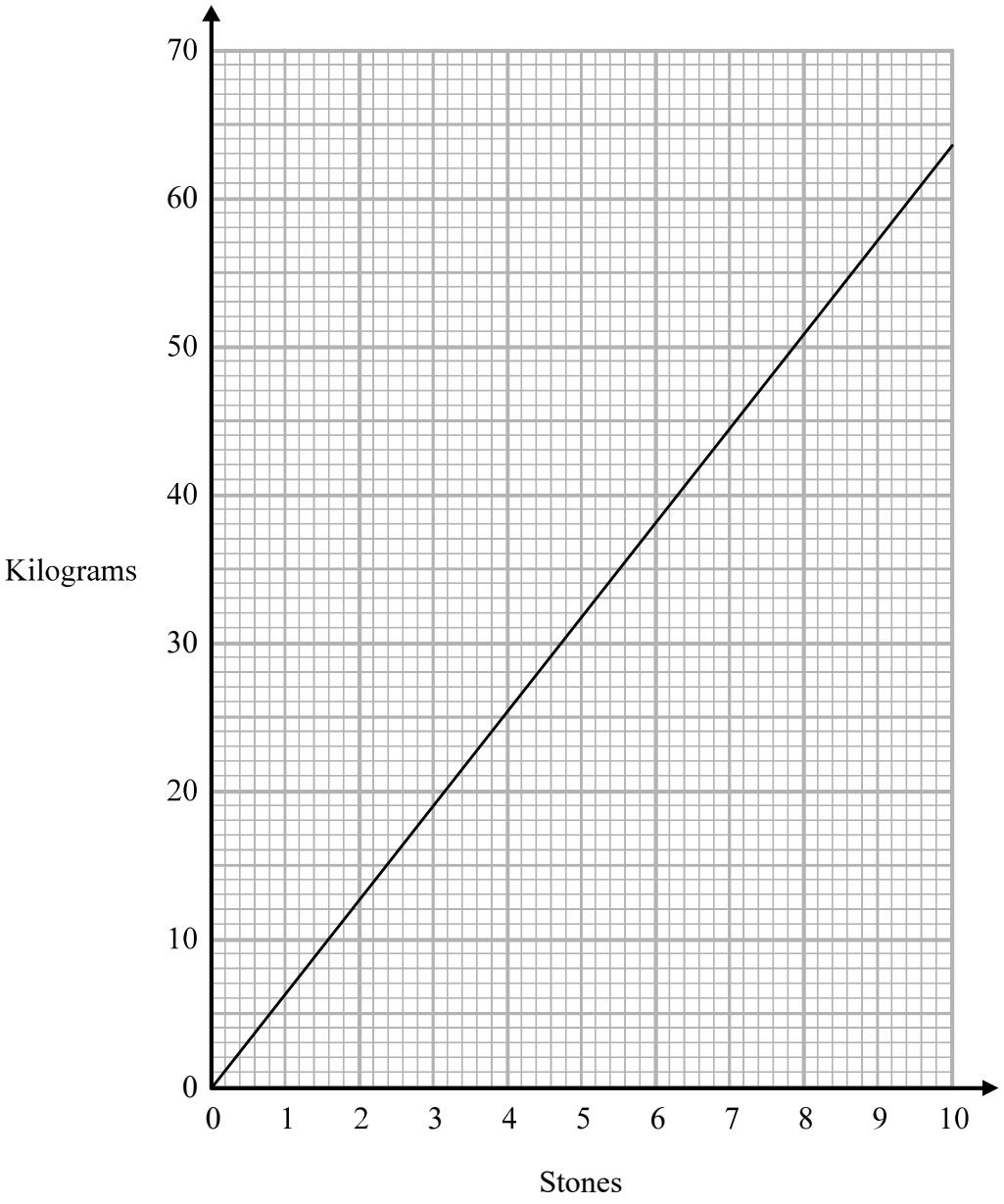
(b) Complete the number machine.

(1)

(Total for Question 70 is 2 marks)

EXPERT TUITION

71 You can use this graph to change between stones and kilograms.



(a) Change 3 stones to kilograms.

..... kilograms

(1)

(b) Change 80 kilograms to stones.

..... stones

(2)

(Total for Question 71 is 3 marks)

EXPERT TUITION

72 Ben is n years old.
Chloe is twice as old as Ben.
Dan is five years younger than Ben.

The total of Ben's age, Chloe's age and Dan's age is T years.

(a) Find a formula for T in terms of n.

.....

(3)

(b) In the table below, put a tick (✓) in the box next to the identity.

$3h + 2 = 14$	
$3a + 4b - 2c$	
$A = \pi r^2$	
$5m - 3m = 2m$	
$x + 7 \leqslant 12$	

(1)

(Total for Question 72 is 4 marks)

EXPERT TUITION

73 An estimate of the height, H metres, of a tall building can be found using the formula

$$H = 4f + 12$$

where the building is f floors high.

A tall building is 110 floors high.
The real height of the building is 442 m.

Seb uses the formula to find an estimate of the height of this building.
He then finds the difference between his estimate and the real height.

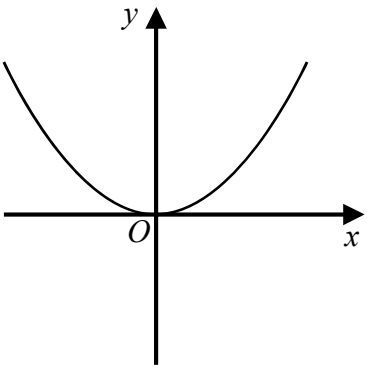
Show that this difference is less than 5% of the real height.

(Total for Question 73 is 4 marks)

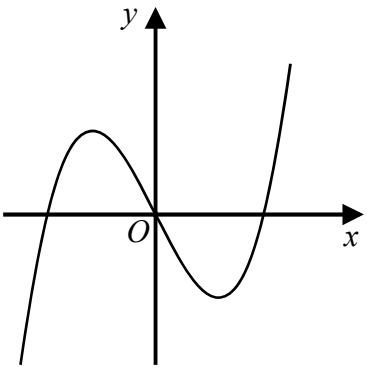
EXPERT TUITION

74 Here are six graphs.

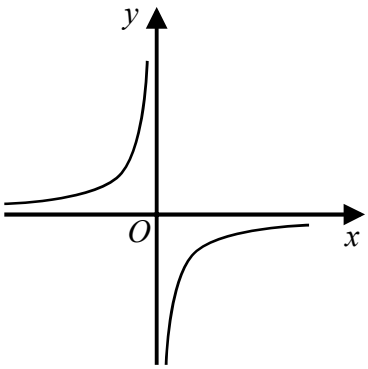
A



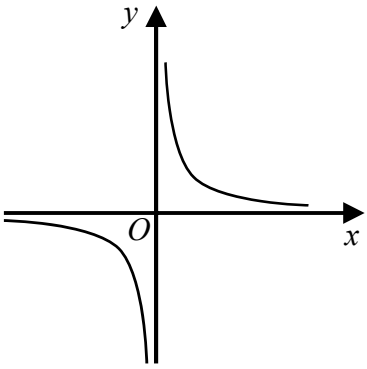
B



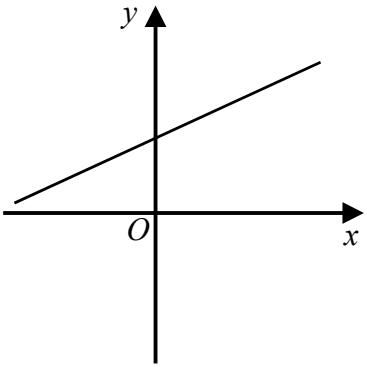
C



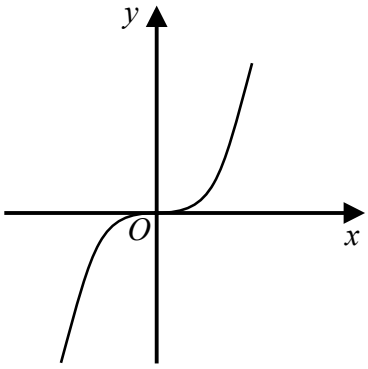
D



E



F



Write down the letter of the graph that could have the equation

(a) $y = x^3$

.....

(1)

(b) $y = \frac{1}{x}$

.....

(1)

(Total for Question 74 is 2 marks)

EXPERT TUITION

75 The nth term of a sequence is $2n^2 - 1$

The nth term of a different sequence is $40 - n^2$

Show that there is only one number that is in both of these sequences.

(Total for Question 75 is 3 marks)

EXPERT TUITION

76 There are y boats on a lake.
There are 7 people in each boat.

Write an expression, in terms of y, for the total number of people in the boats.

.....

(Total for Question 76 is 1 mark)

77 (a) Simplify $a \times b \times 7$

.....

(1)

(b) Simplify $y \times y \times y$

.....

(1)

(c) Simplify fully $\dfrac{e \times e \times e \times f}{e \times e \times f \times f}$

.....

(2)

(Total for Question 77 is 4 marks)

EXPERT TUITION

78 $P = 7r + 3q$

Work out the value of P when $r = 5$ and $q = -4$

.....

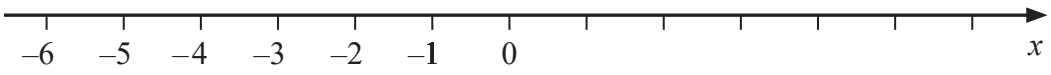
(Total for Question 78 is 2 marks)

79 (a) Solve $14n > 11n + 6$

.....

(2)

(b) On the number line below, show the set of values of x for which $-2 < x + 3 \leqslant 4$

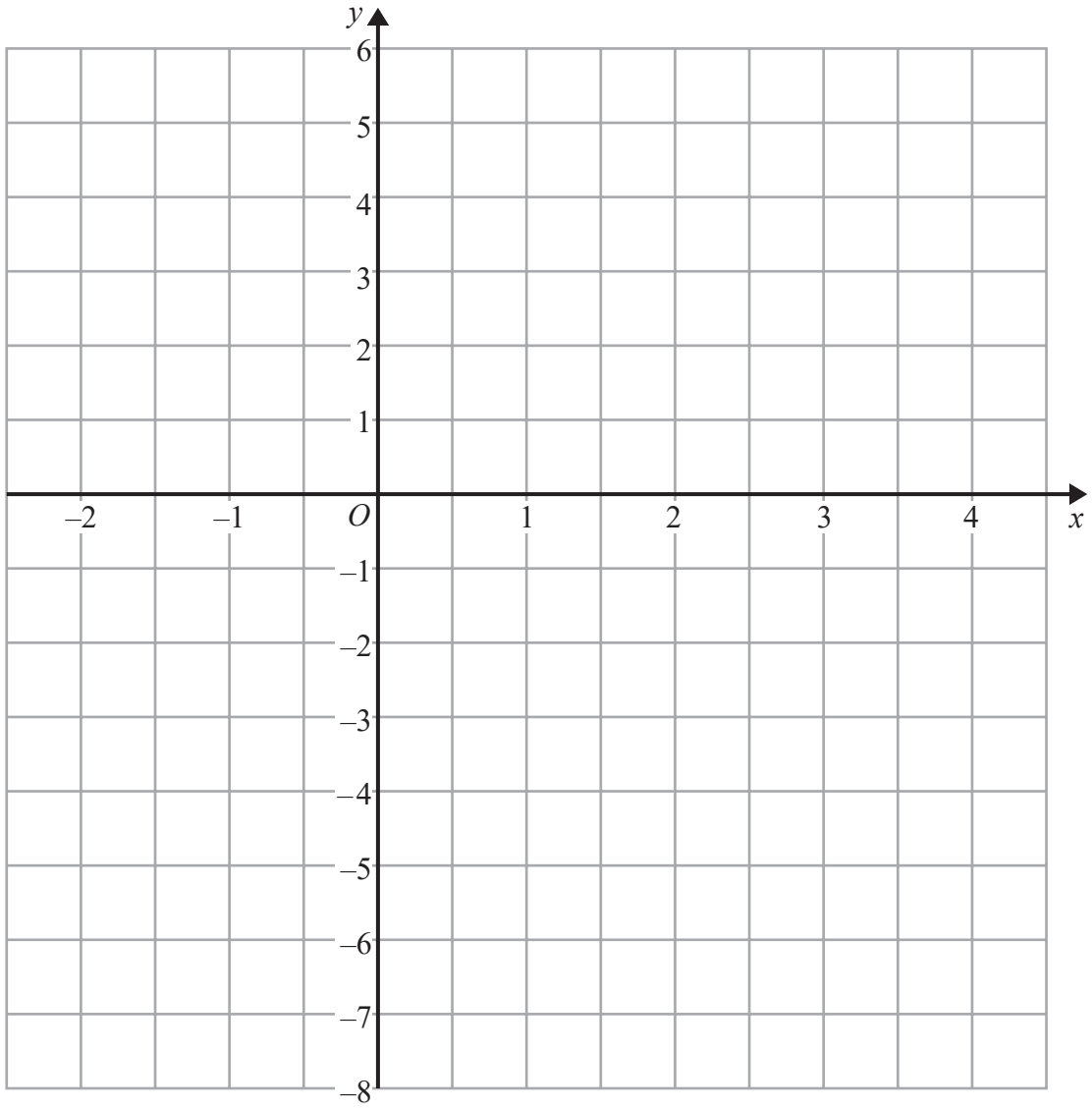


(3)

(Total for Question 79 is 5 marks)

EXPERT TUITION

80 On the grid below, draw the graph of $y = 2x - 3$ for values of x from -2 to 4



(Total for Question 80 is 3 marks)

EXPERT TUITION

81 Here are the first five terms of a Fibonacci sequence.

3 3 6 9 15

(a) Write down the next two terms of the sequence.

..... , ...

(1)

The first three terms of a different Fibonacci sequence are

a a $2a$

(b) Find the 6th term of this sequence.

.....

(2)

(Total for Question 81 is 3 marks)

EXPERT TUITION

82 (a) Simplify $3m - m - m + 3m$

.....

(1)

(b) Simplify $2 \times n \times p \times 4$

.....

(1)

(Total for Question 82 is 2 marks)

---

83 (a) The nth term of a sequence is $3n + 4$

Explain why 21 is not a term of this sequence.

.....

.....

(2)

(b) Here are the first three terms of a different sequence.

1 2 4

Write down two numbers that could be the 4th term and the 5th term of this sequence.
Give the rule you have used to get your numbers.

.....

.....

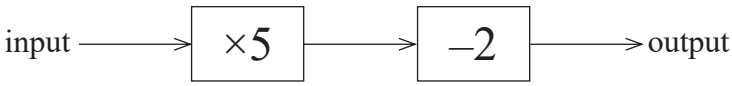
.....

(2)

(Total for Question 83 is 4 marks)

EXPERT TUITION

84 Here is a number machine.



(a) Work out the **output** when the input is 8

.....

(1)

(b) Work out the **input** when the output is 28

.....

(2)

(Total for Question 84 is 3 marks)

EXPERT TUITION

85 (a) Solve $3(x - 4) = 12$

$x =$ .....

(2)

(b) Factorise fully $9b - 3b^2$

.....

(2)

(Total for Question 85 is 4 marks)

86 A is the point with coordinates (5, 9)
B is the point with coordinates (d, 15)

The gradient of the line AB is 3

Work out the value of d.

.....

(Total for Question 86 is 3 marks)

EXPERT TUITION

87 (a) Expand and simplify $(5x + 2)(2x - 3)$

.....

(2)

(b) Factorise $x^2 + 4x + 3$

.....

(2)

(Total for Question 87 is 4 marks)

EXPERT TUITION

88 (a) Solve $x + x + x = 51$

$x =$ .....

(1)

(b) Solve $\frac{y}{4} = 3$

$y =$ .....

(1)

(c) Solve $2f + 7 = 18$

$f =$ .....

(1)

(Total for Question 88 is 3 marks)

EXPERT TUITION

89 (a) Simplify $m^3 \times m^4$

.....

(1)

(b) Simplify $(5np^3)^3$

.....

(2)

(c) Simplify $\dfrac{32q^9r^4}{4q^3r}$

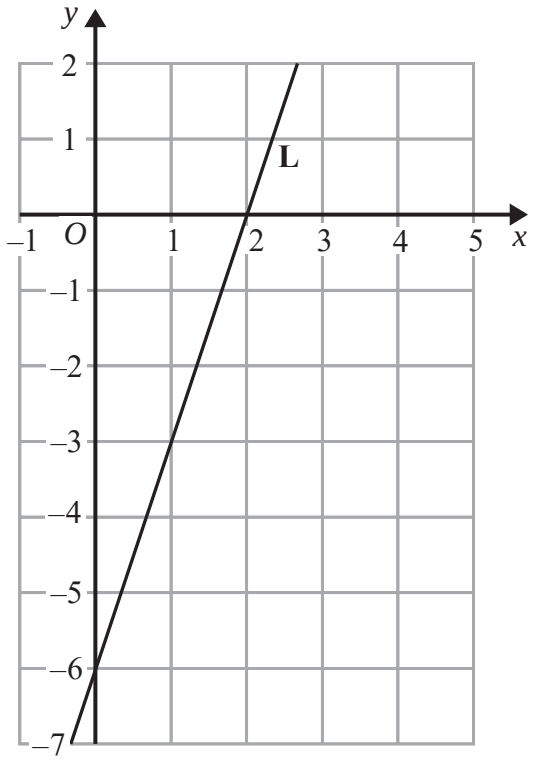
.....

(2)

(Total for Question 89 is 5 marks)

EXPERT TUITION

90 The line **L** is shown on the grid.



Find an equation for **L**.

.....

(Total for Question 90 is 3 marks)

EXPERT TUITION

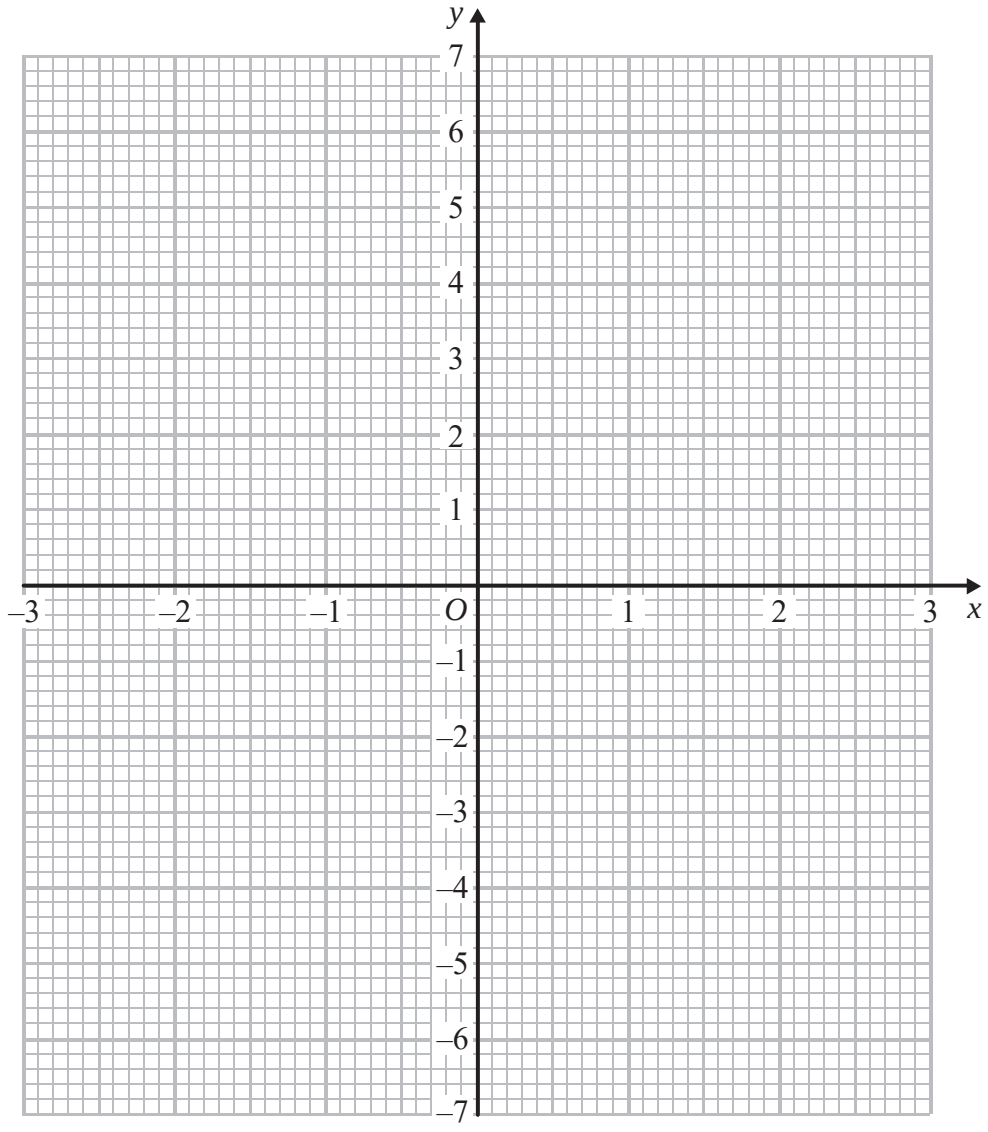
91 (a) Complete the table of values for $y = x^2 - x - 6$

x	–3	–2	–1	0	1	2	3
y	6			– 6			

(2)

(b) On the grid, draw the graph of $y = x^2 - x - 6$ for values of x from –3 to 3

(2)



EXPERT TUITION

(c) Use your graph to find estimates of the solutions to the equation $x^2 - x - 6 = -2$

.....

(2)

(Total for Question 91 is 6 marks)

92 (a) Simplify $3f \times 5g$

.....

(1)

(b) Simplify $t \times t$

.....

(1)

(c) Simplify $\dfrac{2n + 6n}{2}$

.....

(1)

(Total for Question 92 is 3 marks)

EXPERT TUITION

93 a and b are odd numbers.

(a) Give an example to show that the value of $2(a + b)$ is a multiple of 4

(2)

(b) Show that, when a and b are both odd numbers, the value of $2(a + b)$ will always be a multiple of 4

(2)

(Total for Question 93 is 4 marks)

EXPERT TUITION

94 Solve $5x - 6 = 3(x - 1)$

$x =$.....

(Total for Question 94 is 3 marks)

95 $p^3 \times p^x = p^9$

(a) Find the value of x.

$x =$ .....

(1)

$(7^2)^y = 7^{10}$

(b) Find the value of y.

$y =$ .....

(1)

$100^a \times 1000^b$ can be written in the form 10^w

(c) Show that $w = 2a + 3b$

(2)

(Total for Question 95 is 4 marks)

EXPERT TUITION

96 (a) Solve $2x^2 = 72$

.....

(2)

(b) Expand and simplify $(2x + 1)(3x - 2)$

.....

(2)

(c) Factorise $x^2 + 6x + 9$

.....

(1)

(Total for Question 96 is 5 marks)

EXPERT TUITION

97 (a) Simplify $5p - 3p + p$

.....

(1)

(b) Simplify $m^3 + m^3$

.....

(1)

(c) Simplify $10 + 3c + 5d - 7c + d$

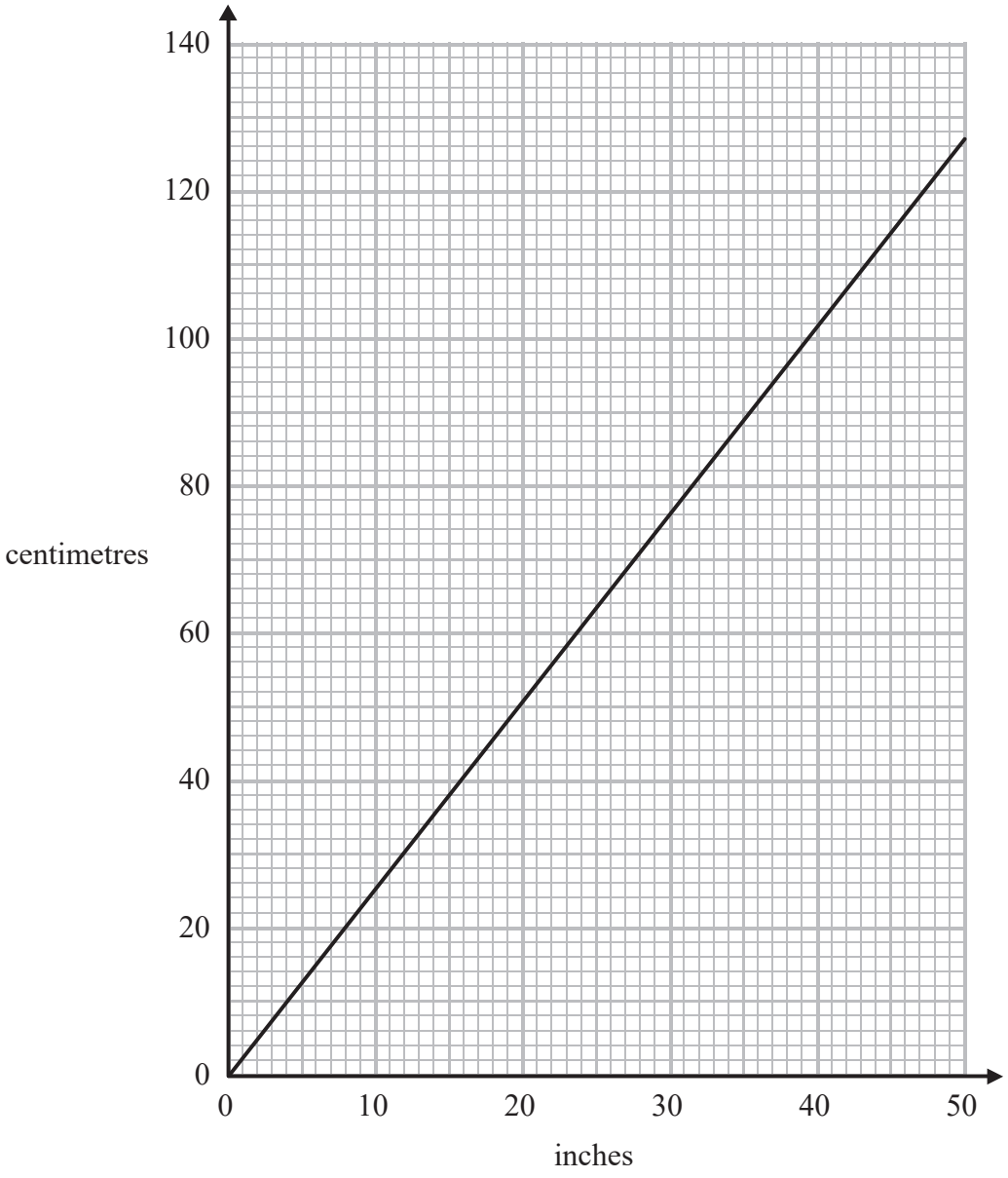
.....

(2)

(Total for Question 97 is 4 marks)

EXPERT TUITION

98 You can use this graph to change between inches and centimetres.



(a) Change 74 cm to inches.

..... inches

(1)

EXPERT TUITION

Daniel's height is 6 feet 3 inches.

1 foot = 12 inches

(b) What is Daniel's height in centimetres?

..... centimetres
(3)

(Total for Question 98 is 4 marks)

99 Find the value of $\dfrac{\sqrt{13.4 - 1.5}}{(6.8 + 0.06)^2}$

Write down all the figures on your calculator display.

.....

(Total for Question 99 is 2 marks)

EXPERT TUITION

100 (a) Factorise $5 - 10m$

.....

(1)

(b) Factorise fully $2a^2b + 6ab^2$

.....

(2)

(Total for Question 100 is 3 marks)

101 Solve $x^2 + 5x - 24 = 0$

.....

(Total for Question 101 is 3 marks)

EXPERT TUITION

102 Here are the first six terms of an arithmetic sequence.

3 8 13 18 23 28

(a) Find an expression, in terms of n, for the nth term of this sequence.

.....

(2)

The nth term of a different sequence is $3n^2$
Nathan says that the 4th term of this sequence is 144

(b) Is Nathan right?
Show how you get your answer.

(1)

(Total for Question 102 is 3 marks)

EXPERT TUITION

103 (a) Rob buys p packets of plain crisps and c packets of cheese crisps.

Write down an expression for the total number of packets of crisps Rob buys.

.....

(1)

(b) Solve $3x - 5 = 9$

$x =$ .....

(2)

(Total for Question 103 is 3 marks)

---

104 $f = 5x + 2y$
$x = 3$ and $y = -2$

Find the value of f.

.....

(Total for Question 104 is 2 marks)

---

105 (a) Factorise $3f + 9$

.....

(1)

(b) Factorise $x^2 - 2x - 15$

.....

(2)

(Total for Question 105 is 3 marks)

EXPERT TUITION

106 $q = \frac{p}{r} + s$

Make p the subject of this formula.

.....

(Total for Question 106 is 2 marks)

107 Here are the first four terms of an arithmetic sequence.

6 10 14 18

(a) Write an expression, in terms of n, for the nth term of this sequence.

.....

(2)

The nth term of a different arithmetic sequence is $3n + 5$

(b) Is 108 a term of this sequence?
Show how you get your answer.

(2)

(Total for Question 107 is 4 marks)

EXPERT TUITION

108 (a) Simplify $5f - f + 2f$

.....

(1)

(b) Simplify $2 \times m \times n \times 8$

.....

(1)

(c) Simplify $t^2 + t^2$

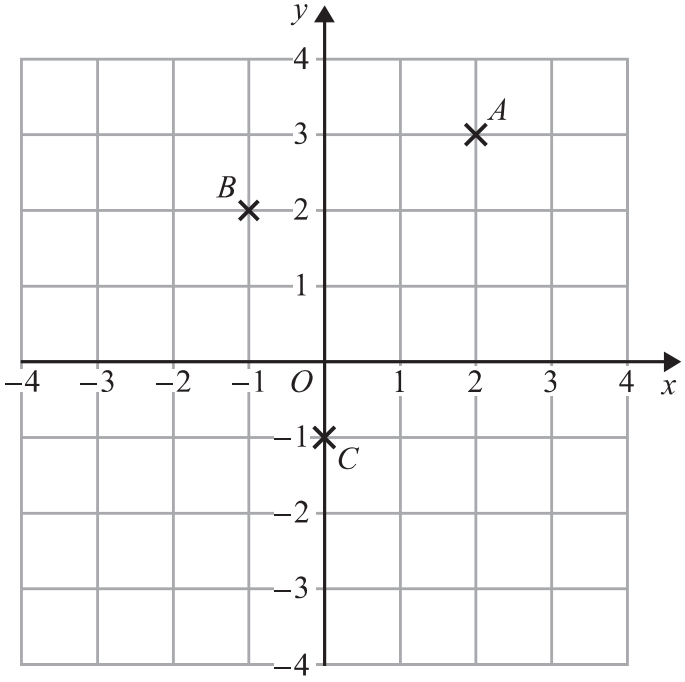
.....

(1)

(Total for Question 108 is 3 marks)

EXPERT TUITION

109



(a) Write down the coordinates of point C.

(..... , ...)

(1)

$ABCD$ is a square.

(b) On the grid, mark with a cross (✕) the point D so that $ABCD$ is a square.

(1)

(c) Write down the coordinates of the midpoint of the line segment BC.

(..... , ...)

(1)

(Total for Question 109 is 3 marks)

EXPERT TUITION

110 (a) Solve $4c + 5 = 11$

$c =$ .....

(2)

(b) Solve $5(e + 7) = 20$

$e =$ .....

(2)

(c) Simplify $(m^3)^2$

.....

(1)

(Total for Question 110 is 5 marks)

111 Make t the subject of the formula $w = 3t + 11$

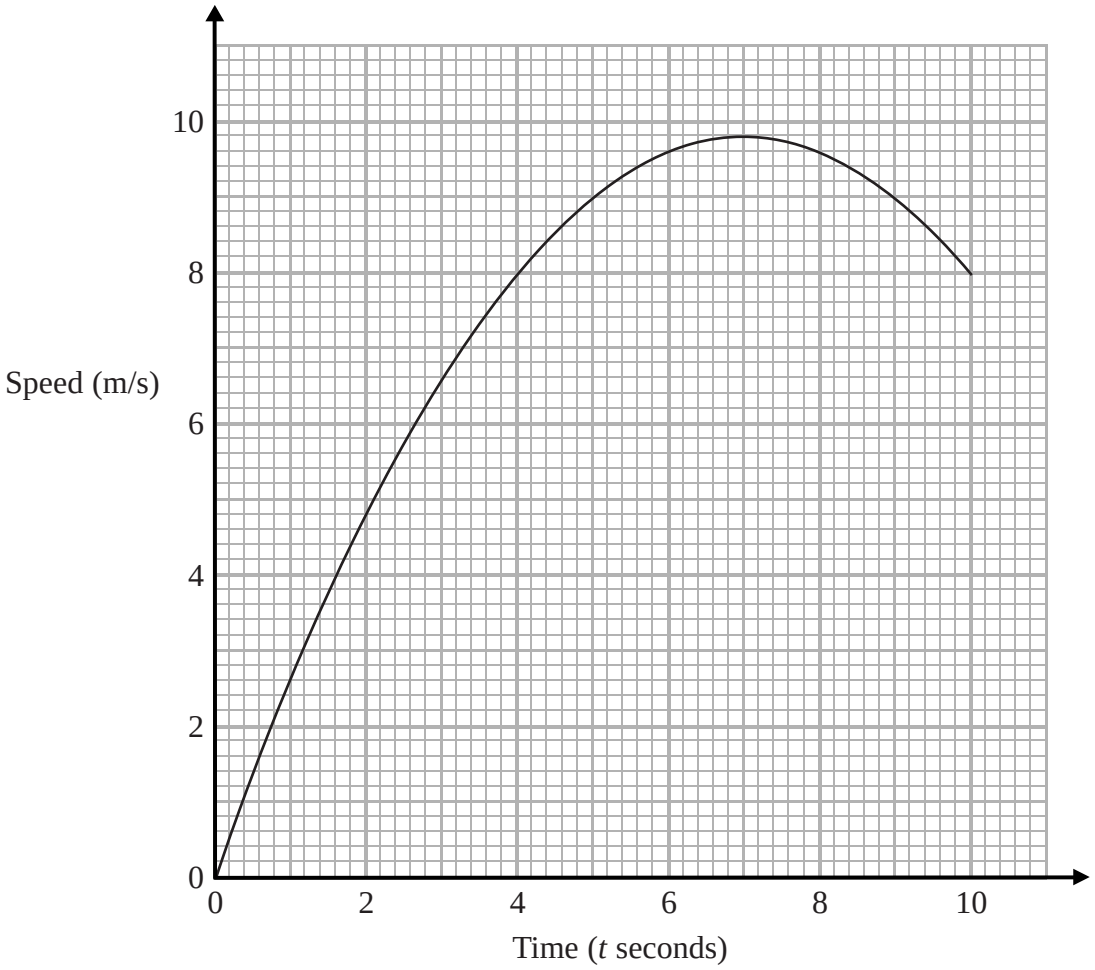
.....

(Total for Question 111 is 2 marks)

EXPERT TUITION

112 Karol ran in a race.

The graph shows her speed, in metres per second, *t* seconds after the start of the race.



(a) Write down Karol's speed 3 seconds after the start of the race.

.....m/s

(1)

(b) Write down Karol's greatest speed.

.....m/s

(1)

There were two times when Karol's speed was 9 m/s.

(c) Write down these two times.

.....seconds

.....seconds

(1)

(Total for Question 112 is 3 marks)

EXPERT TUITION

113 The first three terms of a number pattern are 1 2 4

Hester says the first five terms of this number pattern are 1 2 4 8 16

(a) Write down the rule Hester could have used to get the 4th and 5th terms.

.....

(1)

(b) Write down the 6th term of Hester's number pattern.

.....

(1)

Jack uses a different rule.

He says the first six terms of the number pattern are 1 2 4 7 11 16

(c) Write down the 7th and 8th terms of Jack's number pattern.

....., ...

(1)

(Total for Question 113 is 3 marks)

EXPERT TUITION

114 (a) Simplify $7x + 2y - 3x + 4y$

.....

(2)

(b) Factorise $10x - 15$

.....

(1)

(c) Solve $5p = 3p + 8$

$p =$ .....

(2)

(Total for Question 114 is 5 marks)

115 (a) Expand and simplify $3(y - 2) + 5(2y + 1)$

.....

(2)

(b) Simplify $5u^2w^4 \times 7uw^3$

.....

(2)

(Total for Question 115 is 4 marks)

EXPERT TUITION

116 (a) Simplify $a \times b \times 4$

.....

(1)

(b) Simplify $4x + 3 - x + 5$

.....

(2)

(Total for Question 116 is 3 marks)

EXPERT TUITION

117 (a) Expand $y(y + 5)$

.....

(1)

(b) Factorise $4a - 6$

.....

(1)

(c) Solve $2(5x - 4) = 21$

$x =$ .....

(3)

(d) Simplify $4e^2f \times 5ef^3$

.....

(2)

(Total for Question 117 is 7 marks)

EXPERT TUITION

118 The first four terms of a Fibonacci sequence are

$a \qquad 2a \qquad 3a \qquad 5a$

The sum of the first five terms of this sequence is 228

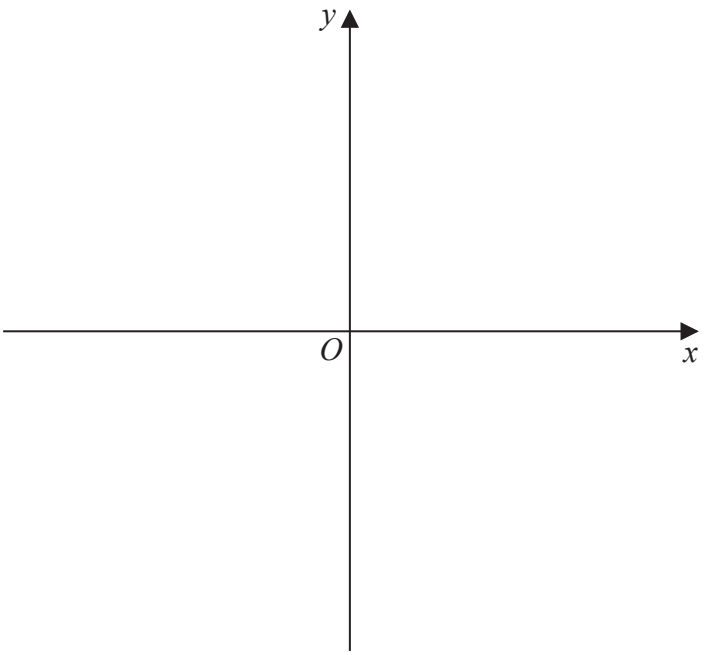
Work out the value of a.

.....

(Total for Question 118 is 3 marks)

EXPERT TUITION

119 Sketch the graph of $y = \frac{1}{x}$



(Total for Question 119 is 2 marks)

EXPERT TUITION

120 Here are the first five terms of a number sequence.

45 40 35 30 25

(a) (i) Write down the next two terms of this sequence.

..... , ...

(1)

A term of this sequence is −5

(ii) Which term?

.....

(1)

The nth term of a different sequence is given by the expression $4n + 3$

(b) Find the 9th term of this sequence.

.....

(1)

(Total for Question 120 is 3 marks)

EXPERT TUITION

121 (a) Simplify $3x + 5y + 2x - 4y$

.....

(2)

(b) Solve $5p + 7 = 22$

$p =$ .....

(2)

(Total for Question 121 is 4 marks)

EXPERT TUITION

122 (a) Simplify $n^3 \times n^5$

.....

(1)

(b) Simplify $\dfrac{c^3d^4}{c^2d}$

.....

(2)

(c) Solve $\dfrac{5x}{2} > 7$

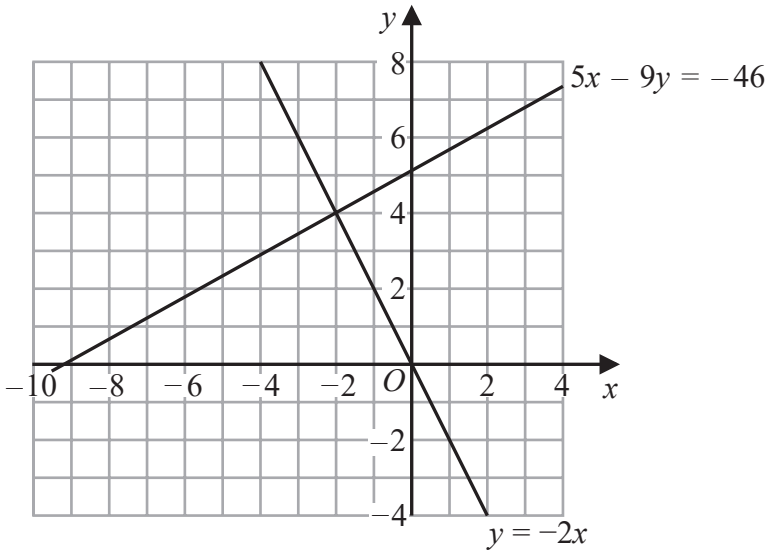
.....

(2)

(Total for Question 122 is 5 marks)

EXPERT TUITION

123



(a) Use these graphs to solve the simultaneous equations

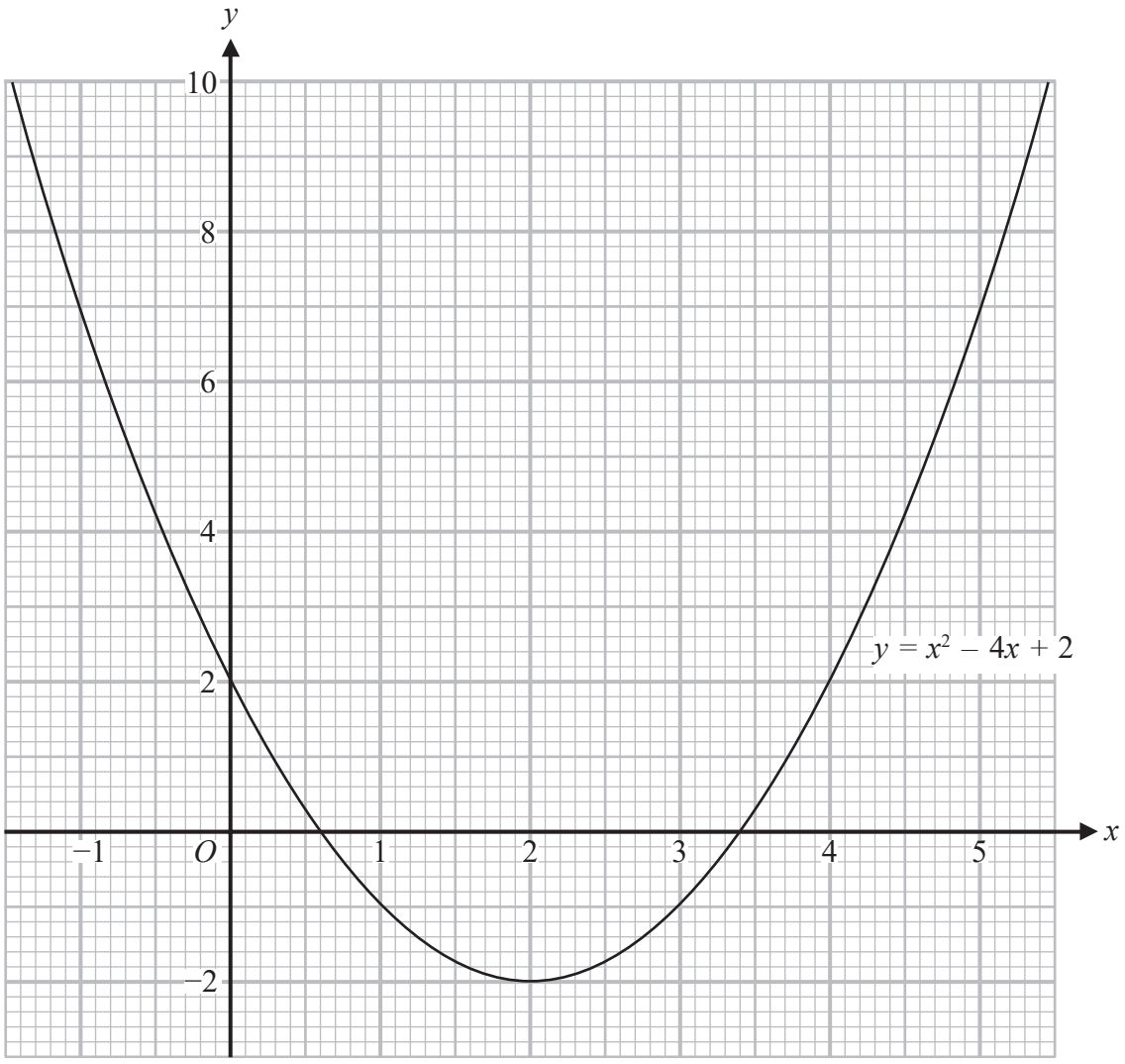
$$5x - 9y = -46$$
$$y = -2x$$

$x =$ .....

$y =$ .....

(1)

EXPERT TUITION



(b) Use this graph to find estimates for the solutions of the quadratic equation $x^2 - 4x + 2 = 0$

.....

(2)

(Total for Question 123 is 3 marks)

124 $w = 4u + 3$

Find the value of w when $u = 8$

.....

(Total for Question 124 is 2 marks)

125 Here are the first five terms of a sequence.

1 3 6 10 15

Write down the next two terms of the sequence.

..... , ...

(Total for Question 125 is 2 marks)

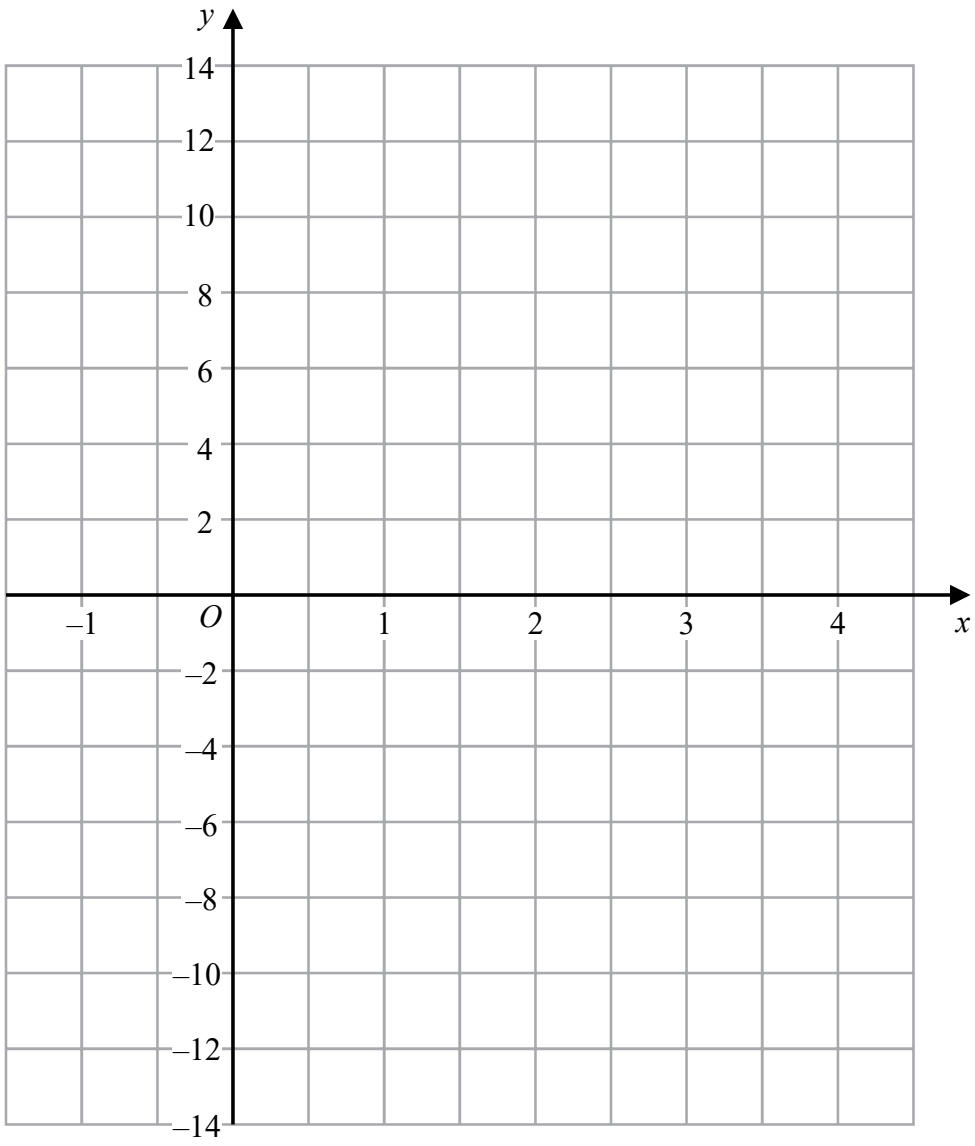
EXPERT TUITION

126 (a) Complete the table of values for $y = 4x - 6$

x	−1	0	1	2	3	4
y			−2			10

(2)

(b) On the grid, draw the graph of $y = 4x - 6$ for values of x from −1 to 4



(2)

(Total for Question 126 is 4 marks)

EXPERT TUITION

127 Solve $4(x - 6) = 44$

$x =$ .....

(Total for Question 127 is 2 marks)

128 (a) Expand and simplify $(x + 5)(x - 9)$

.....

(2)

(b) Factorise fully $9x^2 + 6x$

.....

(2)

(Total for Question 128 is 4 marks)

EXPERT TUITION

129 Simplify $4e + 6f + 7e - f$

.....

(Total for Question 129 is 2 marks)

130 The first term of a sequence of numbers is 24
The term-to-term rule of this sequence is 'add 8'

Josie says,
"No number in this sequence is in the 5 times table."

(a) Give an example to show that Josie is wrong.

.....

(1)

(b) Is 85 a number in this sequence?
Give a reason for your answer.

.....

.....

(1)

(Total for Question 130 is 2 marks)

EXPERT TUITION

131 You can use this rule to work out the total hire charge, in pounds (£), for hiring a 3D printer for a number of weeks.

Total hire charge (£) = number of weeks × 70 + 50

Mia wants to hire a 3D printer for 4 weeks.

(a) Work out the total hire charge.

£.....

(2)

Zahir hires a 3D printer.
The total hire charge is £680

(b) For how many weeks does Zahir hire the 3D printer?

..... weeks

(2)

(Total for Question 131 is 4 marks)

EXPERT TUITION

132 Make x the subject of the formula $y = 2x + 4$

.....

(Total for Question 132 is 2 marks)

133 Solve the simultaneous equations

$$3x - 4y = 11$$
$$9x + 2y = 5$$

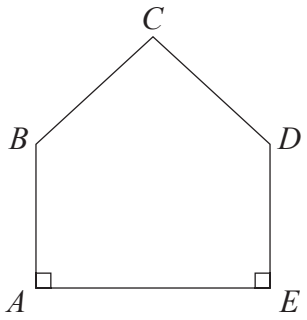
$x =$ .....

$y =$ .....

(Total for Question 133 is 3 marks)

EXPERT TUITION

134 The diagram shows a pentagon.
The pentagon has one line of symmetry.



$AE = 4x$
$AB = 2x + 1$
$BC = x + 2$

All these measurements are given in centimetres.

The perimeter of the pentagon is 18 cm.

(a) Show that $10x + 6 = 18$

(3)

(b) Find the value of x.

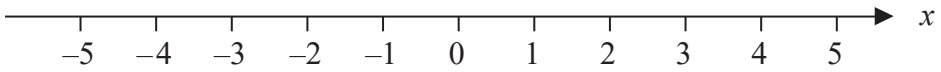
$x =$ .....

(2)

(Total for Question 134 is 5 marks)

EXPERT TUITION

135 (a) On the number line, show the inequality $x < 4$



(2)

$3 < y \leqslant 7$ where y is an integer.

(b) Write down all the possible values of y.

.....

(2)

(c) Solve $3x + 5 \geqslant x + 17$

.....

(3)

(Total for Question 135 is 7 marks)

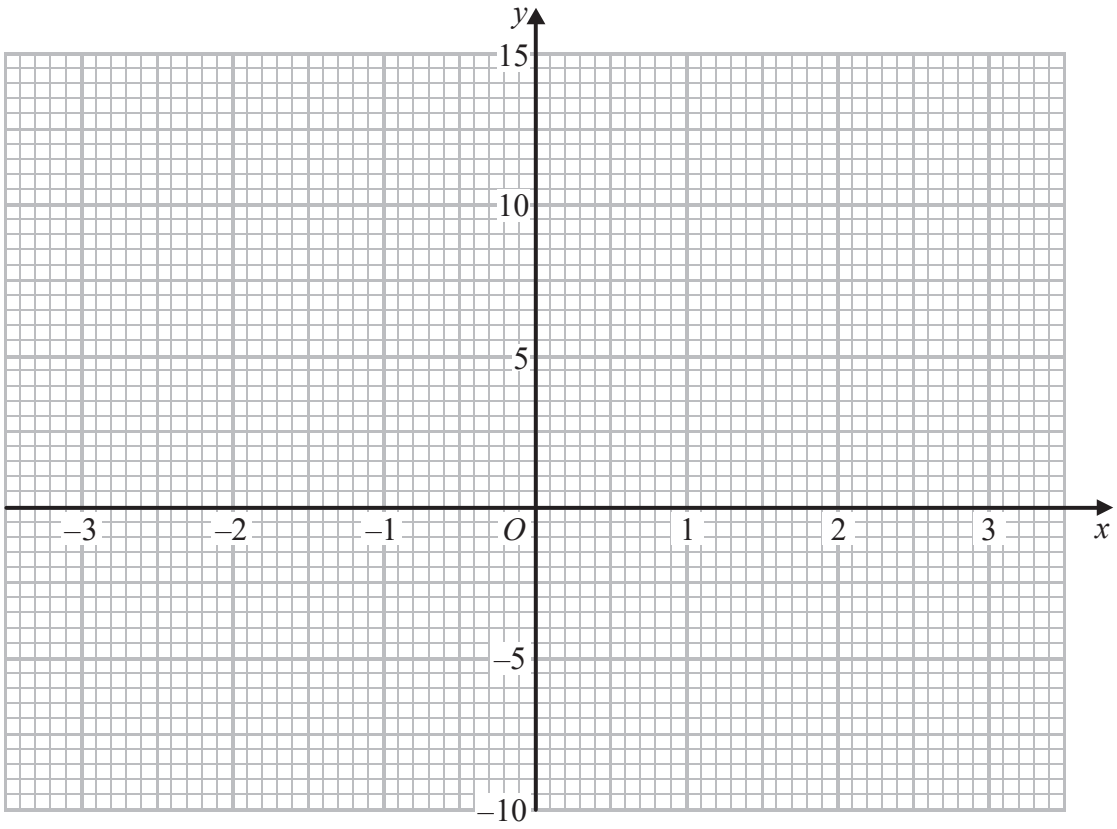
EXPERT TUITION

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

x	–3	–2	–1	0	1	2	3
y		–2	–4		–2		

(2)

(b) On the grid, draw the graph of $y = x^2 + x - 4$ for values of x from –3 to 3



(2)

(c) Use the graph to estimate a solution to $x^2 + x - 4 = 0$

.....

(1)

(Total for Question 136 is 5 marks)

EXPERT TUITION

137 Here are the first four terms of an arithmetic sequence.

5 11 17 23

Write down an expression, in terms of n, for the nth term of the sequence.

.....

(Total for Question 137 is 2 marks)

138 Here are the first 4 terms of a sequence.

2 9 16 23

(a) (i) Write down the next term in the sequence.

.....

(1)

(ii) Explain how you got your answer.

.....

(1)

(b) Work out the 10th term of the sequence.

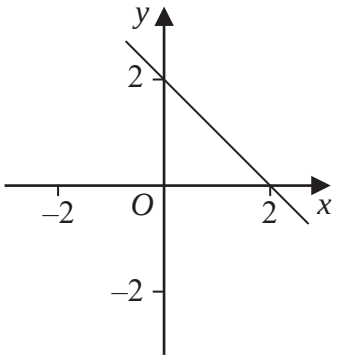
.....

(1)

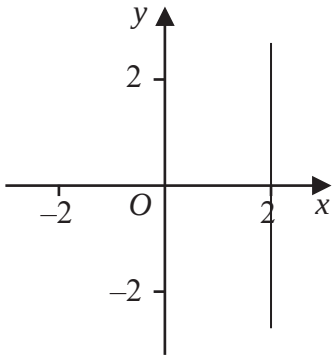
(Total for Question 138 is 3 marks)

EXPERT TUITION

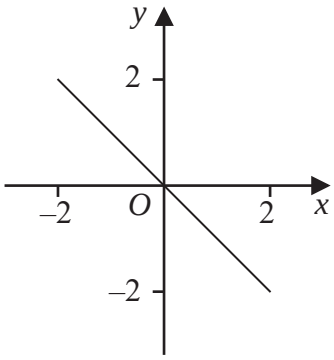
139 Here are six straight line graphs.



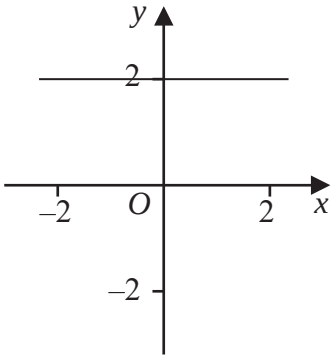
Graph **A**



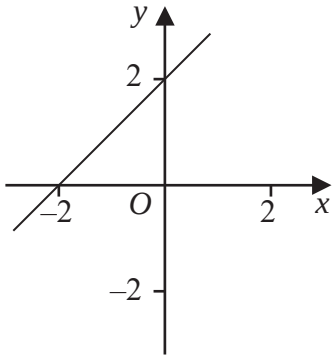
Graph **B**



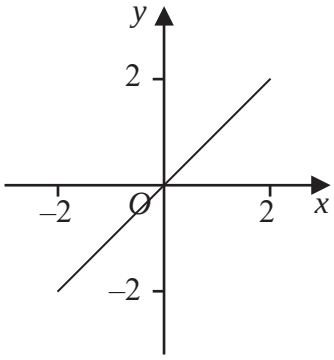
Graph **C**



Graph **D**



Graph **E**



Graph **F**

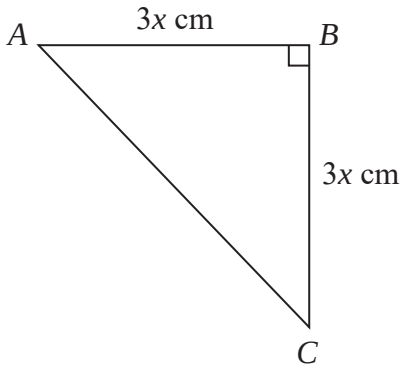
Match each equation in the table to the correct graph.
Write the letter of the graph in the table.

Equation	Graph
$y = 2$	
$y = x$	
$x + y = 2$	

(Total for Question 139 is 2 marks)

EXPERT TUITION

140 *ABC* is an isosceles right-angled triangle.



The area of the triangle is 162 cm^2

Work out the value of x.

$x =$ .....

(Total for Question 140 is 3 marks)

141 Expand and simplify $5(p + 3) - 2(1 - 2p)$

.....

(Total for Question 141 is 2 marks)

EXPERT TUITION

142 Solve $\frac{5-x}{2} = 2x - 7$

$x =$ .....

(Total for Question 142 is 3 marks)

143 Make g the subject of the formula $T = \sqrt{\frac{g+6}{2}}$

.....

(Total for Question 143 is 3 marks)

EXPERT TUITION

144 Simplify $y + 3y - 2y$

.....

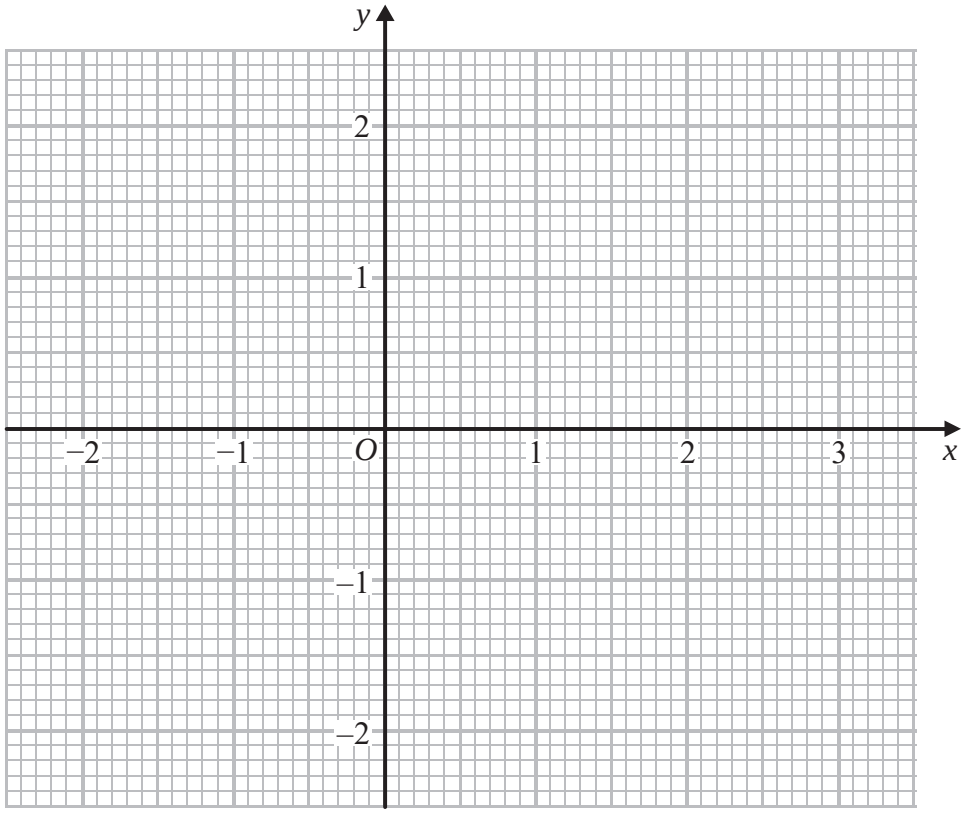
(Total for Question 144 is 1 mark)

145 (a) Complete the table of values for $y = \frac{1}{2}x - 1$

x	−2	−1	0	1		
y	−2				0	

(2)

(b) On the grid, draw the graph of $y = \frac{1}{2}x - 1$ for values of x from −2 to 3



(2)

(c) Use your graph to find the value of x when $y = 0.3$

$x =$ .....

(1)

(Total for Question 145 is 5 marks)

EXPERT TUITION

146 (a) Factorise $4m + 12$

.....

(1)

expression	equation	formula	identity
inequality	term	factor	multiple

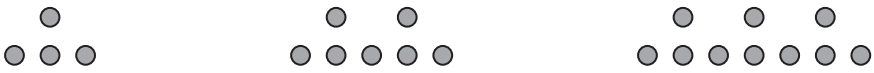
(b) Choose two words from the box above to make this statement correct.

$5y$ is a ..... in the ..... $3x + 5y$

(2)

(Total for Question 146 is 3 marks)

147 Here is a sequence of patterns made with counters.



pattern number 1 pattern number 2 pattern number 3

(a) Find an expression, in terms of n, for the number of counters in pattern number n.

.....

(2)

Bayo has 90 counters.

(b) Can Bayo make a pattern in this sequence using all 90 of his counters?
You must show how you get your answer.

(2)

(Total for Question 147 is 4 marks)

EXPERT TUITION

148 Solve the simultaneous equations

$$x + 3y = 12$$
$$5x - y = 4$$

$x =$ .....

$y =$ .....

(Total for Question 148 is 3 marks)

EXPERT TUITION

149 Cups are sold in packs and in boxes.

There are 12 cups in each pack.
There are 18 cups in each box.

Alison buys p packs of cups and b boxes of cups.

Write down an expression, in terms of p and b, for the total number of cups Alison buys.

.....

(Total for Question 149 is 2 marks)

150 $T = 4v + 3$

(a) Work out the value of T when $v = 2$

$T =$ .....

(2)

(b) Make v the subject of the formula $T = 4v + 3$

.....

(2)

(Total for Question 150 is 4 marks)

EXPERT TUITION

151 Solve the simultaneous equations

$$3x + y = -4$$
$$3x - 4y = 6$$

$x =$ .....

$y =$ .....

(Total for Question 151 is 3 marks)

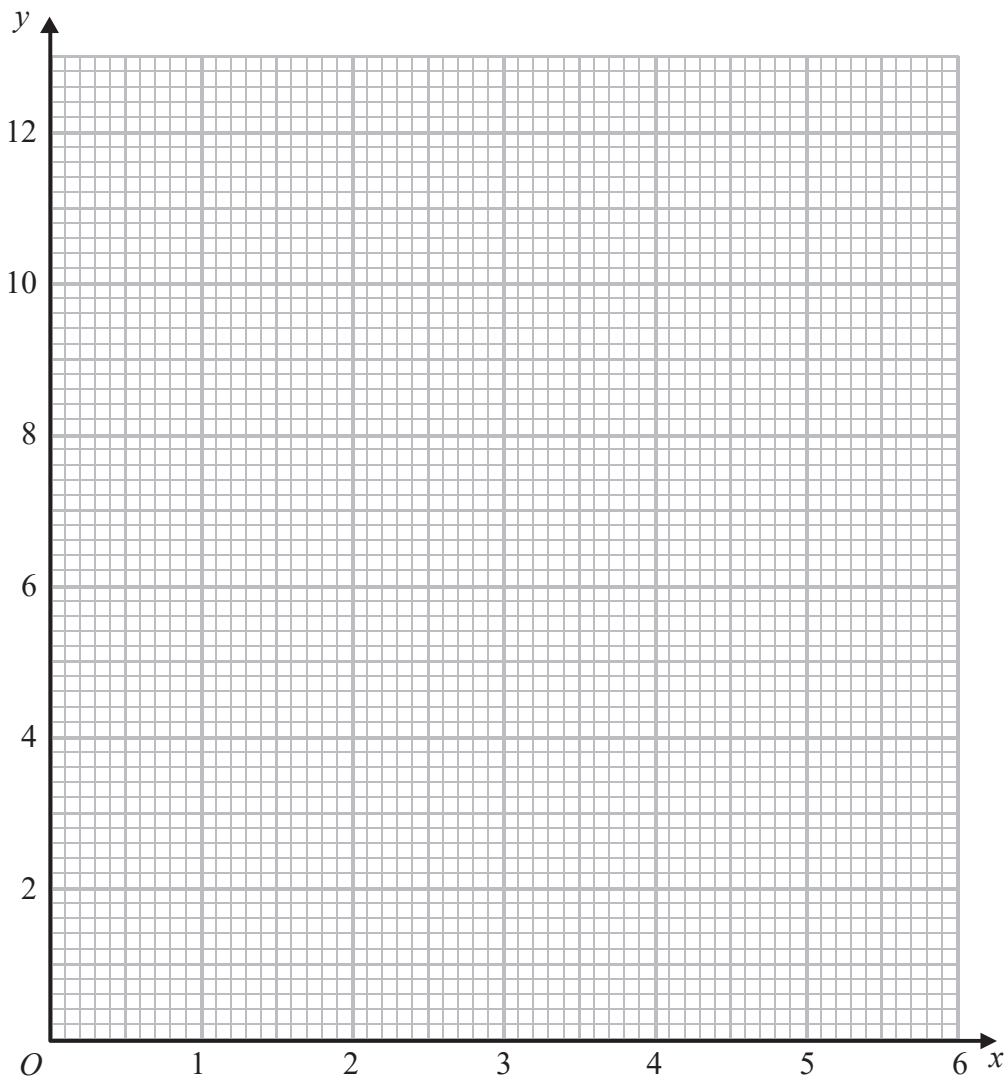
EXPERT TUITION

152 (a) Complete the table of values for $y = \frac{6}{x}$

x	0.5	1	1.5	2	3	4	5	6
y		6		3		1.5		

(2)

(b) On the grid below, draw the graph of $y = \frac{6}{x}$ for values of x from 0.5 to 6



(2)

(Total for Question 152 is 4 marks)

EXPERT TUITION

153 (a) Simplify $8x - 3x + 2x$

.....

(1)

(b) Simplify $4y \times 2y$

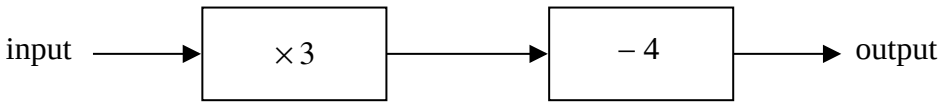
.....

(1)

(Total for Question 153 is 2 marks)

EXPERT TUITION

154 Here is a number machine.



(a) Work out the **output** when the input is 4

.....

(1)

(b) Work out the **input** when the output is 11

.....

(2)

(c) Show that there is a value of the input for which the input and the output have the same value.

(2)

(Total for Question 154 is 5 marks)

EXPERT TUITION

155 Here are the first six terms of a Fibonacci sequence.

1 1 2 3 5 8

The rule to continue a Fibonacci sequence is,

the next term in the sequence is the sum of the two previous terms.

(a) Find the 9th term of this sequence.

.....

(1)

The first three terms of a different Fibonacci sequence are

a b $a + b$

(b) Show that the 6th term of this sequence is $3a + 5b$

(2)

Given that the 3rd term is 7 and the 6th term is 29,

(c) find the value of a and the value of b.

$a =$ .....

$b =$ .....

(3)

(Total for Question 155 is 6 marks)

EXPERT TUITION

156 (a) Solve $f + 2f + f = 20$

$f =$ .....

(1)

(b) Solve $18 - m = 6$

$m =$ .....

(1)

(c) Simplify $d^2 \times d^3$

.....

(1)

(Total for Question 156 is 3 marks)

157 Complete this table of values.

n	$3n + 2$
12	.....
.....	47

(Total for Question 157 is 3 marks)

158 Here are the first three terms of a sequence.

32 26 20

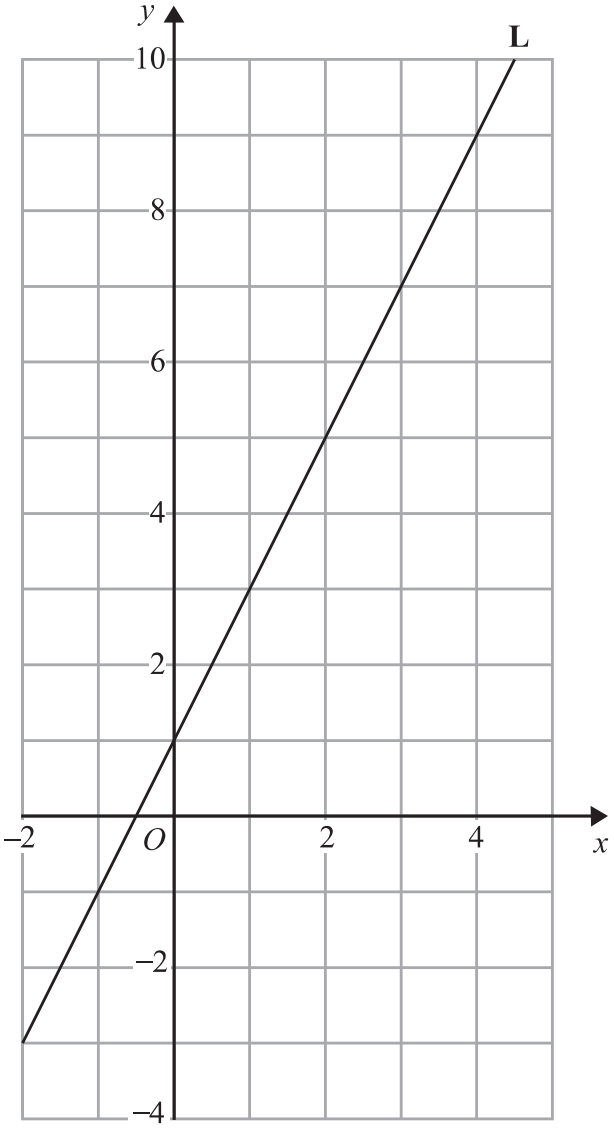
Find the first two terms in the sequence that are less than zero.

....

(Total for Question 158 is 3 marks)

EXPERT TUITION

159 Line **L** is drawn on the grid below.



Find an equation for the straight line **L**.
Give your answer in the form $y = mx + c$

.....

(Total for Question 159 is 3 marks)

EXPERT TUITION

160 Factorise $x^2 + 3x - 4$

.....

(Total for Question 160 is 2 marks)

161 Here are the equations of four straight lines.

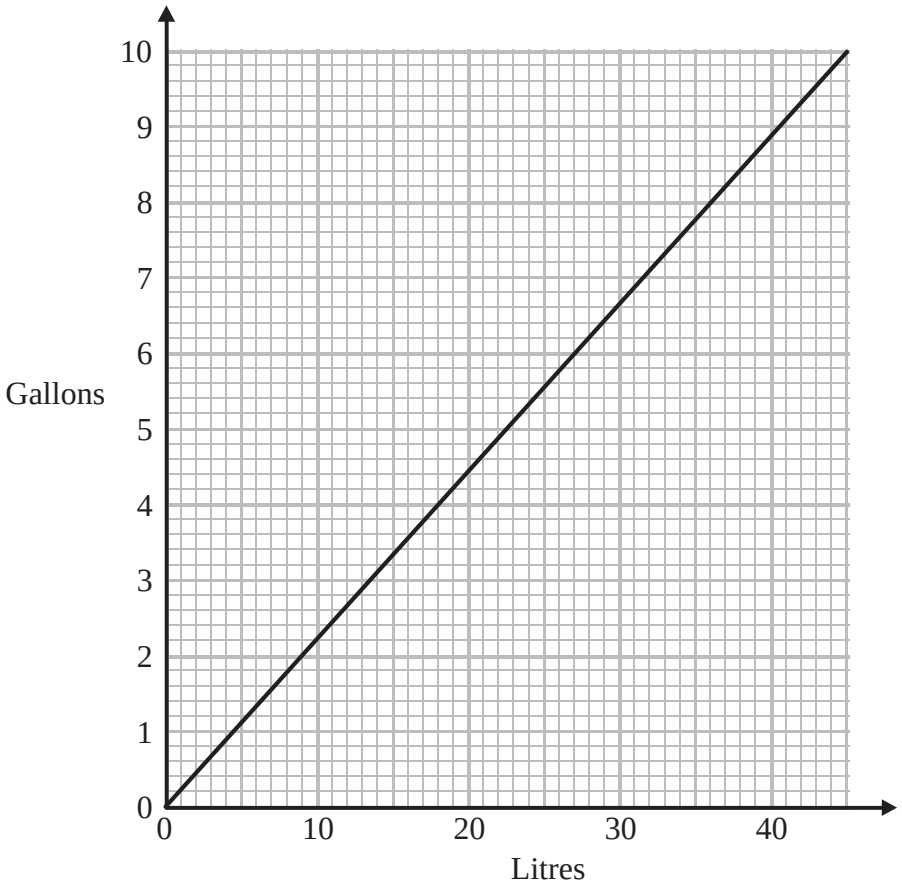
Line A $y = 2x + 4$
Line B $2y = x + 4$
Line C $2x + 2y = 4$
Line D $2x - y = 4$

Two of these lines are parallel.
Write down the two parallel lines.

Line ..... and line.....

(Total for Question 161 is 1 mark)

162 You can use this graph to change between litres and gallons.



Which is the greater, 60 litres or 12 gallons?
You must show how you get your answer.

.....

(Total for Question 162 is 2 marks)

EXPERT TUITION

163 You can use this rule to work out the total cost, in pounds, of hiring a carpet cleaner.

Multiply the number of days by 7.8 and then add 12

Andy hires a carpet cleaner.
The total cost is £82.20

(a) Work out the number of days Andy hires the carpet cleaner for.

.....days
(2)

Chloe hires a carpet cleaner for y days.
The total cost is £T.

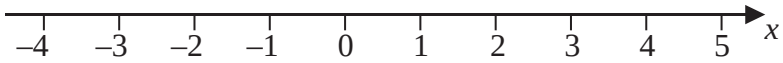
(b) Write down a formula for T in terms of y.

.....
(2)

(Total for Question 163 is 4 marks)

EXPERT TUITION

164 (a) Show the inequality $-2 \leqslant x < 3$ on the number line below.



(2)

(b) Solve the inequality $4y + 7 < 16$

.....

(2)

(Total for Question 164 is 4 marks)

---

165 Here are the first five terms of an arithmetic sequence.

$$-3 \qquad 1 \qquad 5 \qquad 9 \qquad 13$$

Find an expression, in terms of n, for the nth term of this sequence.

.....

(Total for Question 165 is 2 marks)

---

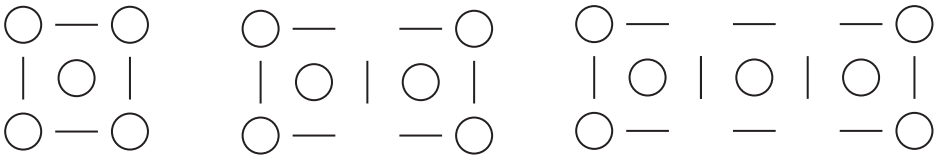
166 Make t the subject of the formula $y = \frac{t}{3} - 2a$

.....

(Total for Question 166 is 2 marks)

EXPERT TUITION

167 Here are the first three patterns in a sequence.
Each pattern is made from lines and circles.



pattern number 1 | pattern number 2 | pattern number 3

(a) In the space below, complete pattern number 4

pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2			
Number of lines	4	7	10		

(1)

(c) Find the number of **lines** in pattern number 12

.....

(1)

(d) Find the number of **circles** in pattern number 20

.....

(1)

(Total for Question 167 is 4 marks)

EXPERT TUITION

168 $y = 4x - 3t$

$x = 2$
$t = 5$

(a) Work out the value of y.

$y =$ .....

(2)

$y = 4x - 3t$

$y = 30$
$t = 2$

(b) Work out the value of x.

$x =$ .....

(2)

(Total for Question 168 is 4 marks)

EXPERT TUITION

169 (a) Simplify $4x + 3x$

.....

(1)

(b) Simplify $2 \times 3y$

.....

(1)

(c) Simplify $5e + 4e^2 + 3e - 6e^2$

.....

(2)

(Total for Question 169 is 4 marks)

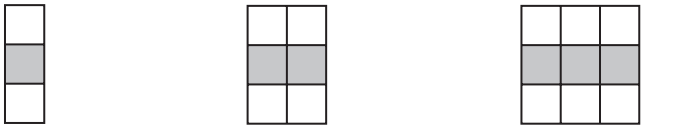
170 Solve $4(x + 3) = 2x + 8$

$x =$ .....

(Total for Question 170 is 3 marks)

EXPERT TUITION

171 Here is a sequence of patterns made with grey squares and with white squares.



pattern number 1 pattern number 2 pattern number 3

(a) In the space below, draw pattern number 4

(1)

A pattern in the sequence has 10 grey squares.

(b) How many white squares does the pattern have?

.....

(1)

A pattern in the sequence has a total of 45 squares.

(c) (i) How many grey squares does the pattern have?

.....

(ii) Explain how you found your answer.

.....

.....

(2)

(Total for Question 171 is 4 marks)

EXPERT TUITION

172 (a) Simplify $h + h + h$

.....

(1)

(b) Simplify $p \times r \times 3$

.....

(1)

(c) Simplify $5x + 4y - 3x + 3y$

.....

(2)

$k = 5$
$m = 3$

(d) Work out the value of $2k + 4m$

.....

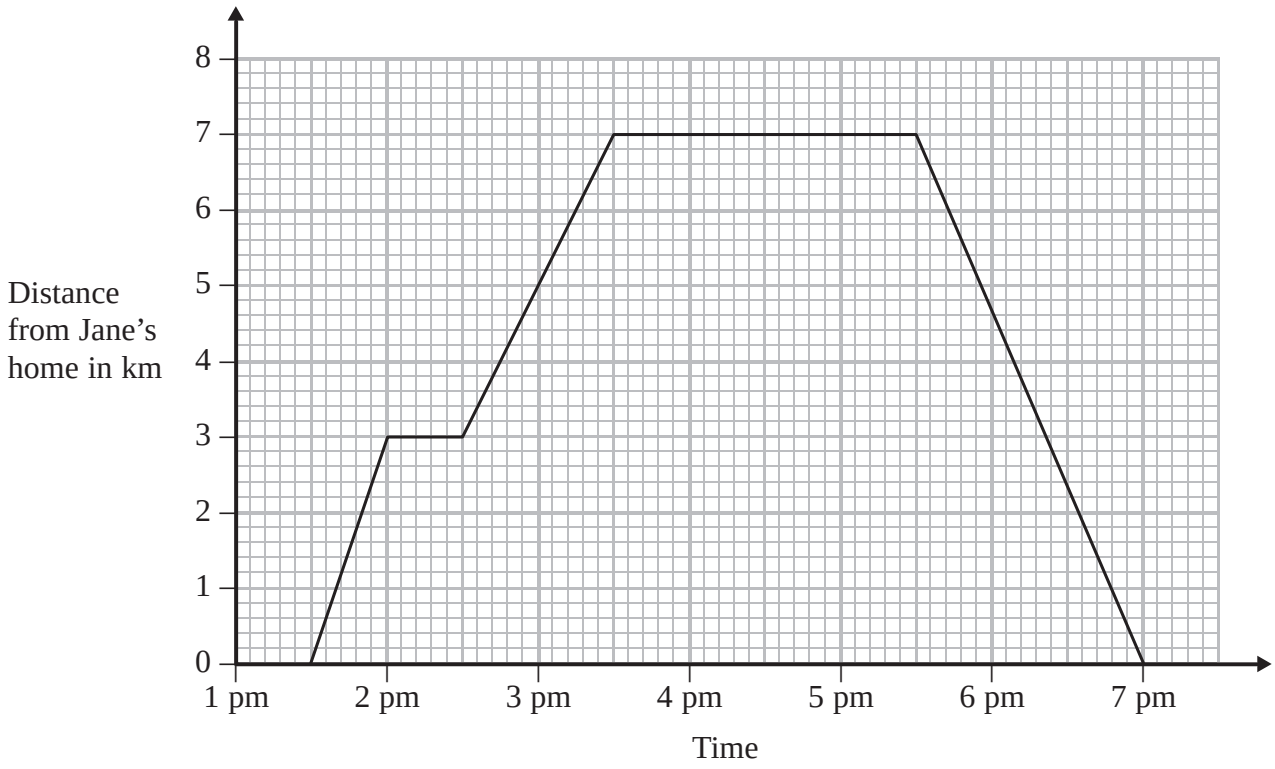
(2)

(Total for Question 172 is 6 marks)

EXPERT TUITION

173 Jane walked from her home to the ice rink and then walked back home.

The travel graph for Jane's journey to the ice rink and back home is shown below.



On the way to the ice rink Jane stopped at her friend's house.

(a) How long did Jane stay at her friend's house?

.....

(1)

(b) How far is it from her friend's house to the ice rink?

..... km

(1)

(c) What time did Jane leave the ice rink?

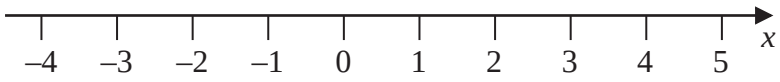
.....

(1)

(Total for Question 173 is 3 marks)

EXPERT TUITION

174 (a) Show the inequality $x < 3$ on the number line below.



(2)

(b) Solve the inequality $4x - 7 \geqslant 13$

.....

(2)

(Total for Question 174 is 4 marks)

EXPERT TUITION

175 (a) Solve $x - 3 = 12$

$x =$ .....

(1)

(b) Solve $5y = 30$

$y =$ .....

(1)

(c) Solve $2w + 7 = 13$

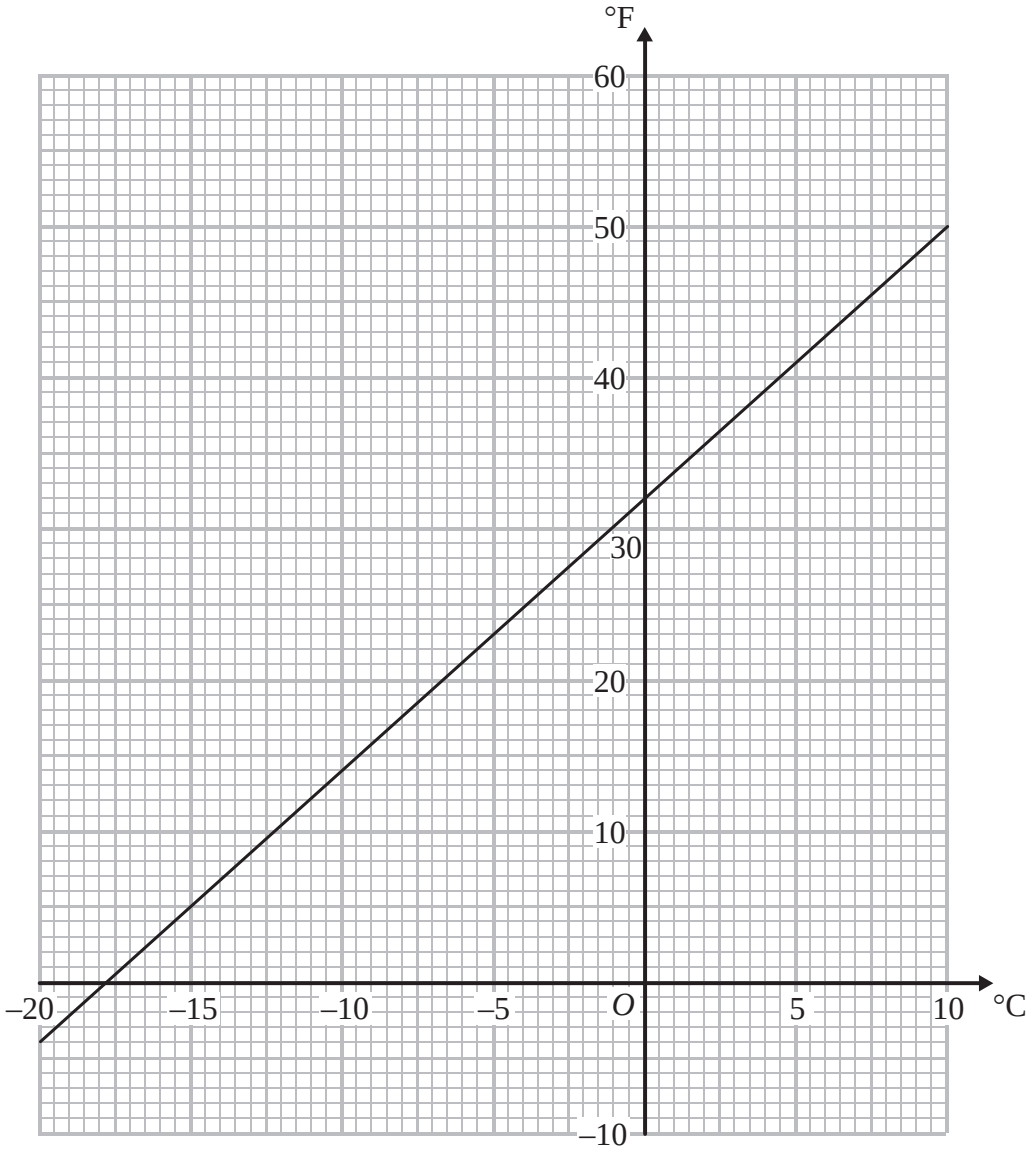
$w =$ .....

(2)

(Total for Question 175 is 4 marks)

EXPERT TUITION

176 You can use this conversion graph to change between temperatures in degrees Celsius (°C) and temperatures in degrees Fahrenheit (°F).



The temperature inside a refrigerator needs to be 40 °F.

(a) Use the conversion graph to change a temperature of 40 °F into a temperature in °C.

..... °C

(1)

EXPERT TUITION

The temperature in a freezer needs to be 0 °F.

The temperature in Dave's freezer is –10 °C.

*(b) Compare the temperature in Dave's freezer with 0 °F.
You must show your working.

(3)

(Total for Question 176 is 4 marks)

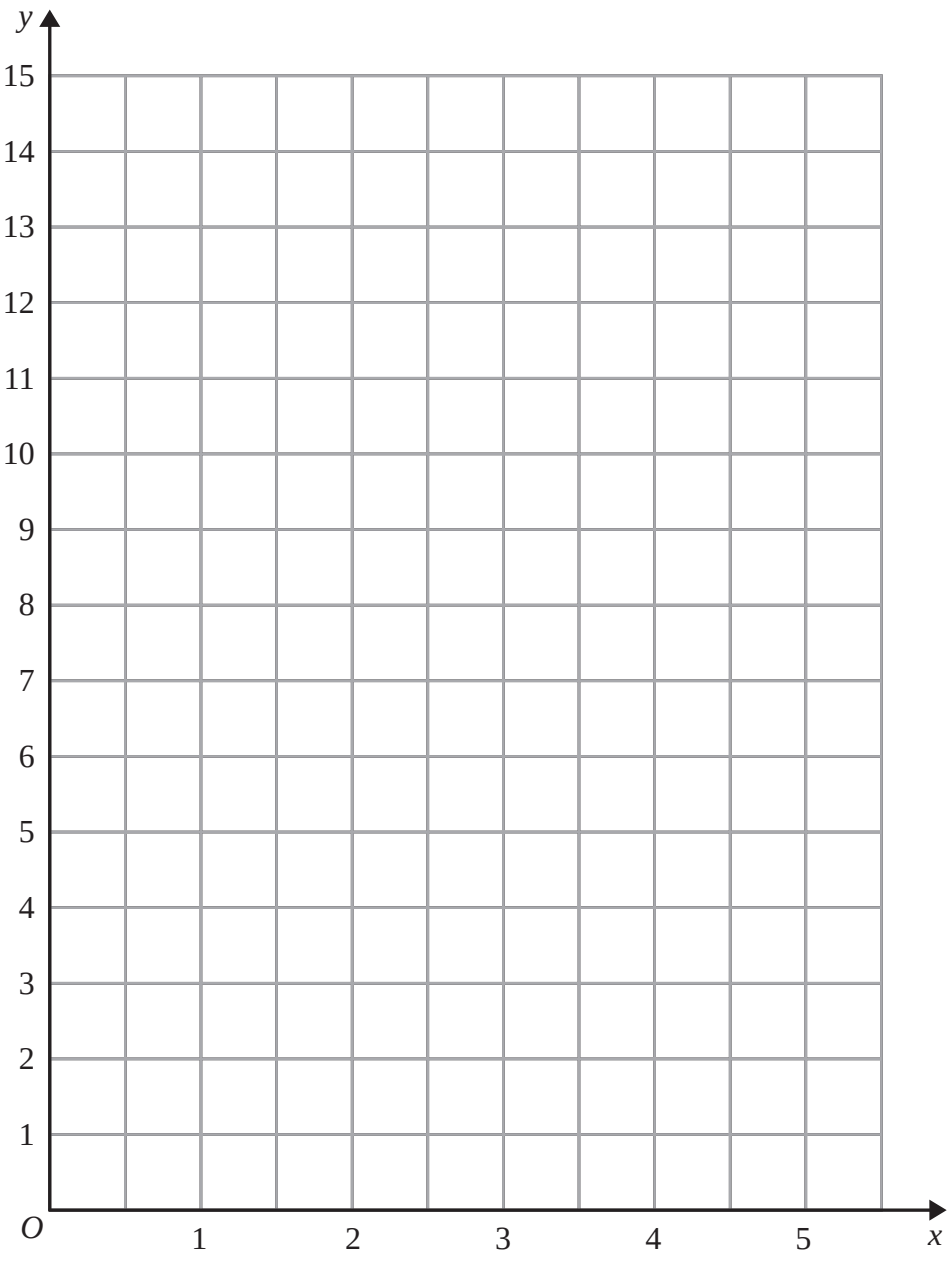
EXPERT TUITION

177 (a) Complete the table of values for $y = 2x + 3$ for values of x from 0 to 5

x	0	1	2	3	4	5
y		5		9		

(2)

(b) On the grid, draw the graph of $y = 2x + 3$ for values of x from 0 to 5



(2)

(Total for Question 177 is 4 marks)

EXPERT TUITION

178 (a) Simplify $p^2 \times p^5$

.....

(1)

(b) Expand and simplify $3(m + 4) – 2(4m + 1)$

.....

(2)

(c) Factorise $n^2 – 7n$

.....

(1)

(Total for Question 178 is 4 marks)

EXPERT TUITION

179 (a) Simplify $t + t + t$

.....

(1)

(b) Simplify $5 \times e \times f$

.....

(1)

(c) Simplify $3x + 8y + x - 2y$

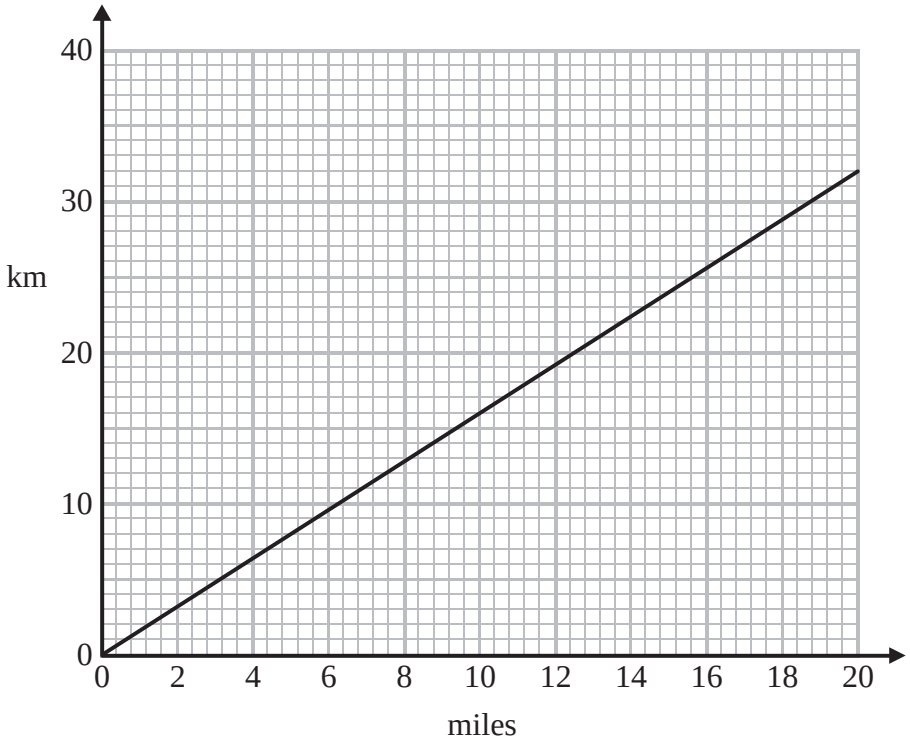
.....

(2)

(Total for Question 179 is 4 marks)

EXPERT TUITION

180 You can use this graph to change between km and miles.



(a) Change 18 miles to km.

..... km

(1)

(b) Change 13 km to miles.

..... miles

(1)

Chris drives 250 km.
He then drives 100 miles.

(c) Work out, in miles, the total distance Chris drives.

..... miles

(3)

(Total for Question 180 is 5 marks)

EXPERT TUITION

181 Here are the first four terms of an arithmetic sequence.

11 17 23 29

(a) Find, in terms of n, an expression for the nth term of this arithmetic sequence.

.....

(2)

(b) Is 121 a term of this arithmetic sequence?
You must explain your answer.

.....

.....

.....

(2)

(Total for Question 181 is 4 marks)

182 Here is a two-stage number machine.

(a) Work out the output when the input is 20

.....

(1)

Here is a different two-stage number machine.

When the input is 10, the output is 12

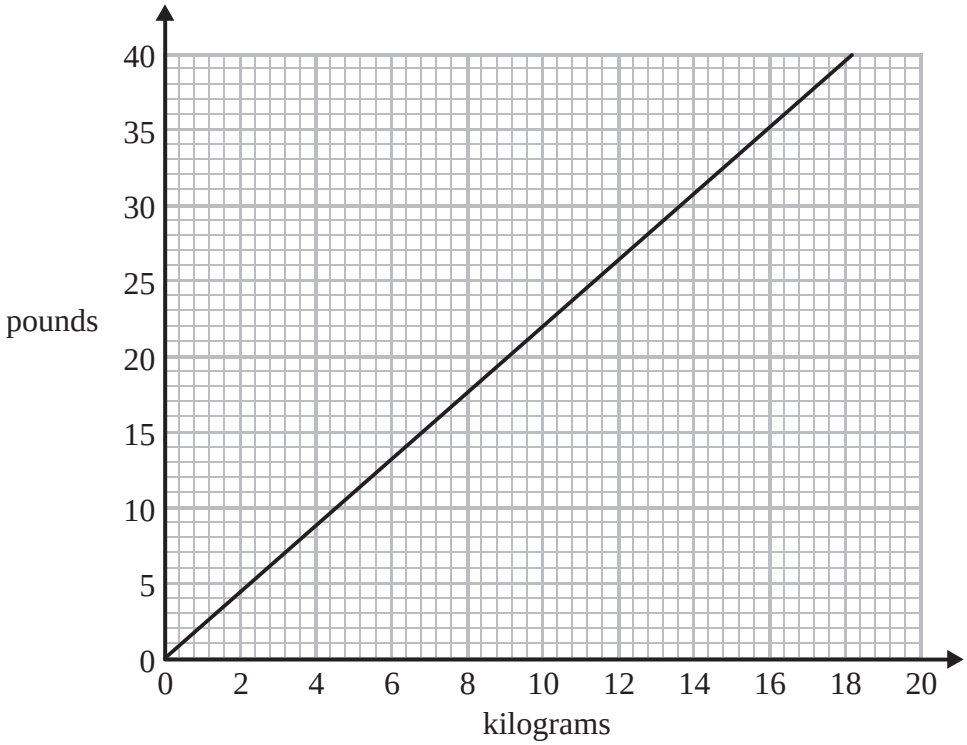
(b) Complete the number machine.

(1)

(Total for Question 182 is 2 marks)

EXPERT TUITION

183 You can use this graph to change between pounds and kilograms.



(a) Change 13 pounds to kilograms.

..... kilograms

(1)

A trolley can carry a maximum weight of 200 pounds.

Jack has 4 bags of potatoes.
Each bag of potatoes weighs 25 kilograms.

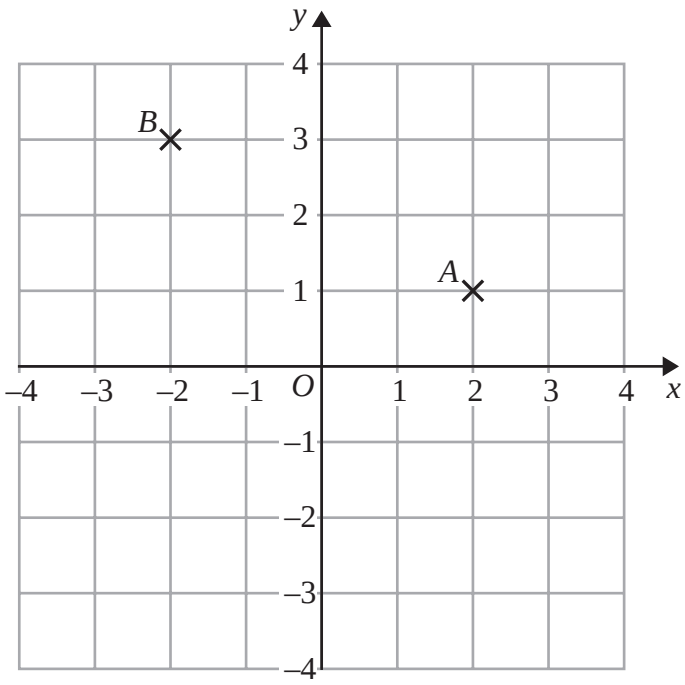
*(b) Can the trolley carry the 4 bags of potatoes at the same time?
You must show your working.

(3)

(Total for Question 183 is 4 marks)

EXPERT TUITION

184



(a) Write down the coordinates of the point *A*.

(..... , ...)

(1)

(b) Write down the coordinates of the point *B*.

(..... , ...)

(1)

(c) On the grid, mark with a cross (×) the point (–3, –1).
Label this point *C*.

(1)

(d) On the grid, draw the line $x = 3$

(1)

(Total for Question 184 is 4 marks)

EXPERT TUITION

185 (a) Solve $x + 3 = 12$

$x =$ .....

(1)

(b) Solve $\frac{y}{5} = 10$

$y =$ .....

(1)

(Total for Question 185 is 2 marks)

---

186 $a = 4$
$b = -5$

(a) Work out the value of $2a + 3b$

.....

(2)

$x = 3$

(b) Work out the value of $4x^2$

.....

(1)

(Total for Question 186 is 3 marks)

EXPERT TUITION

187 (a) Factorise $8x + 6$

.....

(1)

(b) Factorise $y^2 - 2y$

.....

(1)

(c) Simplify fully $\dfrac{p^3 \times p^4}{p^2}$

.....

(2)

(Total for Question 187 is 4 marks)

EXPERT TUITION

188 (a) Simplify $m + m + m$

.....

(1)

(b) Simplify $9e - 2e$

.....

(1)

(c) Simplify $5 \times 3g$

.....

(1)

(Total for Question 188 is 3 marks)

---

189 (a) $L = 3a + 2c$

$a = 5$
$c = 8$

Work out the value of L.

$L =$ .....

(2)

(b) Kirsty buys some buns.
She buys x packs of currant buns and y boxes of iced buns.

There are 6 currant buns in a pack of currant buns.
There are 8 iced buns in a box of iced buns.

Write down an expression, in terms of x and y, for the total number of buns Kirsty buys.

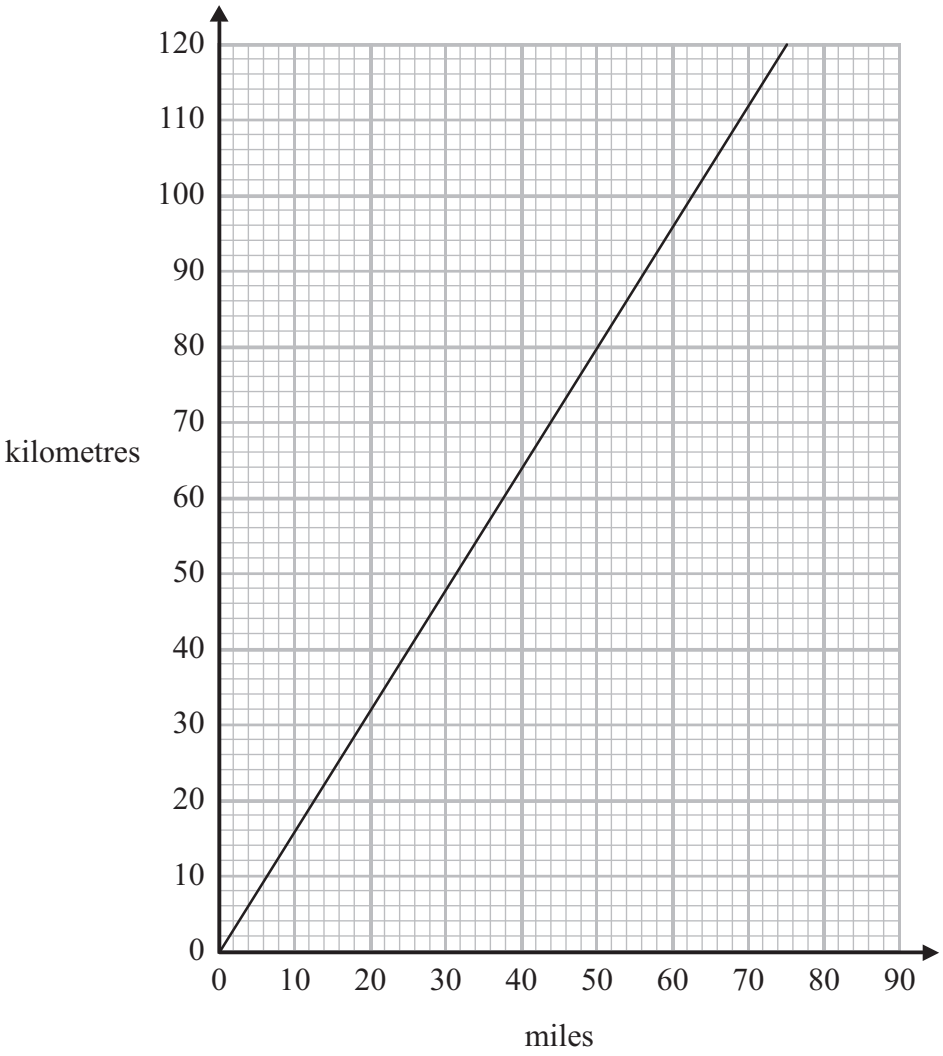
.....

(2)

(Total for Question 189 is 4 marks)

EXPERT TUITION

***190** You can use this graph to change between miles and kilometres.



The distance from Paris to London is 280 miles.
The distance from Paris to Amsterdam is 500 kilometres.

Is Paris further from London or further from Amsterdam?
You must show how you get your answer.

(Total for Question 190 is 3 marks)

EXPERT TUITION

***191** Here are the first four terms in a number sequence.

5 8 11 14

Kasey thinks that the number 34 is in this sequence.

Is Kasey correct?
You must show how you get your answer.

(Total for Question 191 is 3 marks)

192 (a) Factorise $3e^2 + 5e$

.....

(1)

(b) Solve $7(k - 3) = 3k - 5$

$k =$ .....

(3)

(c) Make a the subject of the formula $f = \dfrac{a + 1}{2}$

.....

(2)

(Total for Question 192 is 6 marks)

EXPERT TUITION

193 Here are the first four terms of a number sequence.

3 7 11 15

(a) Write down the next term of this sequence.

.....

(1)

The 50th term of this number sequence is 199

(b) Write down the 51st term of this sequence.

.....

(1)

The number 372 is **not** a term of this sequence.

(c) Explain why.

.....

.....

(1)

(Total for Question 193 is 3 marks)

---

194 (a) Simplify $a \times c \times 3$

.....

(1)

(b) Simplify $p \times p \times p$

.....

(1)

(c) Simplify $5x - 4y + 3x - 3y$

.....

(2)

(Total for Question 194 is 4 marks)

EXPERT TUITION

195 $x = -5$
$y = 2$

(a) Work out the value of $3x + 4y$

.....

(2)

Janet buys p packets of sweets.
There are 10 sweets in each packet.

(b) (i) Write down an expression, in terms of p, for the total number of sweets Janet buys.

.....

Janet eats 7 of the sweets.

(ii) Write down an expression, in terms of p, for the number of sweets Janet has now.

.....

(2)

(Total for Question 195 is 4 marks)

---

196 (a) Expand $2m(m + 3)$

.....

(1)

(b) Factorise fully $3xy^2 - 6xy$

.....

(2)

(Total for Question 196 is 3 marks)

EXPERT TUITION

197 $a = 5$
$b = 3$

Work out the value of $4a + 2b$

.....

(Total for Question 197 is 2 marks)

198 (a) Simplify $b + b + b + b$

.....

(1)

(b) Simplify $8n - 3n$

.....

(1)

(c) Simplify $3 \times c \times d$

.....

(1)

(d) Simplify $3x + 7y + 2x - y$

.....

(2)

(Total for Question 198 is 5 marks)

EXPERT TUITION

199 Jessica thinks of a number.

She multiplies the number by 3
She then subtracts 7
Her answer is 5

What number did Jessica think of?

.....

(Total for Question 199 is 2 marks)

200 (a) Solve $\frac{n}{7} = 2$

.....

(1)

(b) Solve $3g + 4 = 19$

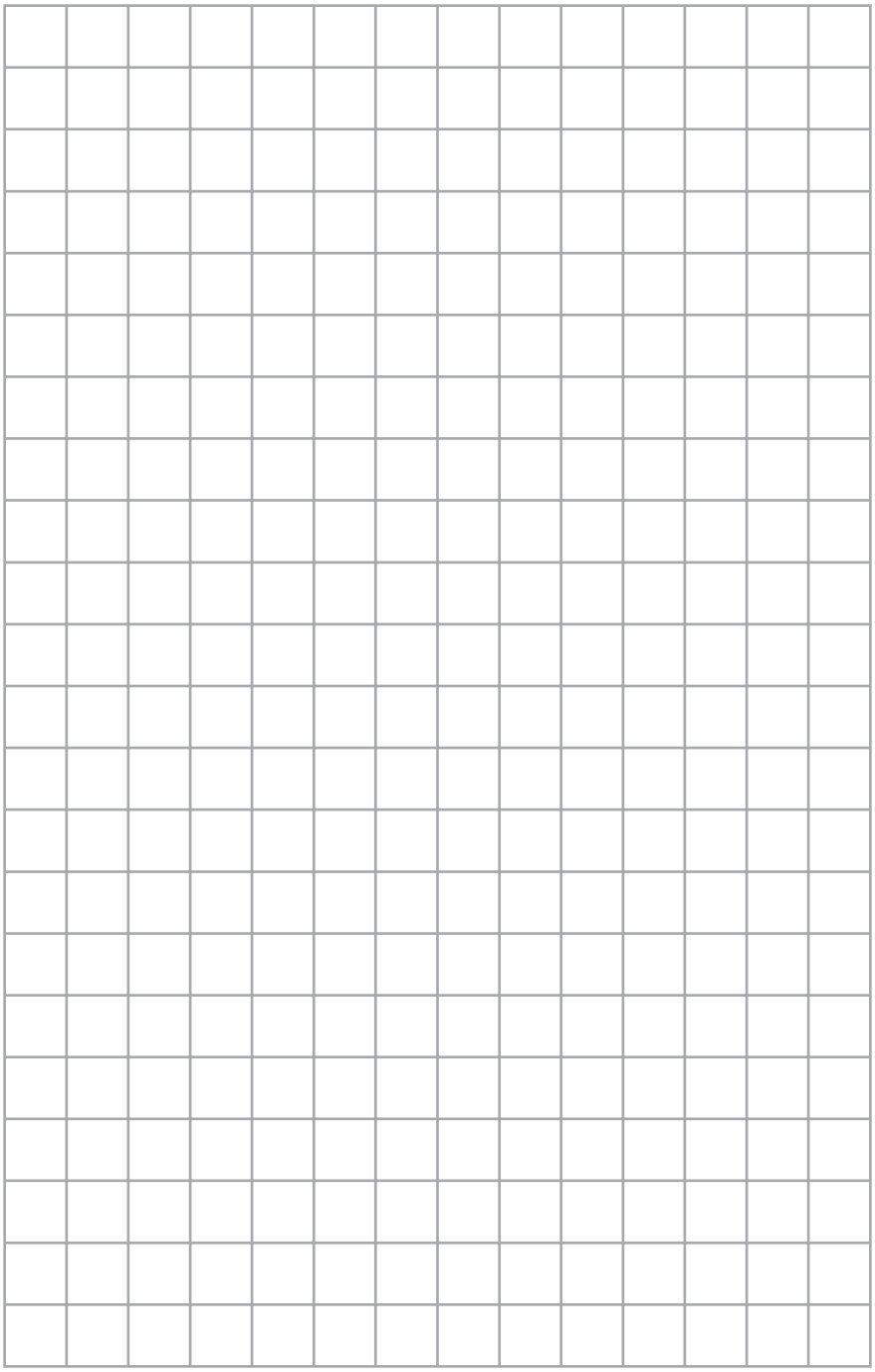
.....

(2)

(Total for Question 200 is 3 marks)

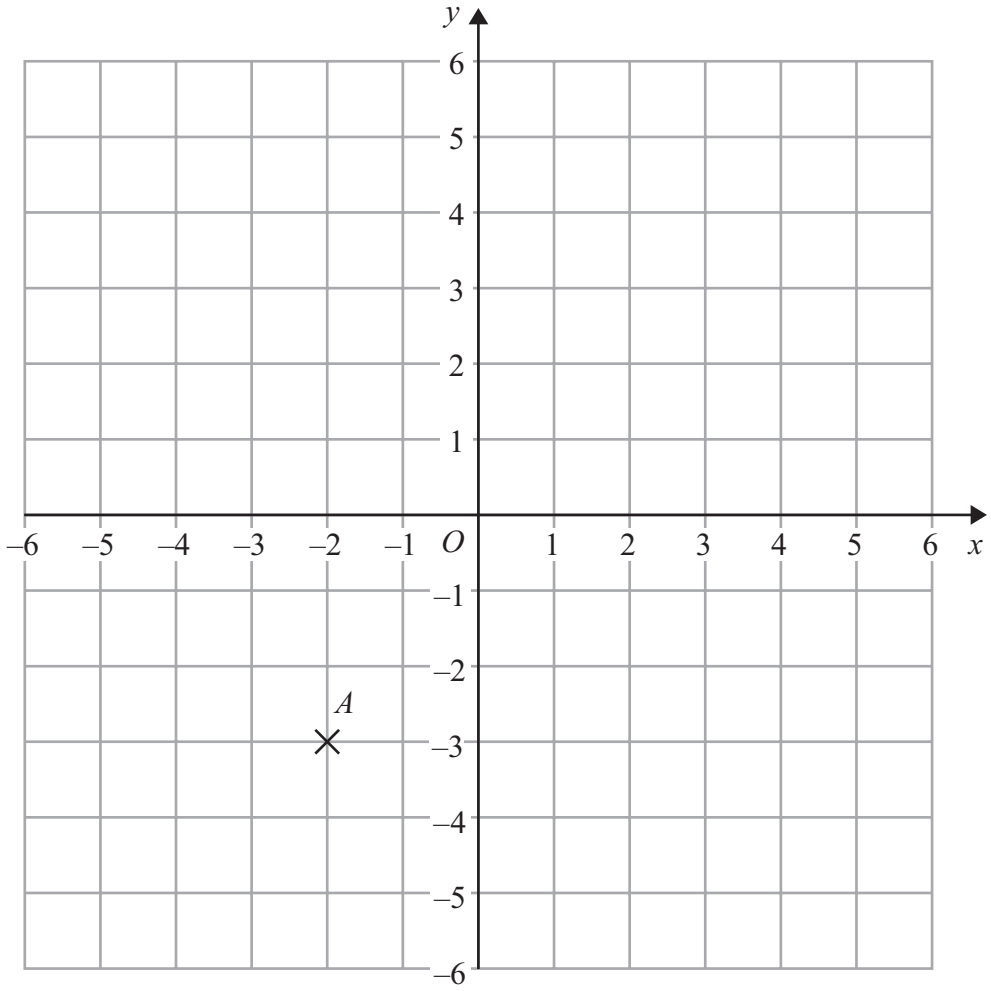
EXPERT TUITION

201 On the grid, draw the graph of $y = 3x + 2$ for values of x from -2 to 2



(Total for Question 201 is 4 marks)

202



(a) (i) Write down the coordinates of the point A.

(....., ...)

(ii) On the grid, mark with a cross (✕) the point with coordinates (5, 2). Label this point B.

(2)

(b) On the grid, draw the line with equation $y = 3$

(1)

(Total for Question 202 is 3 marks)

EXPERT TUITION

203 Here are the first five terms of a number sequence.

2 7 12 17 22

(a) (i) Write down the next term in the sequence.

.....

(ii) Explain how you worked out your answer.

.....

.....

.....

(2)

(b) 45 is **not** a term in this number sequence.
Explain why.

.....

.....

.....

(1)

(Total for Question 203 is 3 marks)

204 Here is a number machine.

Complete this table for the number machine.

Input	Output
0.5	.....
2	15
3	.....
.....	33

(Total for Question 204 is 3 marks)

EXPERT TUITION

205 (a) Work out $2 \times (8 - 3)$

.....

(1)

(b) Work out $3^2 + 4 \times 5$

.....

(2)

(c) Find the value of 5^3

.....

(1)

(d) Find the square root of 16

.....

(1)

(Total for Question 205 is 5 marks)

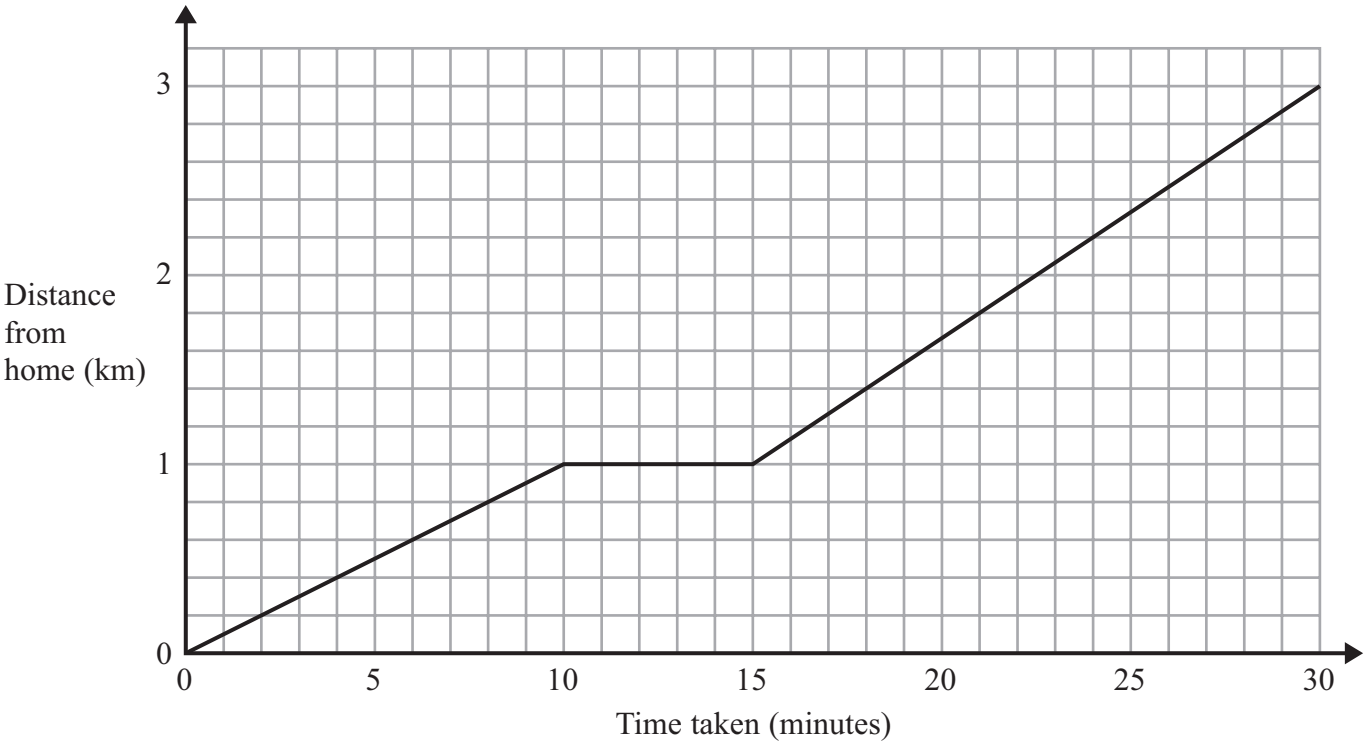
EXPERT TUITION

206 On Monday, Holly walked from her home to school.
She stopped at her friend's house on the way to school.

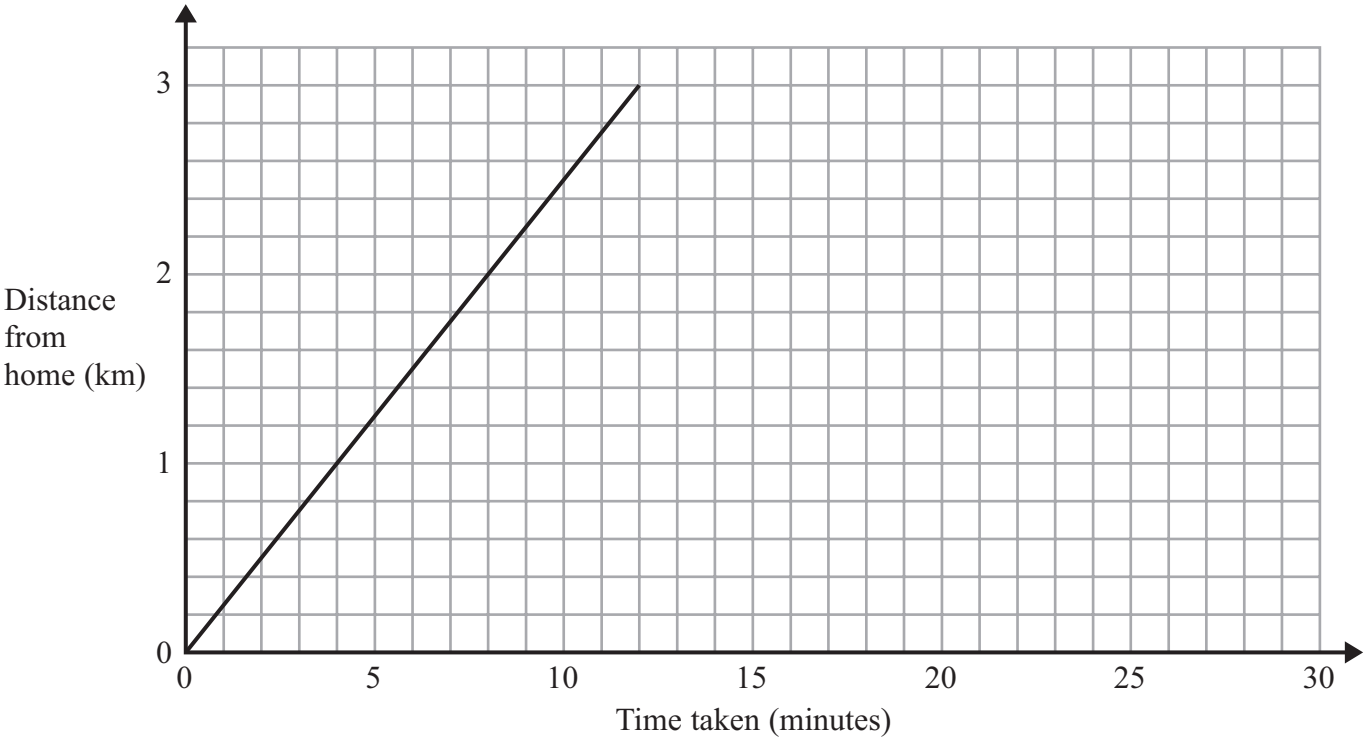
On Tuesday, Holly cycled from her home to school.

The travel graphs show Holly's journey on Monday and on Tuesday.

Monday



Tuesday



EXPERT TUITION

(a) Write down the distance from Holly's home to school.

..... km
(1)

(b) Write down how long Holly stopped at her friend's house on Monday.

..... minutes
(1)

Holly took less time to get to school on Tuesday than on Monday.

(c) How many minutes less?

..... minutes
(2)

(Total for Question 206 is 4 marks)

---

207 (a) Solve $x + 9 = 19$

.....
(1)

(b) Solve $2y = 17$

.....
(1)

(c) Solve $\frac{w}{4} = 8$

.....
(1)

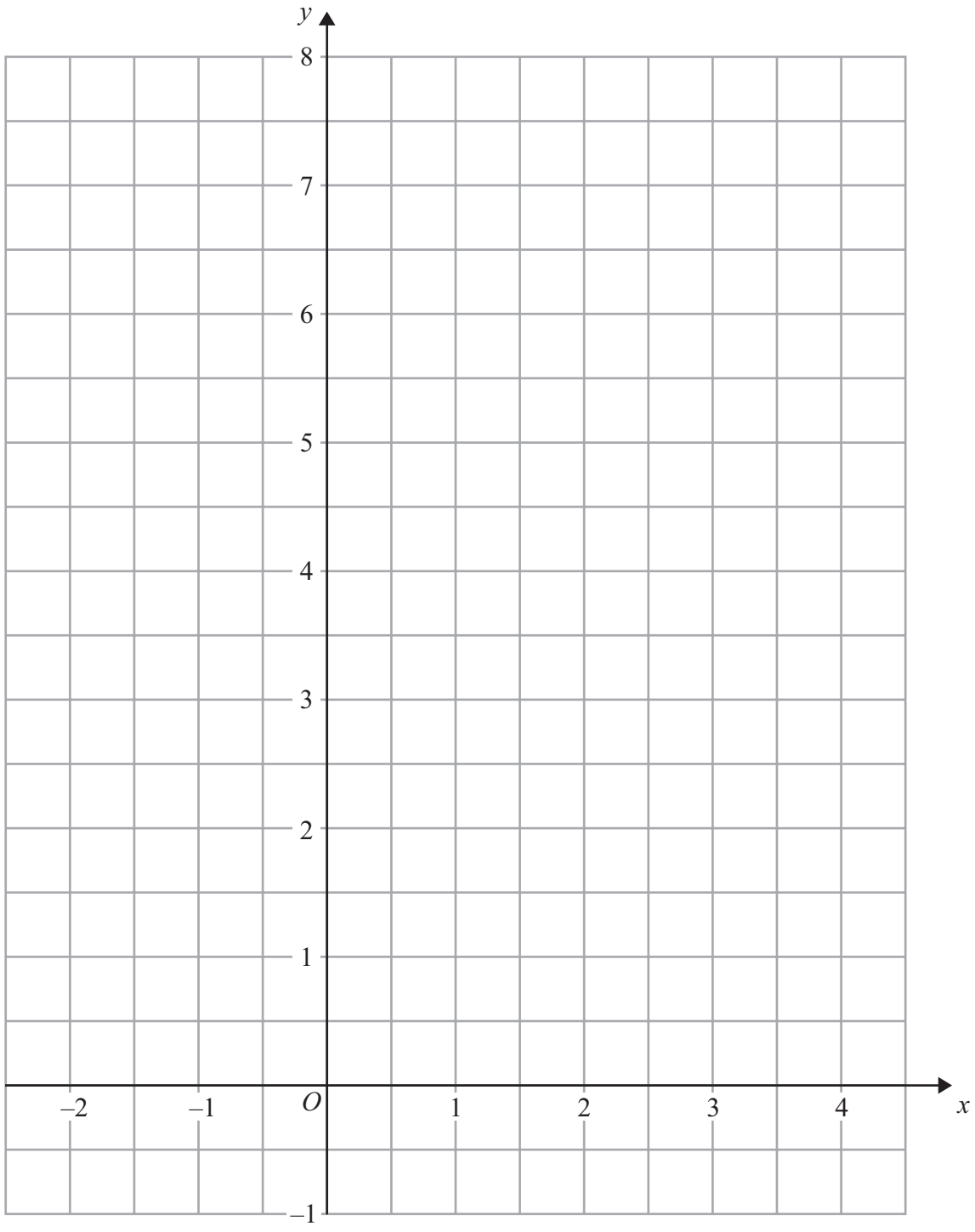
(d) Expand $3(2 + t)$

.....
(1)

(Total for Question 207 is 4 marks)

EXPERT TUITION

208 On the grid, draw the graph of $y = \frac{1}{2}x + 5$ for values of x from –2 to 4



(Total for Question 208 is 3 marks)

EXPERT TUITION

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

358 835 709 98 145

.....

(1)

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

4 –5 7 –1 –8

.....

(1)

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

$\frac{1}{4}$ 0.2 40% $\frac{3}{4}$ 0.5

.....

(2)

(Total for Question 209 is 4 marks)

EXPERT TUITION

210 (a) Simplify $a + a + a + a$

.....

(1)

(b) Simplify $3 \times c \times d$

.....

(1)

(c) Simplify $3ef + 5ef - ef$

.....

(1)

(d) Solve $6g = 18$

$g =$ .....

(1)

(e) Solve $5h + 7 = 17$

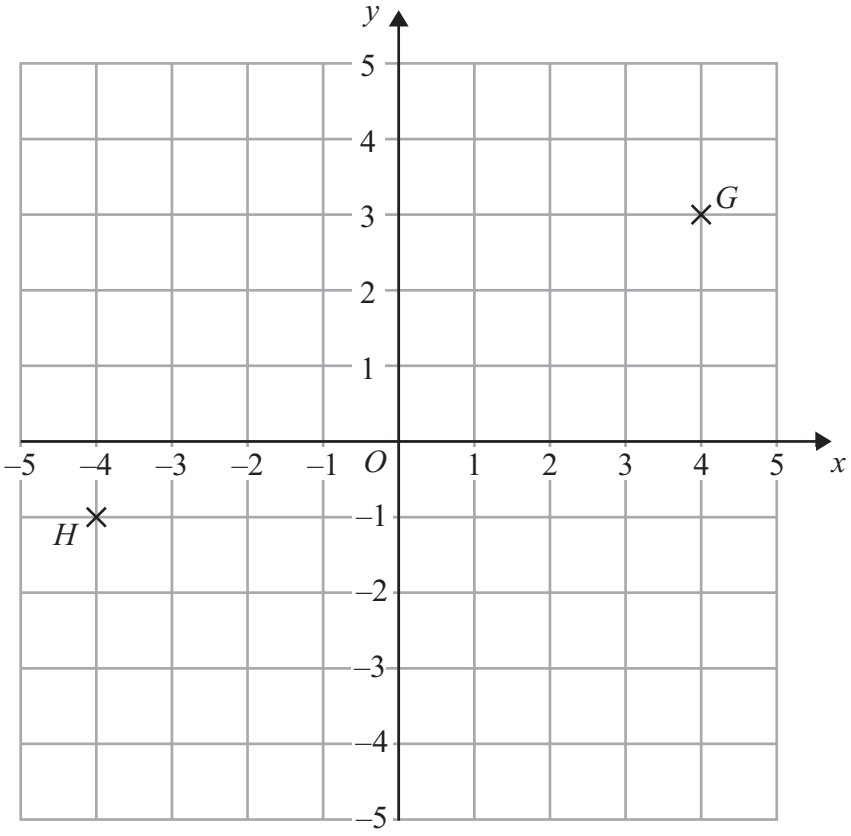
$h =$ .....

(2)

(Total for Question 210 is 6 marks)

EXPERT TUITION

211



(a) (i) Write down the coordinates of the point G.

(..... , ...)

(ii) Write down the coordinates of the point H.

(..... , ...)

(2)

(b) Find the coordinates of the midpoint of GH.

(..... , ...)

(2)

(Total for Question 211 is 4 marks)

EXPERT TUITION

212 Here are the first four terms of a number sequence.

3 7 11 15

(a) (i) Write down the next term in the sequence.

.....

(ii) Explain how you got your answer.

.....

(2)

(b) Work out the difference between the 10th term and the 15th term in the sequence.

.....

(2)

(Total for Question 212 is 4 marks)

---

213 (a) Simplify $f+f+f+f-f$

.....

(1)

(b) Simplify $2m \times 3$

.....

(1)

(c) Simplify $3a + 2h + a + 3h$

.....

(2)

(Total for Question 213 is 4 marks)

EXPERT TUITION

214 (a) Solve $y + 5 = 12$

$y =$ .....

(1)

(b) Solve $\frac{x}{4} = 3$

$x =$ .....

(1)

(c) Solve $5w - 6 = 10$

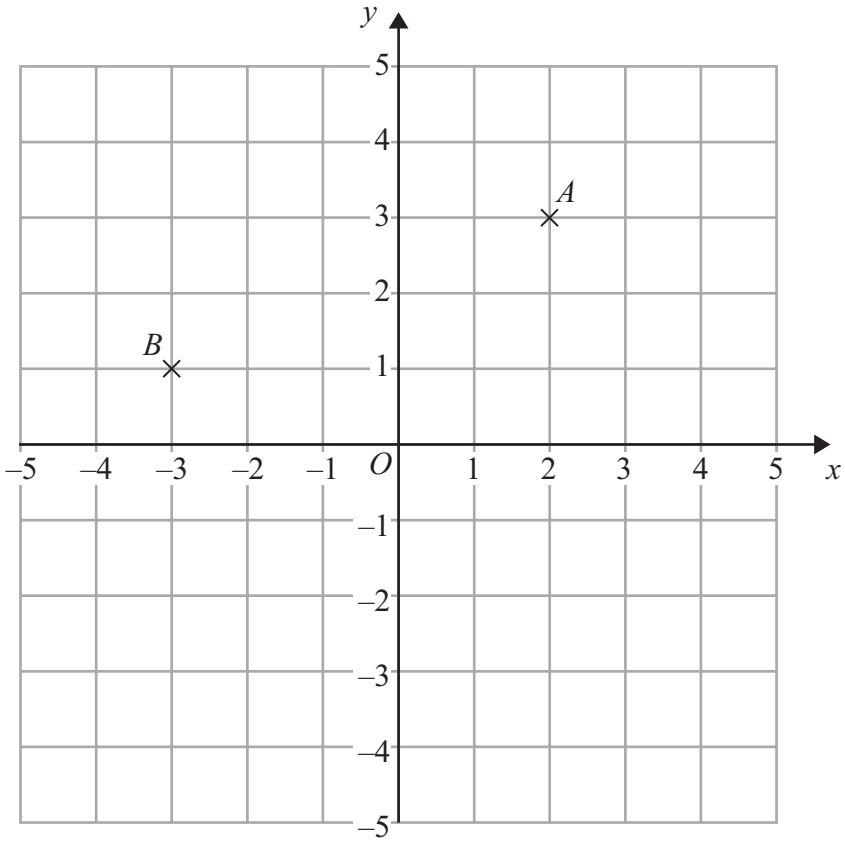
$w =$ .....

(2)

(Total for Question 214 is 4 marks)

EXPERT TUITION

215



(a) (i) Write down the coordinates of the point A.

(..... , ...)

(ii) Write down the coordinates of the point B.

(..... , ...)

(2)

(b) On the grid, mark with a cross (×) the point (3, –4).
Label this point C.

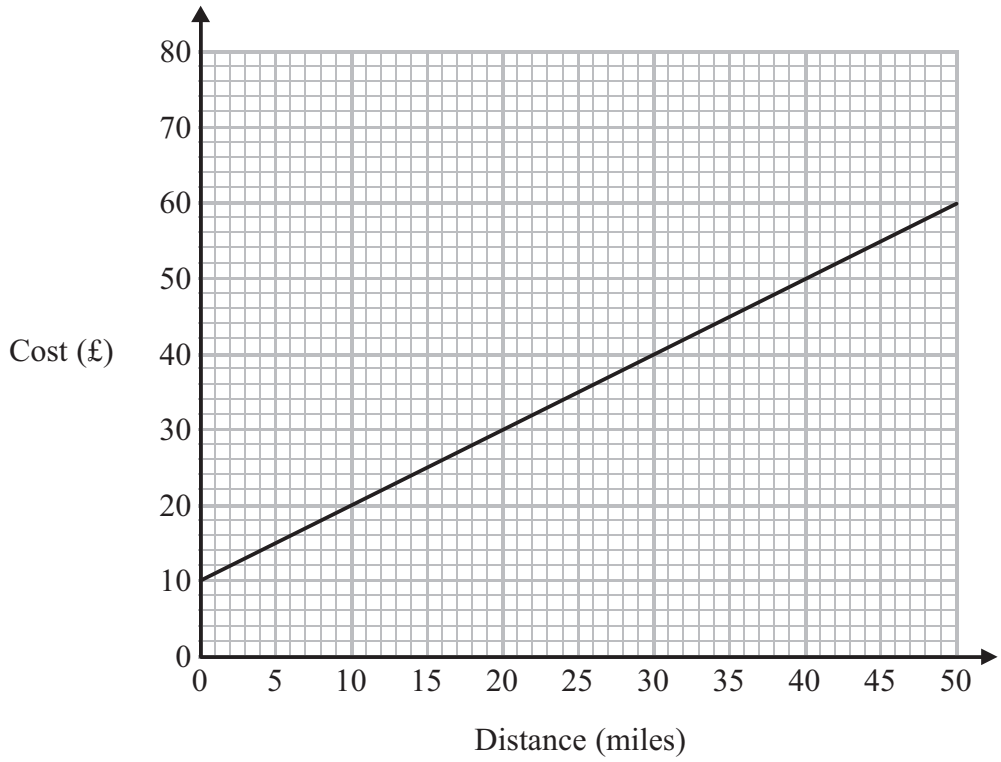
(1)

(Total for Question 215 is 3 marks)

EXPERT TUITION

***216** Bill uses his van to deliver parcels.
For each parcel Bill delivers there is a fixed charge plus £1.00 for each mile.

You can use the graph to find the total cost of having a parcel delivered by Bill.



(a) How much is the fixed charge?

£ .....

(1)

Ed uses a van to deliver parcels.
For each parcel Ed delivers it costs £1.50 for each mile.
There is **no** fixed charge.

(b) Compare the cost of having a parcel delivered by Bill with the cost of having a parcel delivered by Ed.

(3)

(Total for Question 216 is 4 marks)

EXPERT TUITION

217 (a) Expand $3(2y - 5)$

.....

(1)

(b) Factorise completely $8x^2 + 4xy$

.....

(2)

(c) Make h the subject of the formula

$$t = \frac{gh}{10}$$

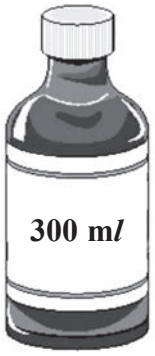
$h =$ .....

(2)

(Total for Question 217 is 5 marks)

EXPERT TUITION

218



Take **two** 5 m*l* spoons full
twice a day

There are 300 m*l* of medicine in a bottle.
Mary has to take two 5 m*l* spoons full of medicine twice a day.

Mary has to take the medicine until the bottle is empty.

(a) How many days does Mary have to take the medicine for?

..... days
(3)

You can work out the amount of medicine, c m*l*, to give to a child by using the formula

$$c = \frac{ma}{150}$$

m is the age of the child, in months.
a is an adult dose, in m*l*.

A child is 30 months old.
An adult's dose is 40 m*l*.

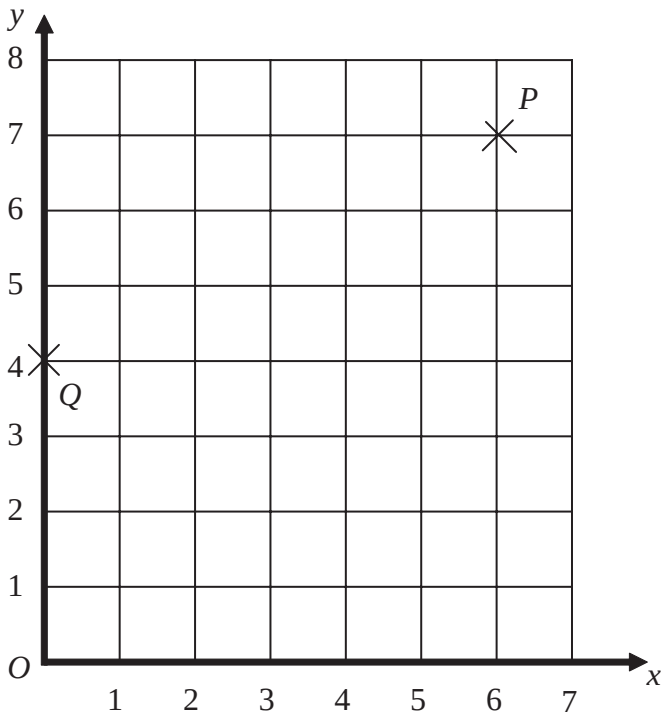
(b) Work out the amount of medicine you can give to the child.

..... m*l*
(2)

(Total for Question 218 is 5 marks)

EXPERT TUITION

219 Here is a coordinate grid.



(a) Write down the coordinates of the point P.

(1)

(.....,.....)

R is the midpoint of PQ.

(b) Write down the coordinates of the point R.

(2)

(.....,.....)

The point B is on the x-axis.
The line BP is parallel to the y-axis.

(c) Write down the coordinates of the point B.

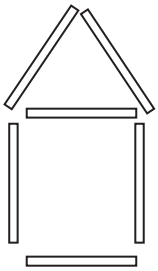
(2)

(.....,.....)

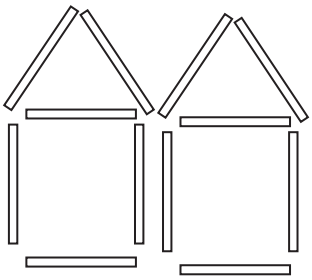
(Total for Question 219 is 5 marks)

EXPERT TUITION

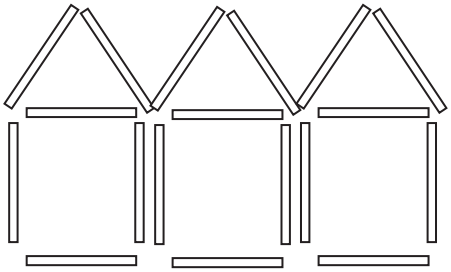
220 Here are some patterns made from sticks.



Pattern number 1



Pattern number 2



Pattern number 3

(a) Draw Pattern number 4 in the space below.

(1)

(b) How many sticks are used for Pattern number 10?

(2)

.....

Jim says there is a pattern with 123 sticks in it.

(c) Is Jim correct? You must explain your answer.

(2)

.....

.....

.....

(Total for Question 220 is 5 marks)

EXPERT TUITION

221 (a) Simplify $7x + 3x - 4x$

(1)

.....

(b) Solve $3y - 2 \geqslant -8$

(2)

.....

(Total for Question 221 is 3 marks)

EXPERT TUITION

222 (a) Solve $5p - 16 = 4$

(2)

$p =$ .....

(b) Solve $2q - 4 = 5q + 5$

(2)

$q =$ .....

$y = 3(2x - 1) - 2(5 + 3x)$

(c) Find the value of y.

(2)

$y =$ .....

(Total for Question 222 is 6 marks)

EXPERT TUITION

223 (a) Factorise $5x - 10y$

(1)

.....

(b) Factorise fully $3pq - 12p^2$

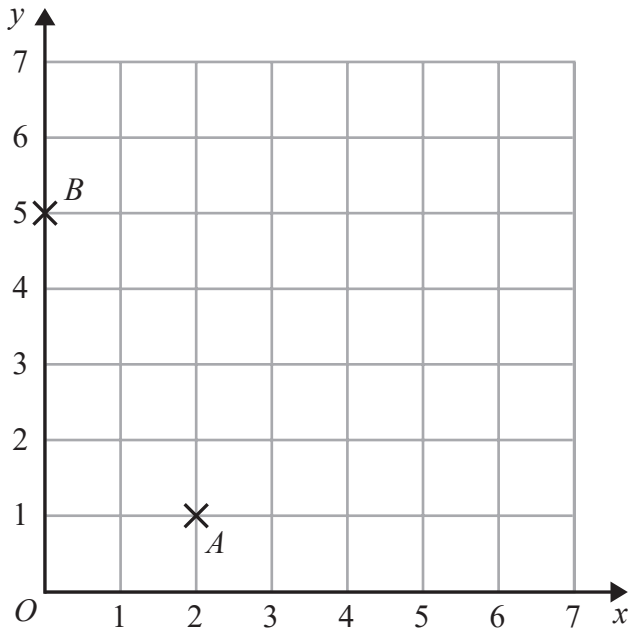
(2)

.....

(Total for Question 223 is 3 marks)

EXPERT TUITION

224



(a) Write down the coordinates of the point A.

(..... , ...)

(1)

(b) Write down the coordinates of the point B.

(..... , ...)

(1)

(c) Write down the coordinates of the midpoint of AB.

(..... , ...)

(1)

(d) On the grid, mark with a cross ($\times$) a point C so that ABC is an isosceles triangle. Label this point C.

(1)

(Total for Question 224 is 4 marks)

EXPERT TUITION

225 (a) Solve $2x = 24$

$x =$ .....

(1)

(b) Solve $\frac{y}{3} = 15$

$y =$ .....

(1)

Hassan thinks of a number.

He multiplies the number by 3
He then adds 12

His answer is 60

(c) What number did Hassan think of?

.....

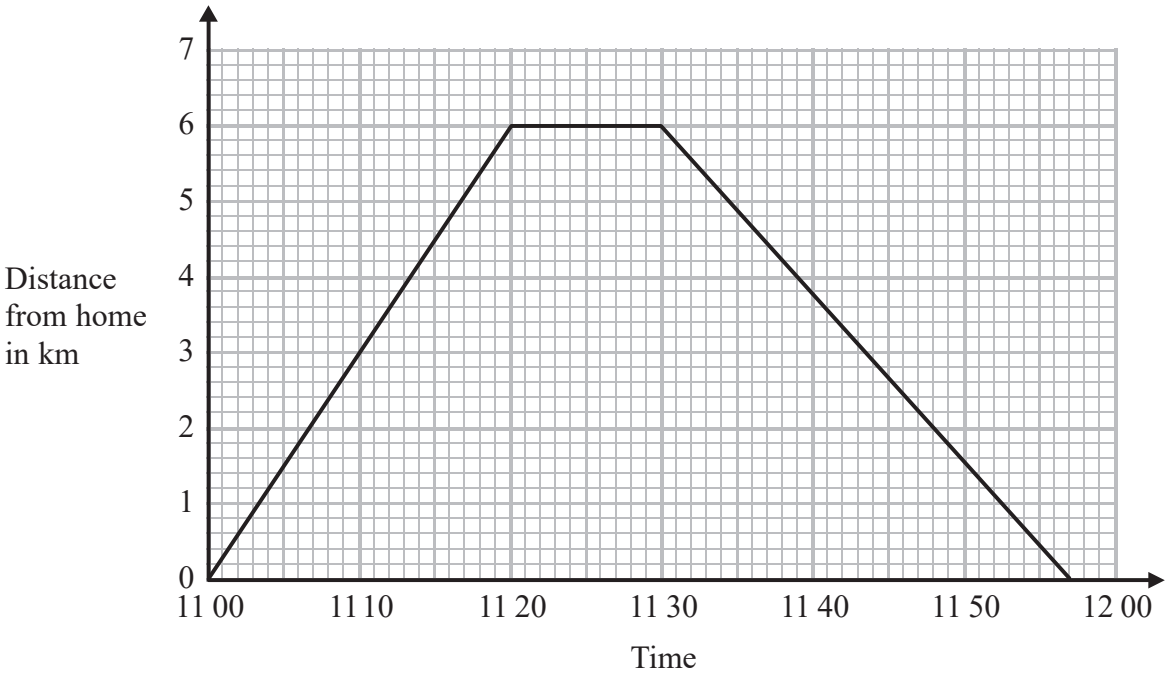
(2)

(Total for Question 225 is 4 marks)

EXPERT TUITION

226 Amina cycled from her home to a shop.
She then cycled home.

The travel graph shows information about Amina's journey.



At 11 20 Amina stopped to go into the shop.

(a) How many minutes did Amina stop for?

..... minutes
(1)

Amina took more time to cycle home from the shop than she took to cycle to the shop.

(b) How many minutes more?

..... minutes
(2)

(c) What was the total distance Amina cycled?

..... km
(1)

(Total for Question 226 is 4 marks)

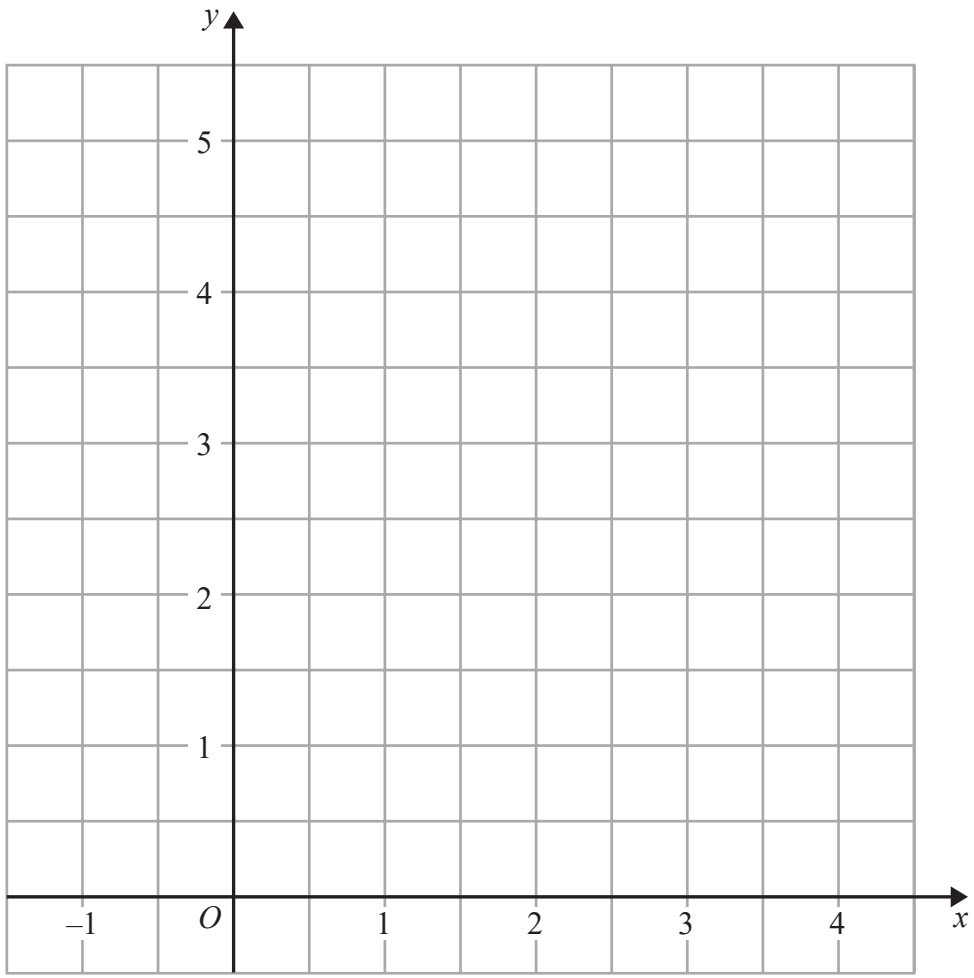
EXPERT TUITION

227 (a) Complete the table of values for $x + y = 4$

x	–1	0	1	2	3	4
y			3			0

(2)

(b) On the grid, draw the graph of $x + y = 4$ for values of x from –1 to 4



(2)

(Total for Question 227 is 4 marks)

EXPERT TUITION

228 Gemma has the same number of sweets as Betty.

Gemma gives 24 of her sweets to Betty.
Betty now has 5 times as many sweets as Gemma.

Work out the total number of sweets that Gemma and Betty have.

.....

(Total for Question 228 is 4 marks)

EXPERT TUITION

229 (a) Solve $3x = 18$

$x =$ .....

(1)

(b) Solve $y + 7 = 15$

$y =$ .....

(1)

(Total for Question 229 is 2 marks)

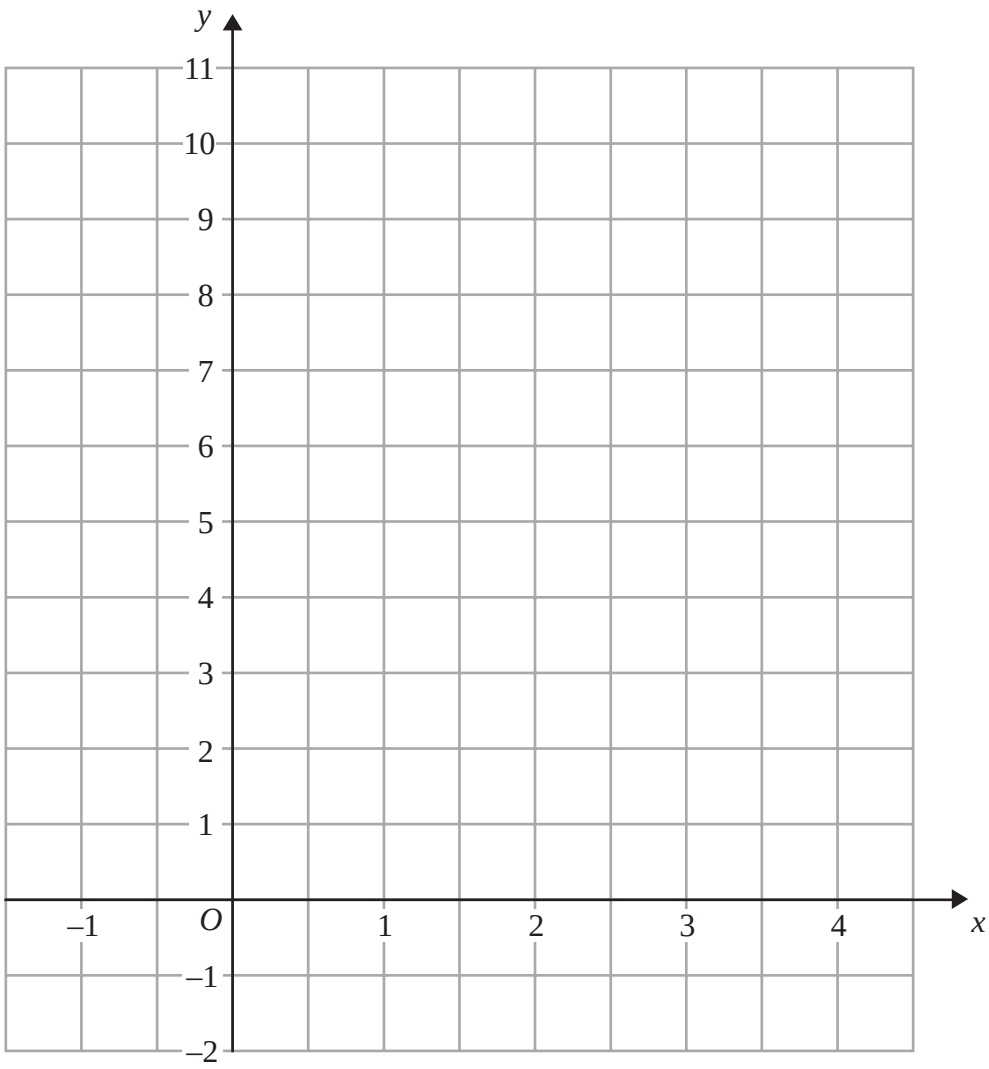
EXPERT TUITION

230 (a) Complete the table of values for $y = 8 - 2x$

x	–1	0	1	2	3	4
y			6			0

(2)

(b) On the grid, draw the graph of $y = 8 - 2x$ for values of x from –1 to 4



(2)

(Total for Question 230 is 4 marks)

EXPERT TUITION

231 (a) Simplify fully $\dfrac{n^7 \times n^3}{n^6}$

.....

(2)

(b) Factorise $5y - 15$

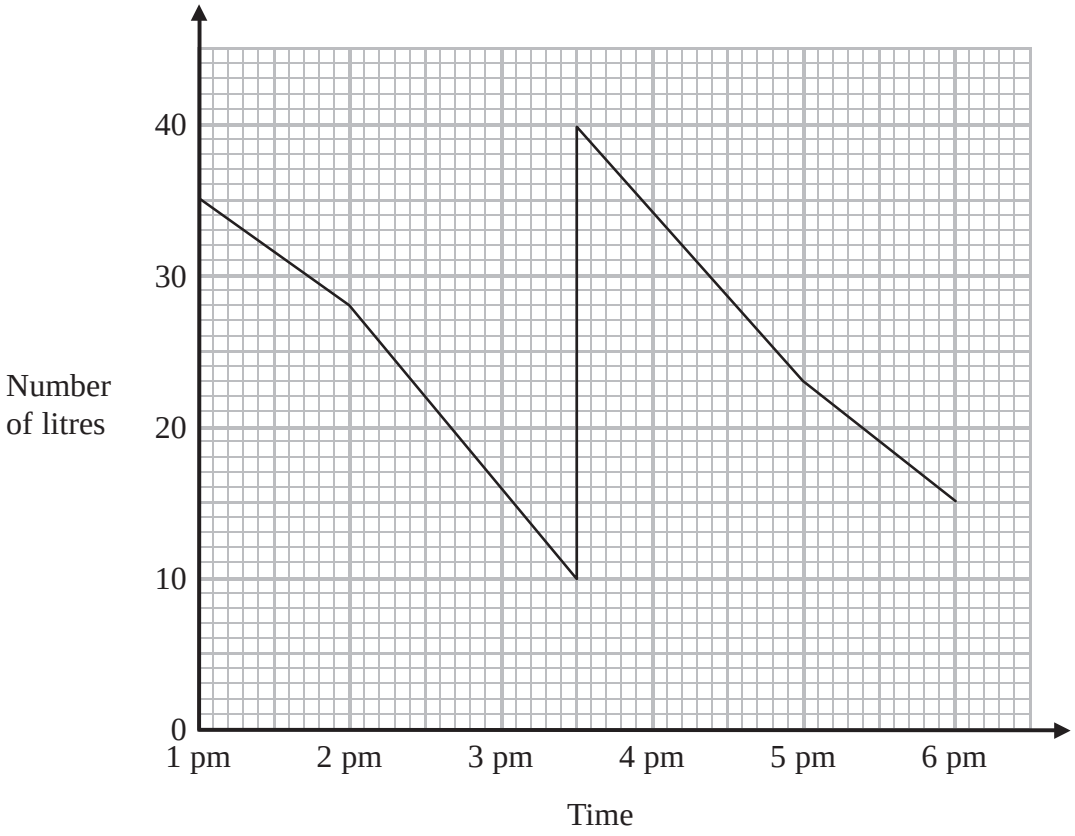
.....

(1)

(Total for Question 231 is 3 marks)

EXPERT TUITION

232 The graph gives information about the number of litres of petrol in the tank of Jim's car during a journey.



(a) How many litres of petrol were in the tank at 1 pm?

..... litres

(1)

At 3 30 pm Jim stopped and put some petrol into the tank.

(b) How many litres of petrol did Jim put into the tank?

..... litres

(1)

(c) Work out the total number of litres of petrol the car used between 1 pm and 6 pm.

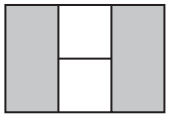
..... litres

(2)

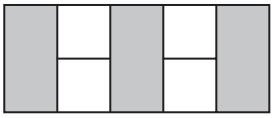
(Total for Question 232 is 4 marks)

EXPERT TUITION

233 Here is a sequence of patterns made with white squares and grey rectangles.



pattern number 1



pattern number 2

pattern number 3

(a) In the space below, draw pattern number 4

(1)

(b) How many grey rectangles are there in pattern number 8?

.....

(1)

Sue says,

"There is a pattern in the sequence with exactly 50 white squares."

(c) Is Sue right?
You must give a reason for your answer.

.....

.....

(1)

A pattern in the sequence has exactly 20 grey rectangles.

(d) How many white squares does the pattern have?

.....

(1)

(Total for Question 233 is 4 marks)

EXPERT TUITION

234 (a) Simplify $m + m + m + m + m$

.....

(1)

(b) Simplify $p \times r \times 4$

.....

(1)

(c) Simplify $5x + 4y + 2x - y$

.....

(2)

(Total for Question 234 is 4 marks)

EXPERT TUITION

235 The body mass index, B, for a person of mass m kg and height h metres is given by the formula

$$B = \frac{m}{h^2}$$

Usman has a mass of 50 kg.
He has a height of 1.57 m.

(a) Work out Usman's body mass index.
Give your answer correct to one decimal place.

.....

(2)

Tom's height is 1.80 m.
He wants his body mass index to be 21

(b) Work out the mass that will give Tom a body mass index of 21

..... kg

(2)

Tom is a ski jumper.

The maximum length of skis he can use is 145% of his height.
Tom's height is 1.80 m.

(c) Work out the maximum length of skis Tom can use.

..... m

(3)

(Total for Question 235 is 7 marks)

EXPERT TUITION

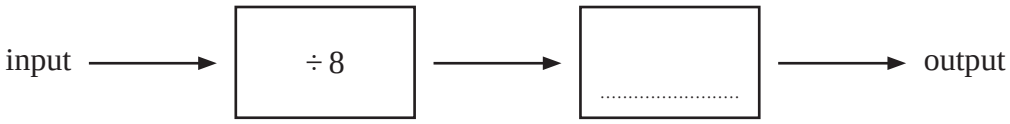
236 Here is a two-stage number machine.

(a) Complete the table.

input	output
1	2
3	14
6	.....
.....	50

(2)

Here is a different two-stage number machine.



When the input is 24, the output is 10

(b) Complete the number machine.

(1)

(Total for Question 236 is 3 marks)

EXPERT TUITION

237 (a) Solve $y + 6 = 11$

$y =$ .....

(1)

(b) Solve $5p = 14$

$p =$ .....

(1)

(c) Solve $4x + 3 = 9$

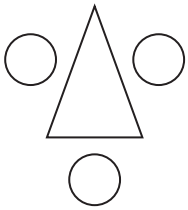
$x =$ .....

(2)

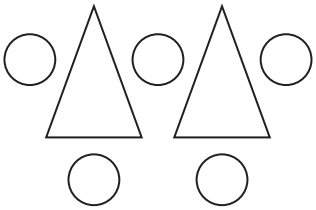
(Total for Question 237 is 4 marks)

EXPERT TUITION

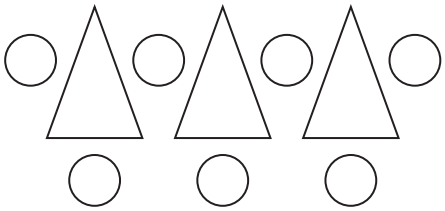
238 Here is a sequence of patterns made from triangles and circles.



pattern number 1

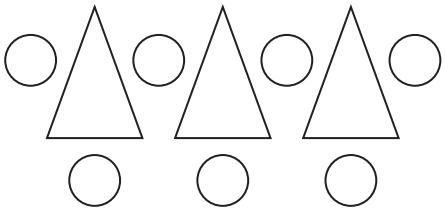


pattern number 2



pattern number 3

(a) Complete the diagram below to show pattern number 4



(1)

(b) Find the number of circles in pattern number 7

.....

(2)

Jane says pattern number 17 has 36 circles.

Jane is wrong.

(c) Explain why.

.....

.....

(1)

(Total for Question 238 is 4 marks)

EXPERT TUITION

239 n is a positive whole number.

(a) What type of positive whole number is $2n - 1$?

.....

(1)

(b) Write down an expression for the nth multiple of 5

.....

(1)

Alan has 4 boxes of cakes.
There is the same number of cakes in each box.
Alan has a total of t cakes.

(c) Write down an expression, in terms of t, for the number of cakes in each box.

.....

(1)

(Total for Question 239 is 3 marks)

240 $p = 2e + 3g$

$e = 6.5$
$g = 2$

Work out the value of p.

.....

(Total for Question 240 is 2 marks)

EXPERT TUITION

241 Ali is y years old.
Bhavara is twice as old as Ali.
Ceris is 3 years younger than Ali.

The total of their ages is 125 years.

Work out the age of each person.

Ali.....years

Bhavara.....years

Ceris.....years

(Total for Question 241 is 4 marks)

242 (a) Simplify $\frac{n^3}{n}$

.....

(1)

(b) Simplify $a^3 \times a^4$

.....

(1)

(Total for Question 242 is 2 marks)

EXPERT TUITION

243 (a) Simplify $e + e + e - e + 3e$

.....

(1)

(b) Simplify $7 \times g \times h$

.....

(1)

(c) Simplify $3a + d - 2a + 5d$

.....

(2)

(Total for Question 243 is 4 marks)

244 Here are the first four terms of a number sequence.

3 7 11 15

(a) (i) Write down the next term in the sequence.

.....

(ii) Explain how you got your answer.

.....

(2)

(b) Work out the 11th term in the sequence.

.....

(1)

(c) Is 79 a term in this sequence?
Explain how you got your answer.

.....

.....

(1)

(Total for Question 244 is 4 marks)

EXPERT TUITION

245 Buttons are sold in packets and in boxes.

There are 6 buttons in a packet.
There are 15 buttons in a box.

Nomusa buys d packets of buttons and f boxes of buttons.

She buys a total of T buttons.

Write a formula for T in terms of d and f.

.....

(Total for Question 245 is 3 marks)

246 (a) Solve $8f + 19 = 15$

f = ...

(2)

(b) Solve $2c + 5 = c + 8$

c = ...

(2)

(Total for Question 246 is 4 marks)

EXPERT TUITION

***247** Redlands School sent x students to a revision day.
St Samuel's School sent twice as many students as Redlands School.
Francis Long School sent 7 fewer students than Redlands School.

Each student paid £15 for the revision day.
The students paid a total of £1155

Work out how many students were sent by each school to the revision day.
You must show all your working.

(Total for Question 247 is 5 marks)

EXPERT TUITION

248 (a) Solve $x - 5 = 17$

$x =$ .....

(1)

(b) Solve $\frac{m}{3} = 6$

$m =$ .....

(1)

(c) Solve $5y + 7 = 24$

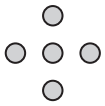
$y =$ .....

(2)

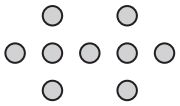
(Total for Question 248 is 4 marks)

EXPERT TUITION

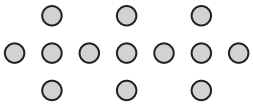
249 Here is a sequence of patterns made with counters.



pattern number 1



pattern number 2



pattern number 3

(a) In the space below, draw pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of counters	5	9	13		

(1)

(c) Find an expression, in terms of n, for the number of counters in pattern number n.

.....

(2)

Habeeb has 50 counters.
He wants to use as many of his counters as possible to make a pattern in the sequence.

(d) What is the number of the pattern he can make using the greatest number of his counters?

.....

(2)

(Total for Question 249 is 6 marks)

EXPERT TUITION

250 (a) Factorise $3x + 6$

.....

(1)

(b) Expand and simplify $5(y - 2) + 2(y - 3)$

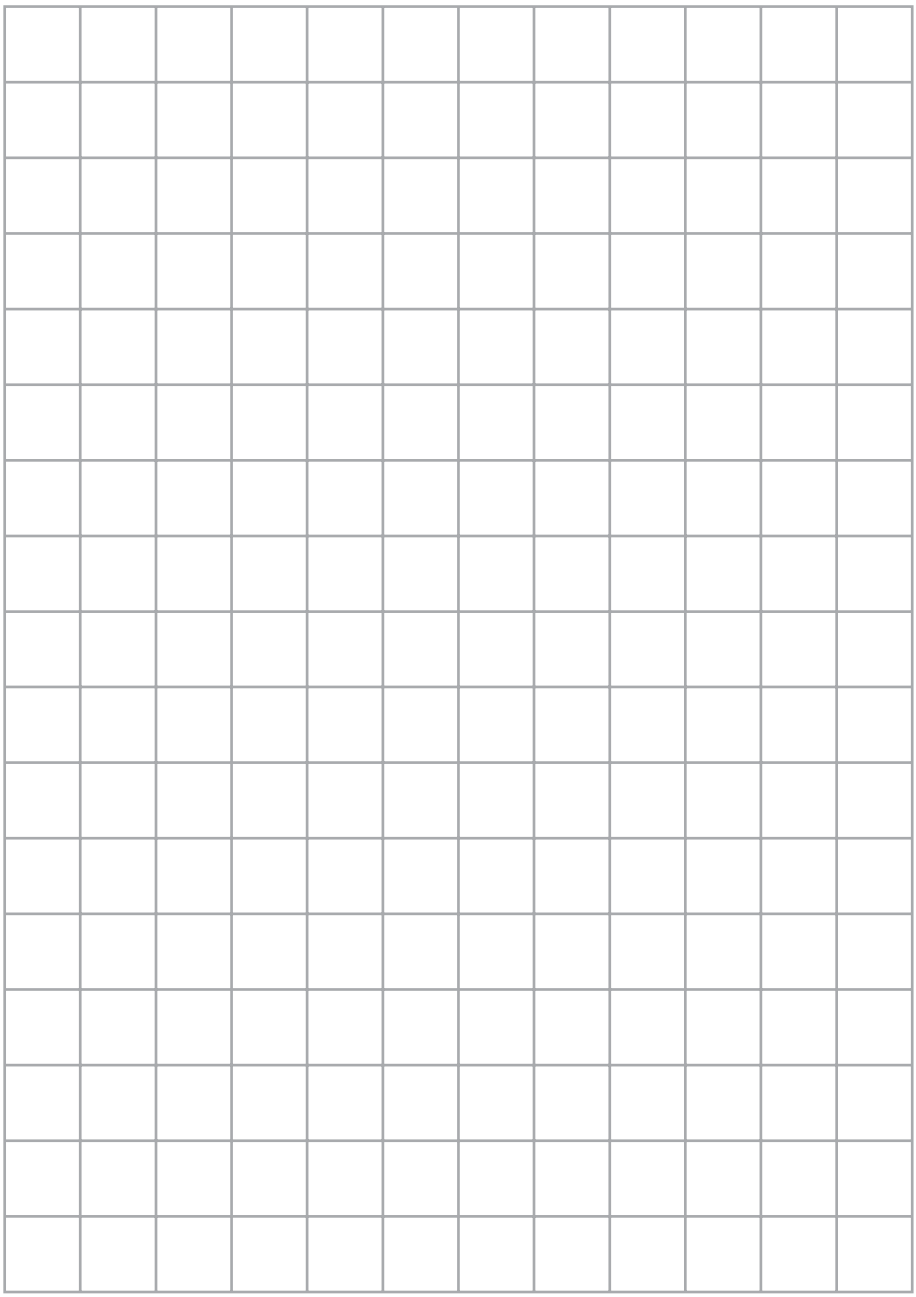
.....

(2)

(Total for Question 250 is 3 marks)

EXPERT TUITION

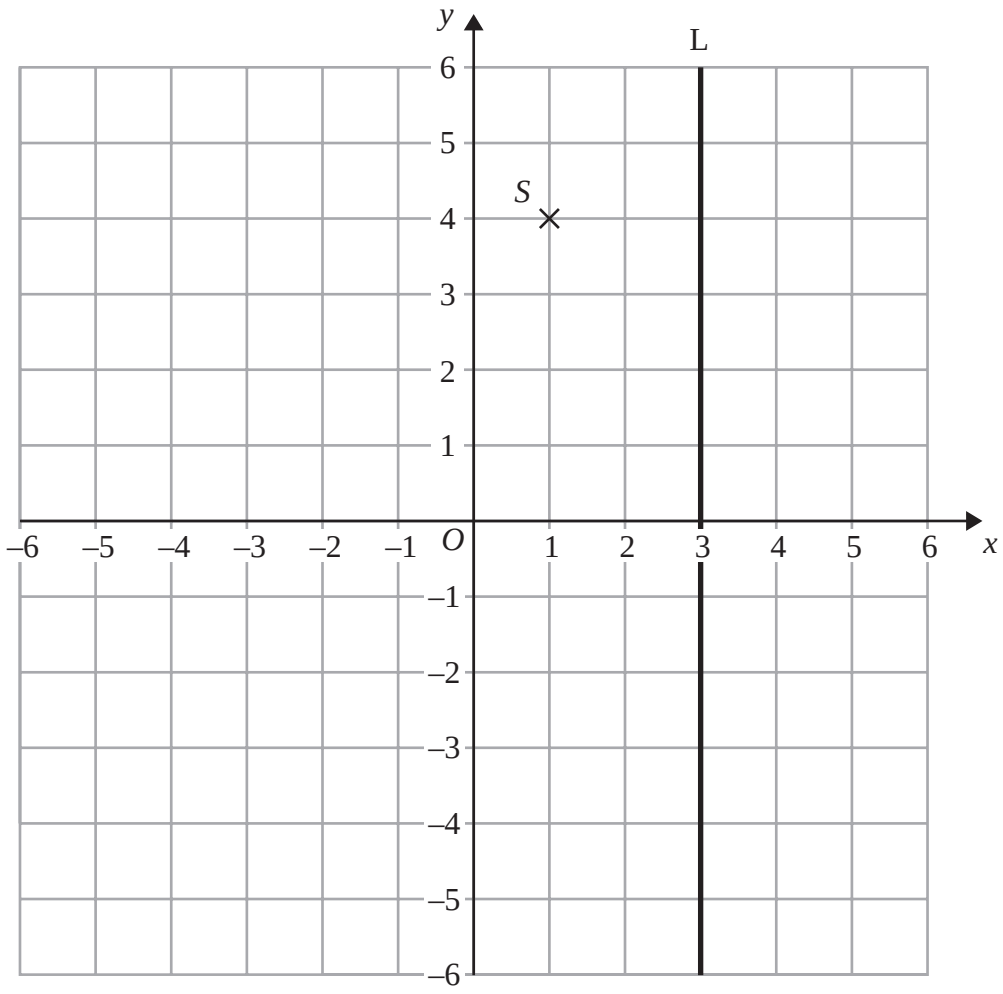
251 On the grid, draw the graph of $y = 2x - 3$ for values of x from -2 to 3



(Total for Question 251 is 4 marks)

EXPERT TUITION

252



(a) Write down the coordinates of the point *S*.

(..... , ...)

(1)

The coordinates of the point *T* are (–3, 2).

(b) On the grid, mark this point with a cross (×).
Label the point *T*.

(1)

(c) Write down an equation of the line L.

.....

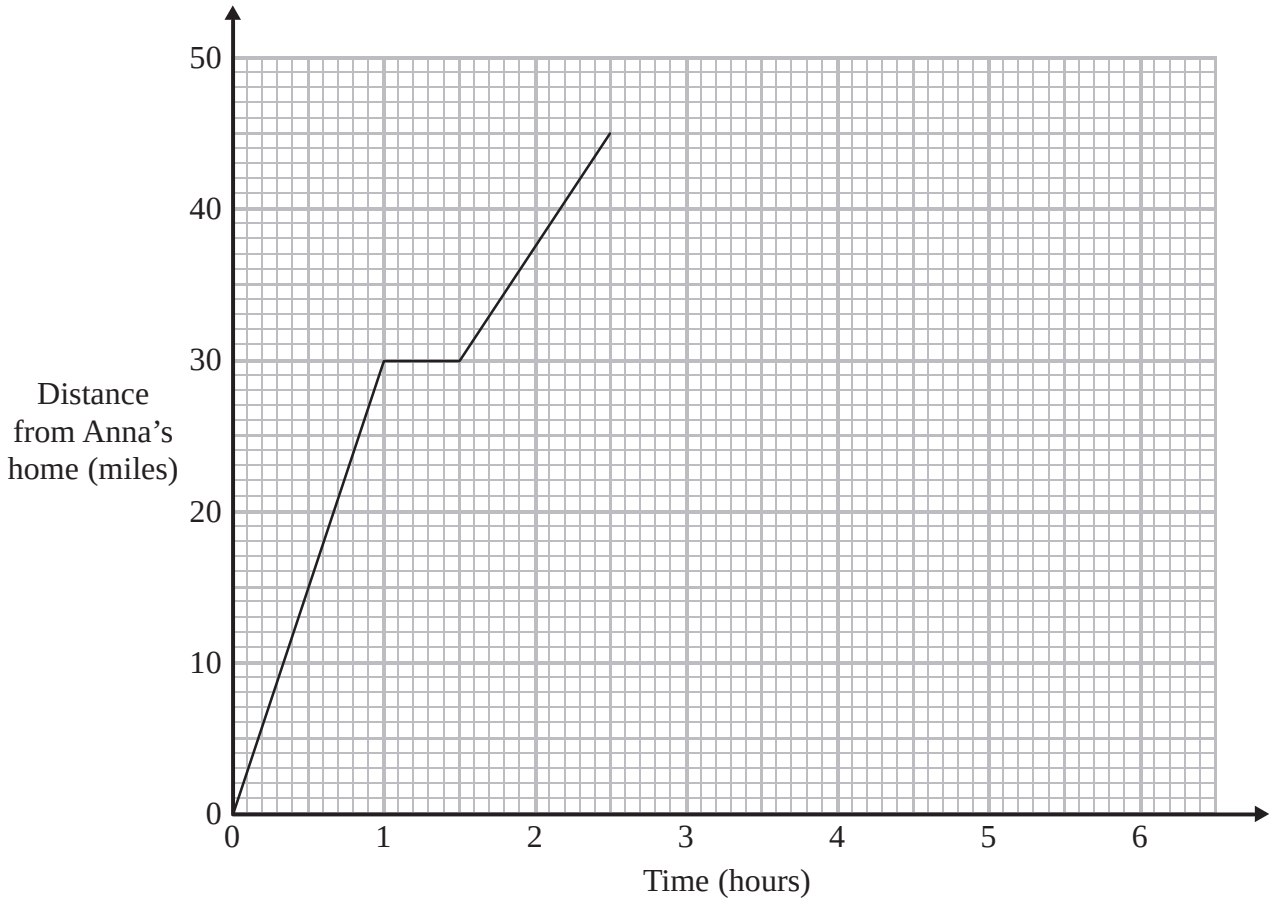
(1)

(Total for Question 252 is 3 marks)

EXPERT TUITION

253 Anna drives 45 miles from her home to a meeting.

Here is the travel graph for Anna's journey to the meeting.



Anna's meeting lasts for 1 hour.
She then drives home at a steady speed of 30 miles per hour with no stops.

Complete the travel graph to show this information.

(Total for Question 253 is 2 marks)

EXPERT TUITION

254 (a) Work out the value of 3.1^4

.....

(1)

(b) Simplify $(p^3)^2$

.....

(1)

(c) Simplify $\frac{t^8}{t^3}$

.....

(1)

$2^3 \times 2^n = 2^9$

(d) Work out the value of n.

.....

(1)

(Total for Question 254 is 4 marks)

EXPERT TUITION

255 (a) Solve $3p + 4 = 6$

.....

(2)

$-5 < y \leqslant 0$

y is an integer.

(b) Write down all the possible values of y.

.....

(2)

(Total for Question 255 is 4 marks)

256 $x = 0.7$

Work out the value of $\dfrac{(x+1)^2}{2x}$

Write down all the figures on your calculator display.

.....

(Total for Question 256 is 2 marks)

EXPERT TUITION

257 Here are the first five terms of a number sequence.

40 37 34 31 28

(a) (i) Write down the next two terms of this number sequence.

....., ...

(ii) Explain how you got your answer.

.....

.....

(2)

Here are the first five terms of a different number sequence.

−12 −7 −2 3 8

(b) Find the 8th term of this sequence.

.....

(2)

(Total for Question 257 is 4 marks)

EXPERT TUITION

258 Here is a number machine.

Complete this table for the number machine.

Input	Output
8	9
12	.....
.....	27

(Total for Question 258 is 2 marks)

EXPERT TUITION

259 Jan writes down

one multiple of 9
two different factors of 40

Jan adds her three numbers together.
The answer is greater than 20 but less than 30

What three numbers could Jan have written down?

....

(Total for Question 259 is 3 marks)

260 Pat has x cards.

Jim has 4 more cards than Pat.

(i) Write down an expression, in terms of x, for the number of cards Jim has.

.....

Lex has 2 times as many cards as Pat.

(ii) Write down an expression, in terms of x, for the number of cards Lex has.

.....

(Total for Question 260 is 2 marks)

EXPERT TUITION

261 (a) Solve $e + e + e + e + e = 45$

.....

(1)

(b) Solve $18 - x = 13$

.....

(1)

(c) Solve $2(y - 5) = 24$

.....

(2)

(d) Factorise $15p + 40$

.....

(1)

(Total for Question 261 is 5 marks)

262 (a) Simplify $m + m + m + m + m$

.....

(1)

(b) Simplify $2p + 7p$

.....

(1)

(c) Simplify $t \times w \times 4$

.....

(1)

(Total for Question 262 is 3 marks)

EXPERT TUITION

263 $a = 4b$

(a) Work out the value of a when $b = 3$

$a =$ .....

(1)

$P = 4d - 3$

(b) Work out the value of P when $d = 2$

$P =$ .....

(2)

(Total for Question 263 is 3 marks)

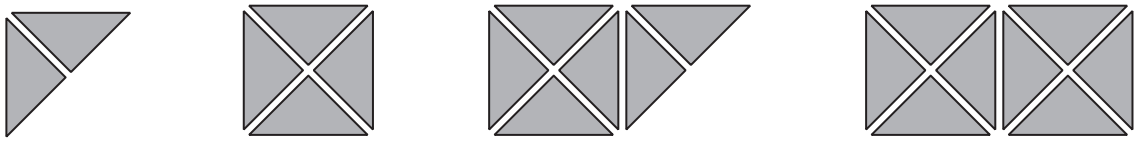
264 Solve $3(x - 2) = x + 7$

$x =$ .....

(Total for Question 264 is 3 marks)

EXPERT TUITION

265 Here are some patterns made from triangles.



Pattern number 1 | Pattern number 2 | Pattern number 3 | Pattern number 4

(a) Complete the table.

Pattern number	1	2	3	4	5
Number of triangles	2	4	6		

(1)

(b) How many triangles are needed for Pattern number 12?

.....

(1)

Luke says that Pattern number 40 has 82 triangles.

(c) Luke is wrong.
Explain why.

.....

.....

(1)

(Total for Question 265 is 3 marks)

EXPERT TUITION

266 $f = 8$

(a) Work out the value of $2f + 7$

.....

(2)

$T = 3g + 5h$

$g = -2$

$h = 4$

(b) Work out the value of T.

.....

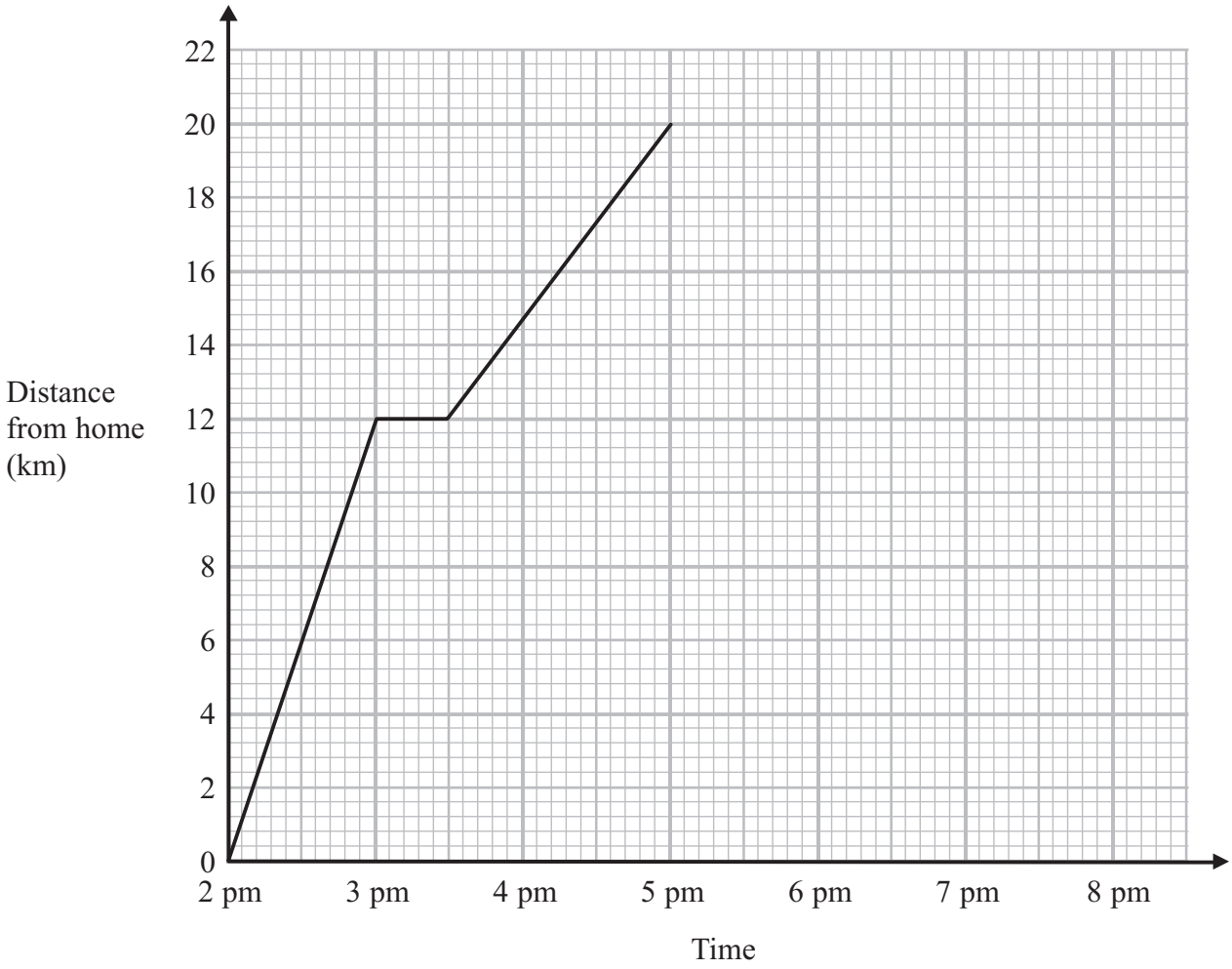
(2)

(Total for Question 266 is 4 marks)

EXPERT TUITION

267 Simon went for a cycle ride.
He left home at 2 pm.

The travel graph represents part of Simon's cycle ride.



At 3 pm Simon stopped for a rest.

(a) How many minutes did he rest?

..... minutes

(1)

(b) How far was Simon from home at 5 pm?

..... km

(1)

At 5 pm Simon stopped for 30 minutes.
Then he cycled home at a steady speed.
It took him 1 hour 30 minutes to get home.

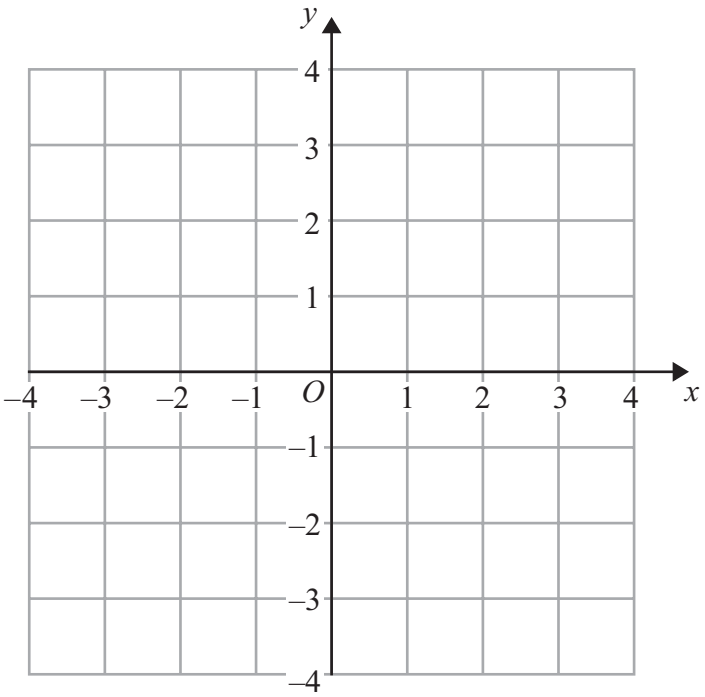
(c) Complete the travel graph.

(2)

(Total for Question 267 is 4 marks)

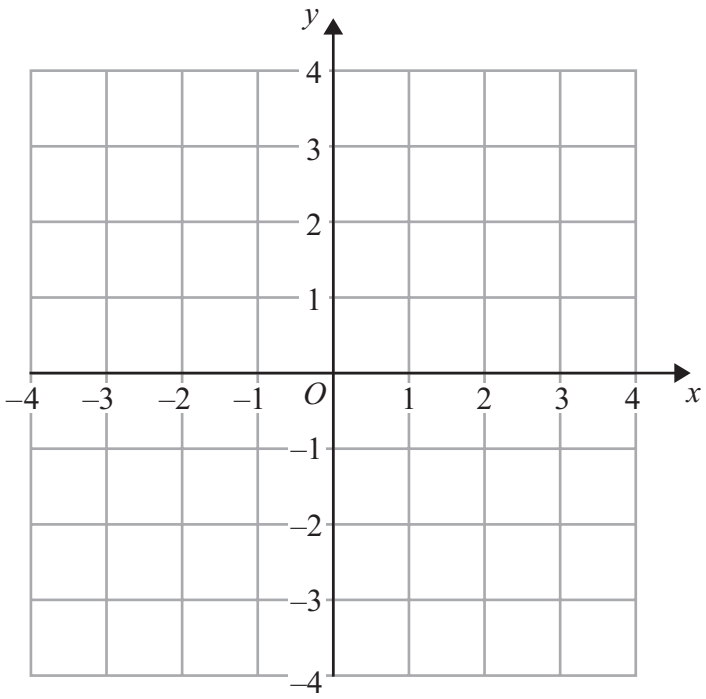
EXPERT TUITION

268



(a) On the grid above, draw the line $x = 3$

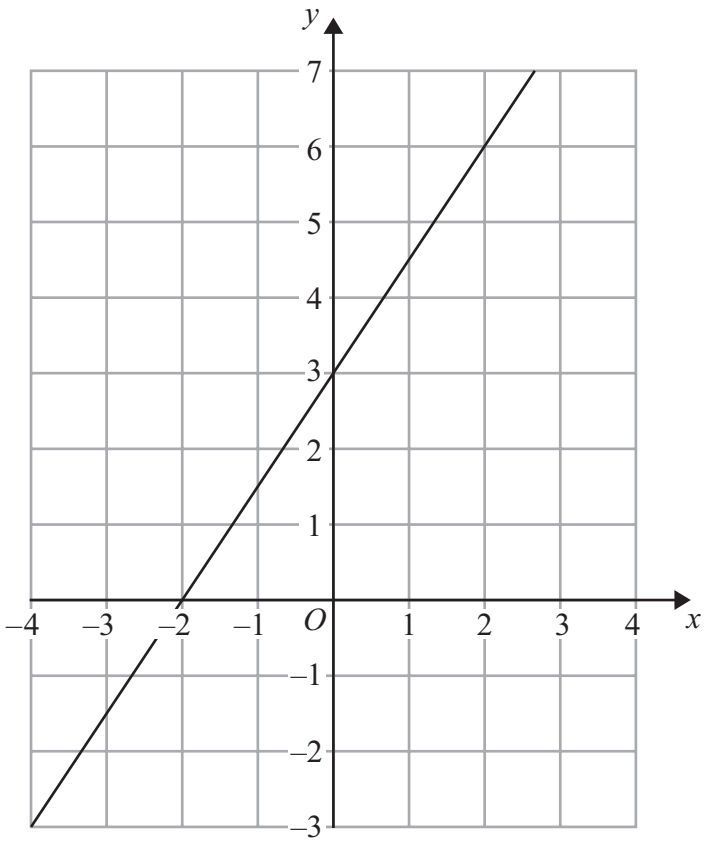
(1)



(b) On this grid, draw the line $y = x$

(1)

EXPERT TUITION



(c) Find the gradient of the straight line drawn on this grid.

.....

(2)

(Total for Question 268 is 4 marks)

269 (a) Simplify $n^5 \times n^3$

.....

(1)

(b) Simplify $n^7 \div n^2$

.....

(1)

(Total for Question 269 is 2 marks)

EXPERT TUITION

270 (a) Expand $3(x + 4)$

.....

(1)

(b) Expand $x(x^2 + 2)$

.....

(2)

(c) Factorise $x^2 - 6x$

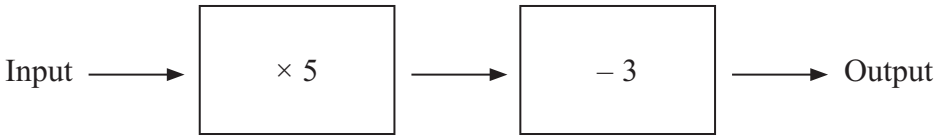
.....

(1)

(Total for Question 270 is 4 marks)

EXPERT TUITION

271 Here is a two-stage number machine.
It multiplies by 5 and then subtracts 3

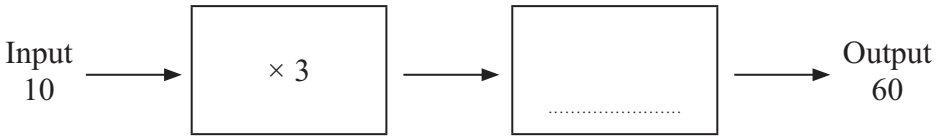


(a) Complete the table.

Input	Output
1	2
2	7
5	22
7	.....
.....	47

(2)

Here is a different two-stage number machine.



When the input is 10, the output is 60

(b) Complete the number machine.

(1)

(Total for Question 271 is 3 marks)

EXPERT TUITION

272 $y = 4x + c$

$x = 7.5$

$c = 5.4$

(a) Work out the value of y.

.....

(2)

$y = 4x + c$

$y = 18.8$

$c = -2.4$

(b) Work out the value of x.

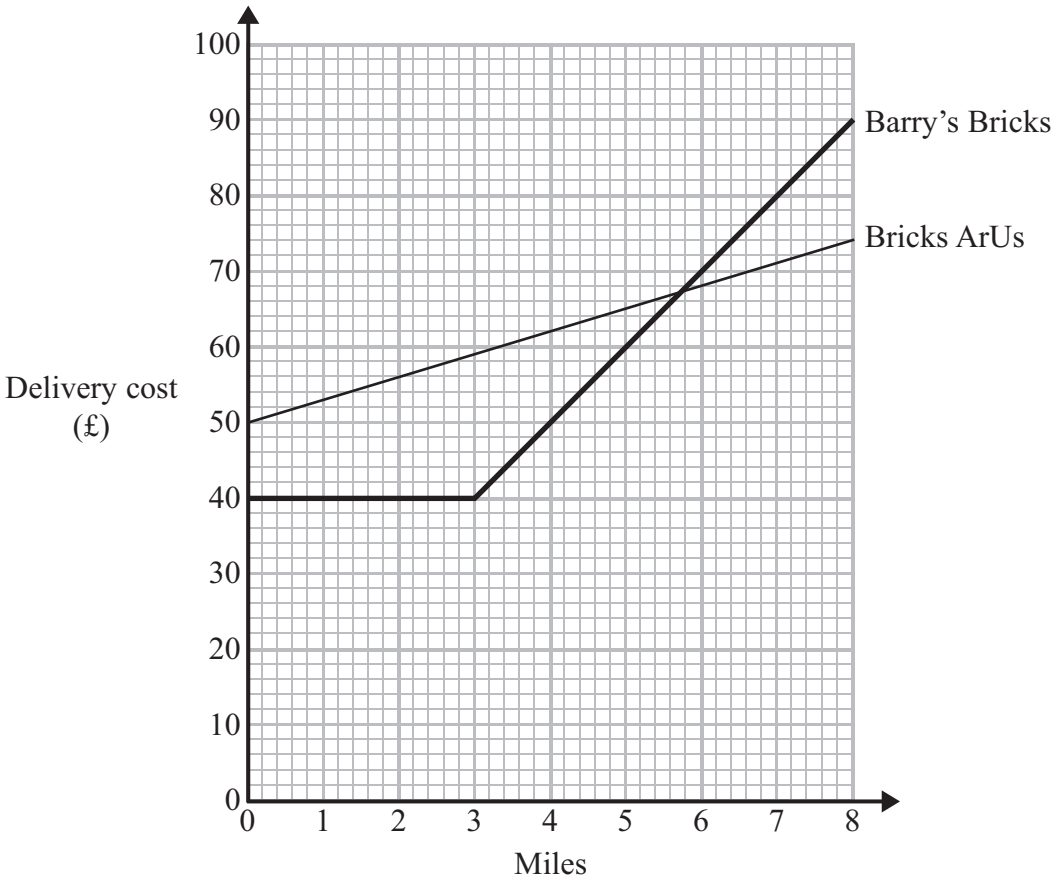
.....

(2)

(Total for Question 272 is 4 marks)

EXPERT TUITION

273 Two companies, Barry's Bricks and Bricks ArUs, deliver bricks.
The graph shows the delivery costs of bricks from both companies.



Prakash wants Bricks ArUs to deliver some bricks.
He lives 2 miles away from Bricks ArUs.

(a) Write down the delivery cost.

£ .....

(1)

John needs to have some bricks delivered.
He lives 4 miles from Barry's Bricks.
He lives 5 miles from Bricks ArUs.

(b) Work out the difference between the two delivery costs.

£ .....

(3)

(Total for Question 273 is 4 marks)

EXPERT TUITION

274 (a) n is an integer.

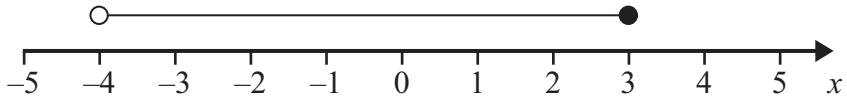
$-1 \leqslant n < 4$

List the possible values of n.

.....

(2)

(b)



Write down the inequality shown in the diagram.

.....

(2)

(c) Solve $3y - 2 > 5$

.....

(2)

(Total for Question 274 is 6 marks)

EXPERT TUITION

275 (a) Factorise $4x + 10y$

.....

(1)

(b) Factorise $x^2 + 7x$

.....

(1)

(Total for Question 275 is 2 marks)

276 (a) Simplify $c + c + c$

.....

(1)

(b) Simplify $2e \times 3f$

.....

(1)

(c) Simplify $9p + 2t - 2p + 3t$

.....

(2)

(Total for Question 276 is 4 marks)

EXPERT TUITION

277 $P = 3.5x - y$

(a) Work out the value of P when $x = 12$ and $y = 5$

.....

(2)

(b) Work out the value of P when $x = -9$ and $y = -6$

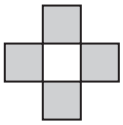
.....

(2)

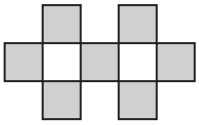
(Total for Question 277 is 4 marks)

EXPERT TUITION

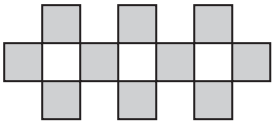
278 Here are some patterns made from grey tiles.



Pattern number 1

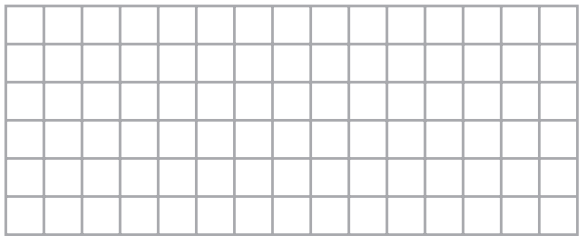


Pattern number 2



Pattern number 3

(a) Draw Pattern number 4 on the grid below.



(1)

(b) How many grey tiles are needed for Pattern number 10?

.....

(2)

Jenny says,

'I will need exactly 46 grey tiles for Pattern number 18'.

(c) Is Jenny right?
You must give a reason for your answer.

.....

.....

.....

(2)

(Total for Question 278 is 5 marks)

EXPERT TUITION

279 (a) Solve $b - 7 = 12$

$b =$ .....

(1)

(b) Solve $5e = 40$

$e =$ .....

(1)

(c) Solve $4m + 6 = 15$

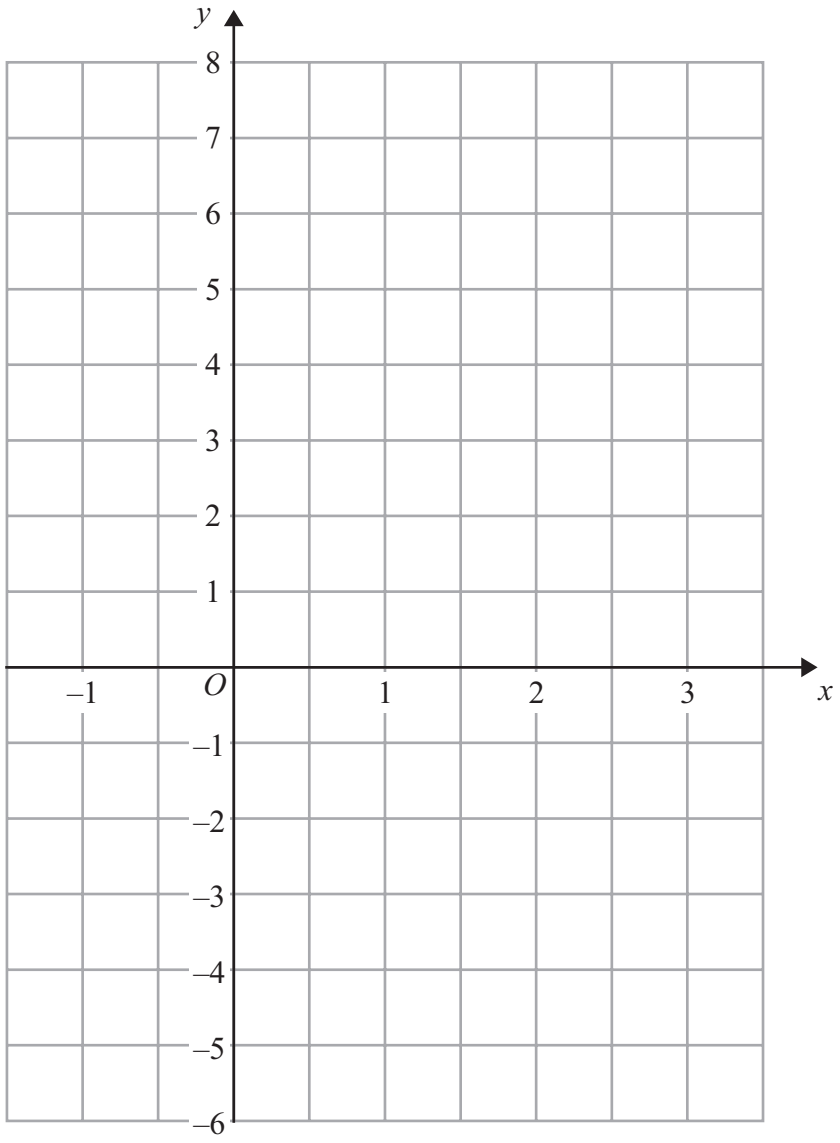
$m =$ .....

(2)

(Total for Question 279 is 4 marks)

EXPERT TUITION

280 On the grid, draw the graph of $y = 3x - 2$ for values of x from -1 to 3



(Total for Question 280 is 3 marks)

EXPERT TUITION