



Equation of a Line



REVISE THIS
TOPIC

- 1 (a) Write down the coordinates of the y -intercept of the line $y = 2x - 3$ [1 mark]

Answer (0 , -3)

- 1 (b) Write down the gradient of the line $y = 2x - 3$ [1 mark]

Answer 2

- 2 (a) Write down the coordinates of the y -intercept of the line $y = 8 - 5x$ [1 mark]

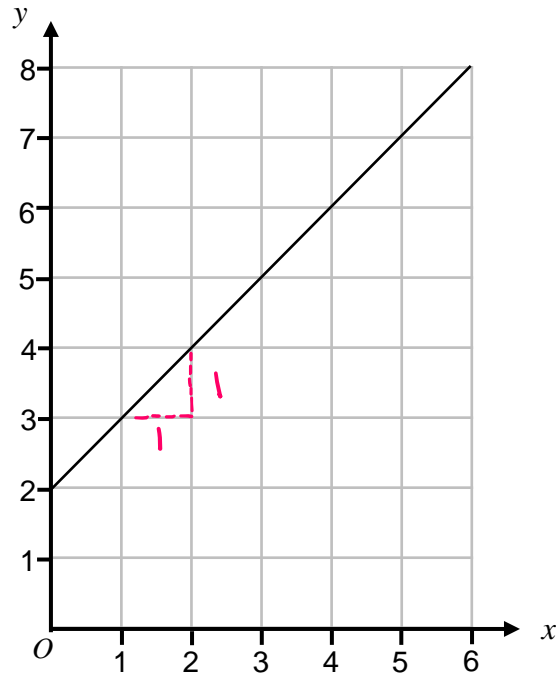
Answer (0 , 8)

- 2 (b) Write down the gradient of the line $y = 8 - 5x$ [1 mark]

Answer -5



3 Here is a straight line graph.



3 (a) Write down the coordinates of the y-intercept

[1 mark]

Answer (0 , 2)

3 (b) Work the gradient of the line.

[2 marks]

1
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1

Answer 1

3 (c) Use your answers to parts (a) and (b) to write down the equation of the line.

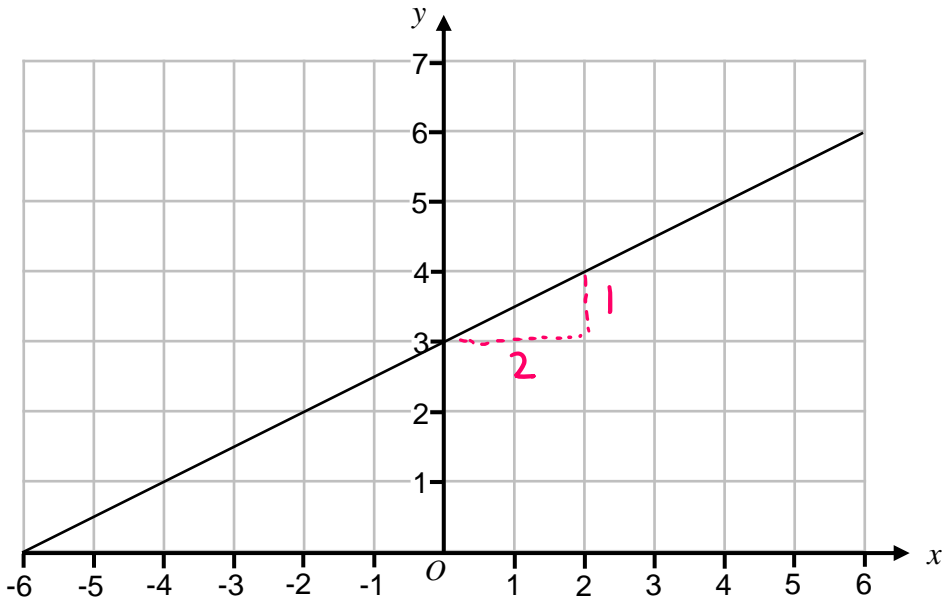
[1 mark]

Give your answer in the form $y = mx + c$

Answer $y = x + 2$



4 Here is a straight line graph.



4 (a) Write down the coordinates of the y-intercept

[1 mark]

Answer (0 , 3)

4 (b) Work the gradient of the line.

[2 marks]

$$\frac{1}{2}$$

Answer 0.5 (or $\frac{1}{2}$)

4 (c) Use your answers to parts (a) and (b) to write down the equation of the line.

[1 mark]

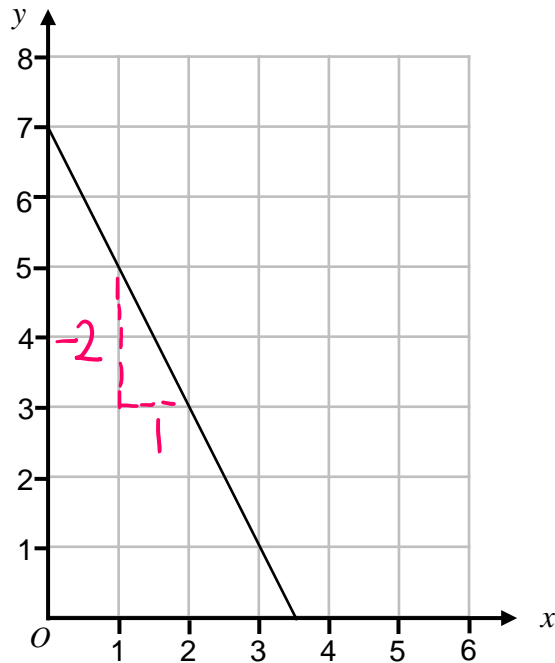
Give your answer in the form $y = mx + c$

Answer $y = 0.5x + 3$



Turn over ►

5 Here is a straight line graph.



5 (a) Write down the coordinates of the y-intercept

[1 mark]

Answer (0 , 7)

5 (b) Work the gradient of the line.

[2 marks]

$$\frac{-2}{1}$$

Answer -2

5 (c) Use your answers to parts (a) and (b) to write down the equation of the line.

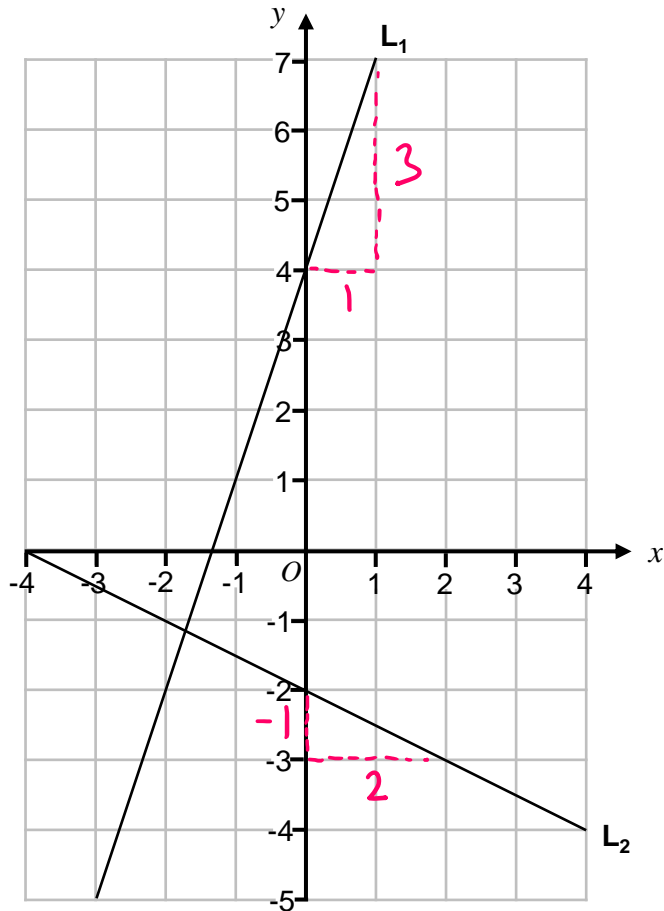
[1 mark]

Give your answer in the form $y = mx + c$

Answer $y = -2x + 7$



- 6 The lines L_1 and L_2 are shown on the grid.



- 6 (a) Work out the equation of line L_1

[3 marks]

$$\frac{3}{1} = 3$$

Answer $y = 3x + 4$

- 6 (b) Work out the equation of line L_2

[3 marks]

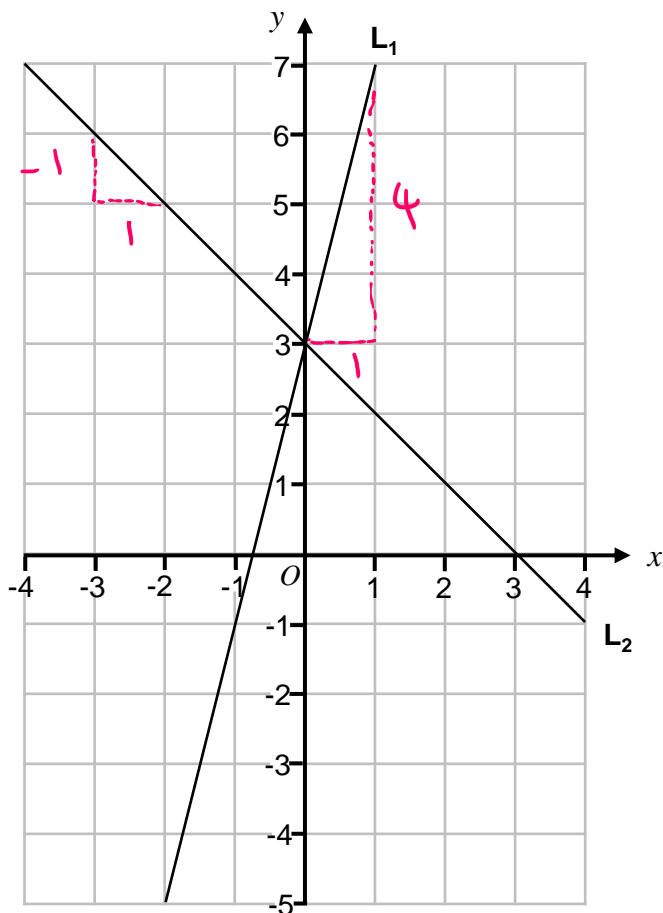
$$-\frac{1}{2} = -0.5$$

Answer $y = -0.5x - 2$



Turn over ►

- 7 The lines L_1 and L_2 are shown on the grid.



- 7 (a) Work out the equation of line L_1

[3 marks]

$$\frac{4}{1} = 4$$

Answer

$$y = 4x + 3$$

- 7 (b) Work out the equation of line L_2

[3 marks]

$$\frac{-1}{1} = -1$$

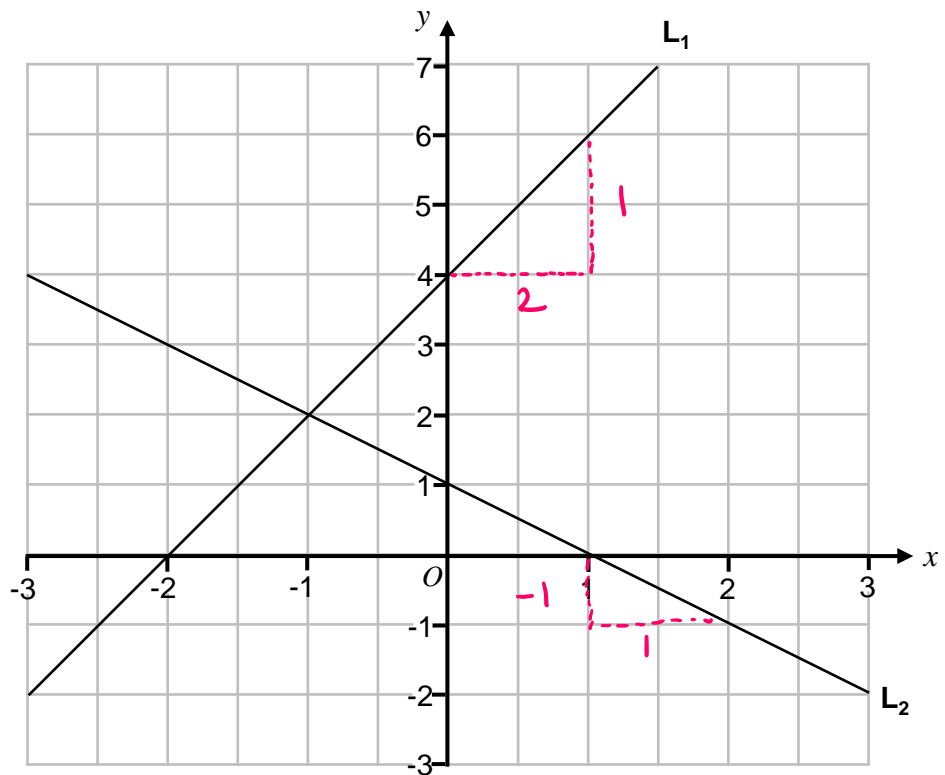
Answer

$$y = -x + 3$$



Turn over ►

- 8 The lines L_1 and L_2 are shown on the grid.



- 8 (a) Work out the equation of line L_1 [3 marks]

$$\frac{1}{2} = 0.5$$

Answer $y = 0.5x + 4$

- 8 (b) Work out the equation of line L_2 [3 marks]

$$\frac{-1}{1} = -1$$

Answer $y = -x + 1$



Turn over ►



- 9 (a) Write down the coordinates of the y -intercept of the line $2y = 5x + 6$ [1 mark]

$$y = 2.5x + 3$$

Answer (0 , 3)

- 9 (b) Write down the gradient of the line $2y = 5x + 6$ [1 mark]

Answer 2.5

- 9 (c) Is the point ^{xy}(2, 8) on the line $2y = 5x + 6$?

You **must** show your working.

[2 marks]

$$2 \times 8 = 16$$

$$5 \times 2 + 6 = 16$$

Yes

- 10 (a) Write down the coordinates of the y -intercept of the line $y - 3x = 10$ [1 mark]

$$y = 10 + 3x$$

Answer (0 , 10)

- 10 (b) Write down the gradient of the line $y - 3x = 10$ [1 mark]

Answer 3

- 10 (c) Is the point ^{xy}(4, -2) on the line $y - 3x = 10$

You **must** show your working.

[2 marks]

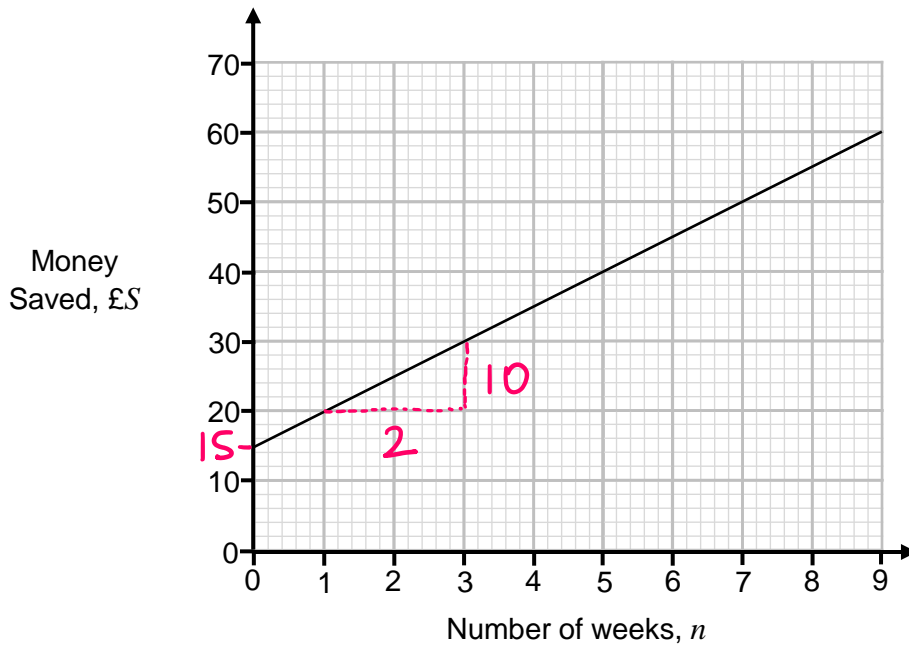
$$-2 - 3 \times 4 = -2 - 12$$

$$= -14 \text{ not } 10 \quad \underline{\underline{No}}$$



11

The graph shows the amount of money saved by a student.



Work out a formula for S in terms of n .

[3 marks]

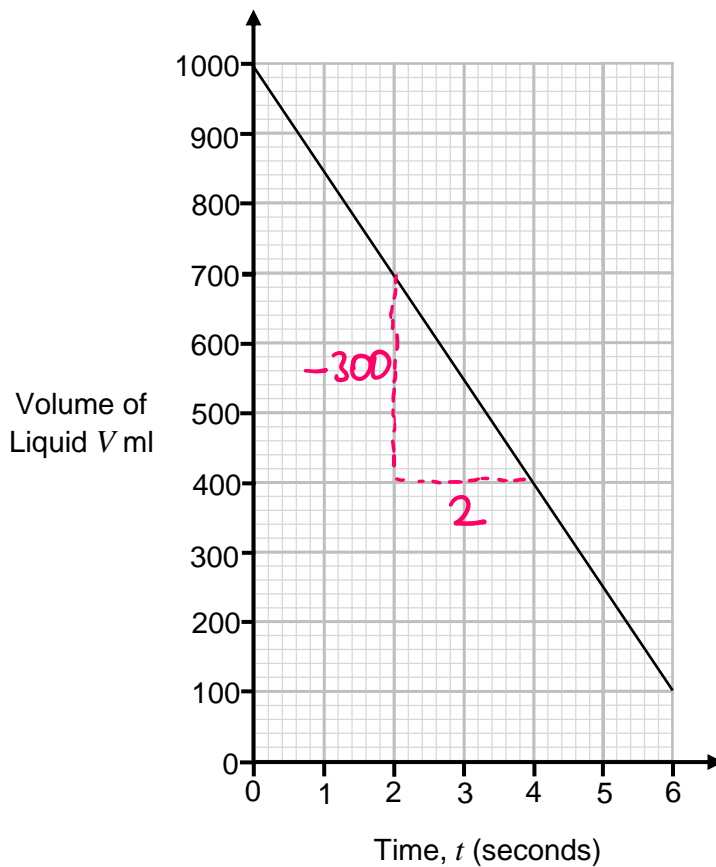
$$\frac{10}{2} = 5$$

Answer $S = 5n + 15$



12

The graph shows the amount liquid in a container.


Work out a formula for V in terms of t .

[3 marks]

$$\frac{-300}{2} = -150$$

Answer $V = -150t + 1000$





13

Work out the gradient of the straight line through $(2, 8)$ and $(5, 20)$

[2 marks]

$$\frac{20-8}{5-2} = \frac{12}{3} = 4$$

Answer 4

14

Work out the gradient of the straight line through $(2, 10)$ and $(6, 8)$

[2 marks]

$$\frac{8-10}{6-2} = \frac{-2}{4} = -\frac{1}{2}$$

Answer -0.5

15

A straight line

has gradient 4

and

passes through the point $(3, 10)$

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

$$y = 4x + c$$

$$10 = 4 \times 3 + c$$

$$10 = 12 + c$$

$$c = -2$$

Answer $y = 4x - 2$ 

16

A straight line

has gradient -2

and

passes through the point (10, -17)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

$$y = -2x + c$$

$$-17 = -2 \times 10 + c$$

$$-17 = -20 + c$$

$$c = 3$$

Answer

$$y = -2x + 3$$

17

A straight line

has gradient 0.5

and

passes through the point (8, -3)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

[3 marks]

$$y = 0.5x + c$$

$$-3 = 0.5 \times 8 + c$$

$$-3 = 4 + c$$

$$c = -7$$

Answer

$$y = 0.5x - 7$$



18

Work out the equation of the straight line through (3, 5) and (6, 11)

[4 marks]

$$\frac{11-5}{6-3} = \frac{6}{3} = 2$$

$$\begin{aligned} y &= 2x + c \\ 5 &= 2 \times 3 + c \\ 5 &= 6 + c \\ c &= -1 \end{aligned}$$

Answer

$$y = 2x - 1$$

19

Work out the equation of the straight line through (-4, 2) and (2, 5)

[4 marks]

$$\frac{5-2}{2-(-4)} = \frac{3}{6} = \frac{1}{2}$$

$$\begin{aligned} y &= 0.5x + c \\ 5 &= 0.5 \times 2 + c \\ 5 &= 1 + c \\ c &= 4 \end{aligned}$$

Answer

$$y = 0.5x + 4$$

20

Work out the equation of the straight line through (3, 16) and (8, 1)

[4 marks]

$$\frac{1-16}{8-3} = \frac{-15}{5} = -3$$

$$\begin{aligned} y &= -3x + c \\ 16 &= -3 \times 3 + c \\ 16 &= -9 + c \\ c &= 25 \end{aligned}$$

Answer

$$y = -3x + 25$$

