Equation of a Line

SCAN ME

REVISE THIS TOPIC

1 The equation of a straight line **L** is $y = 2x - 3$

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

(0 , -3)

(1)

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

2

(1)

(Total for Question 1 is 2 marks)

2 The equation of a straight line **L** is $y = 8 - 5x$

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

(0 , 8)

(1)

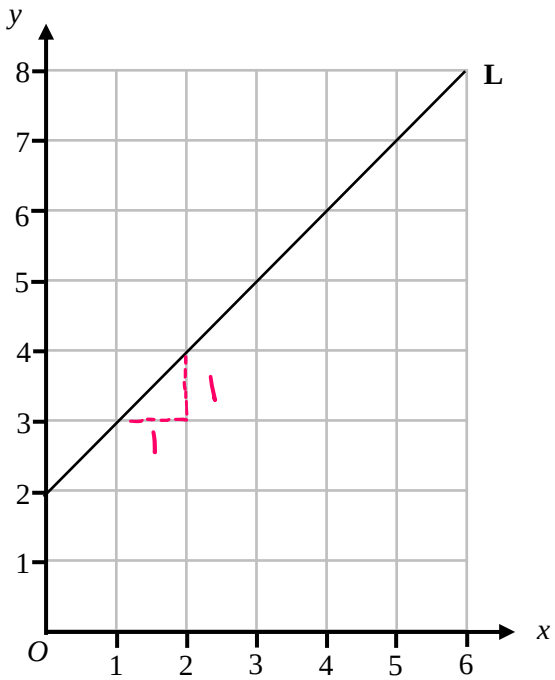
(b) Write down the gradient of **L**.

-5

(1)

(Total for Question 2 is 2 marks)

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



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

(0 , 2)

(1)

(b) Work out the gradient of **L**.

$\frac{1}{1}$

1

(2)

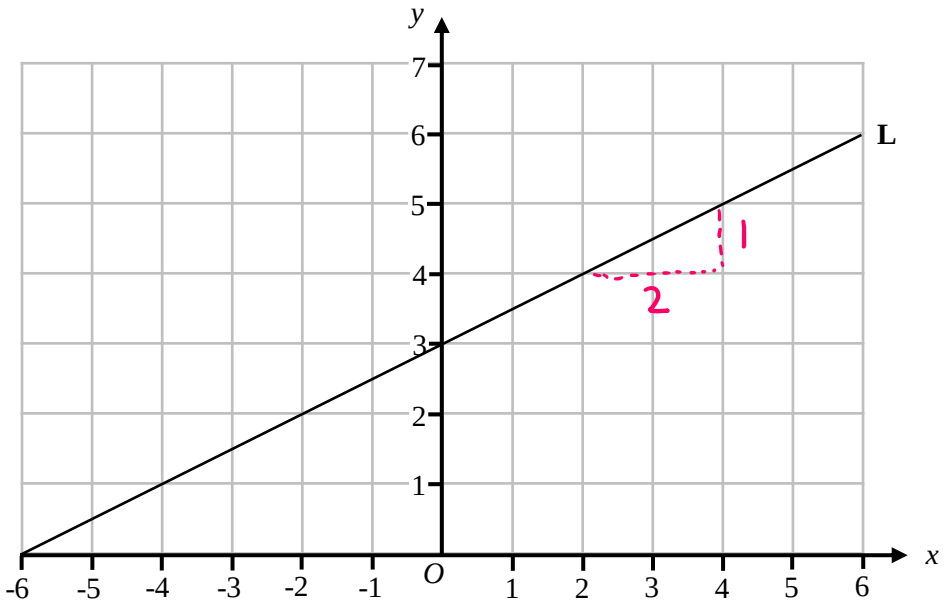
(c) Use your answers to parts (a) and (b) to write down the equation of the line **L**.
Give your answer in the form $y = mx + c$

$y = x + 2$

(1)

(Total for Question 3 is 4 marks)

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



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

(0 , 3)

(1)

(b) Work out the gradient of **L**.

$\frac{1}{2}$

0·5 (or $\frac{1}{2}$)

(2)

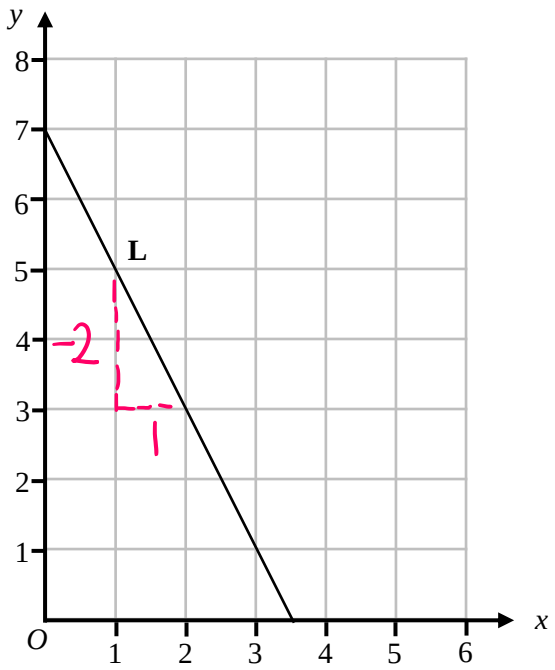
(c) Use your answers to parts (a) and (b) to write down the equation of the line **L**.
Give your answer in the form $y = mx + c$

$y = 0.5x + 3$

(1)

(Total for Question 4 is 4 marks)

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



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

(0 , 7)

(1)

(b) Work out the gradient of **L**.

$\frac{-2}{1}$

-2

(2)

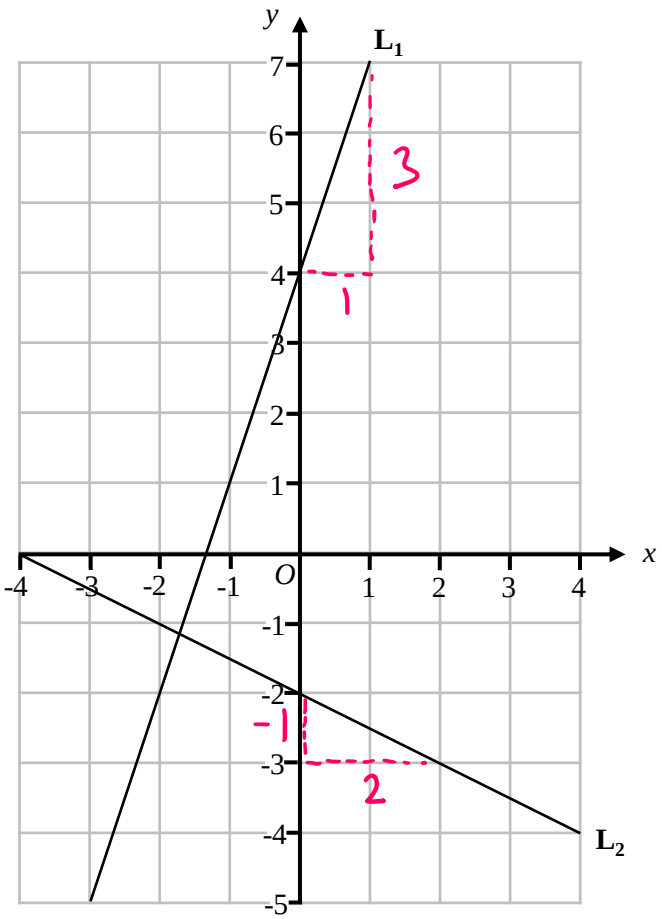
(c) Use your answers to parts (a) and (b) to write down the equation of the line **L**.
Give your answer in the form $y = mx + c$

$y = -2x + 7$

(1)

(Total for Question 5 is 4 marks)

6 The lines $\mathbf{L_1}$ and $\mathbf{L_2}$ are shown on the grid.



(a) Find and equation for $\mathbf{L_1}$

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

$y = 3x + 4$

(3)

(b) Find and equation for $\mathbf{L_2}$

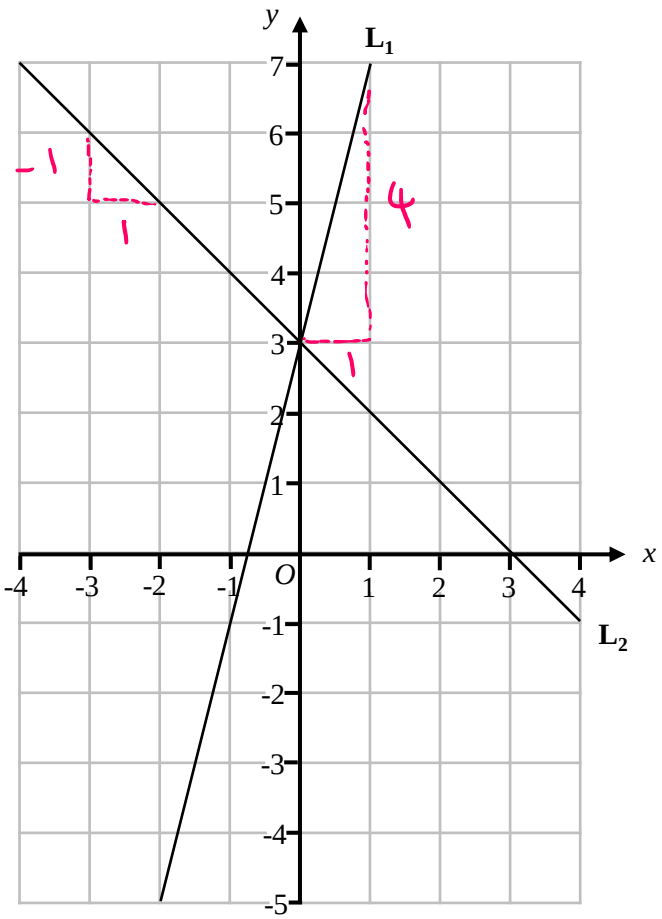
$\frac{-1}{2} = -0.5$

$y = -0.5x - 2$

(3)

(Total for Question 6 is 6 marks)

7 The lines $\mathbf{L_1}$ and $\mathbf{L_2}$ are shown on the grid.



(a) Find and equation for $\mathbf{L_1}$

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

$y = 4x + 3$

(3)

(b) Find and equation for $\mathbf{L_2}$

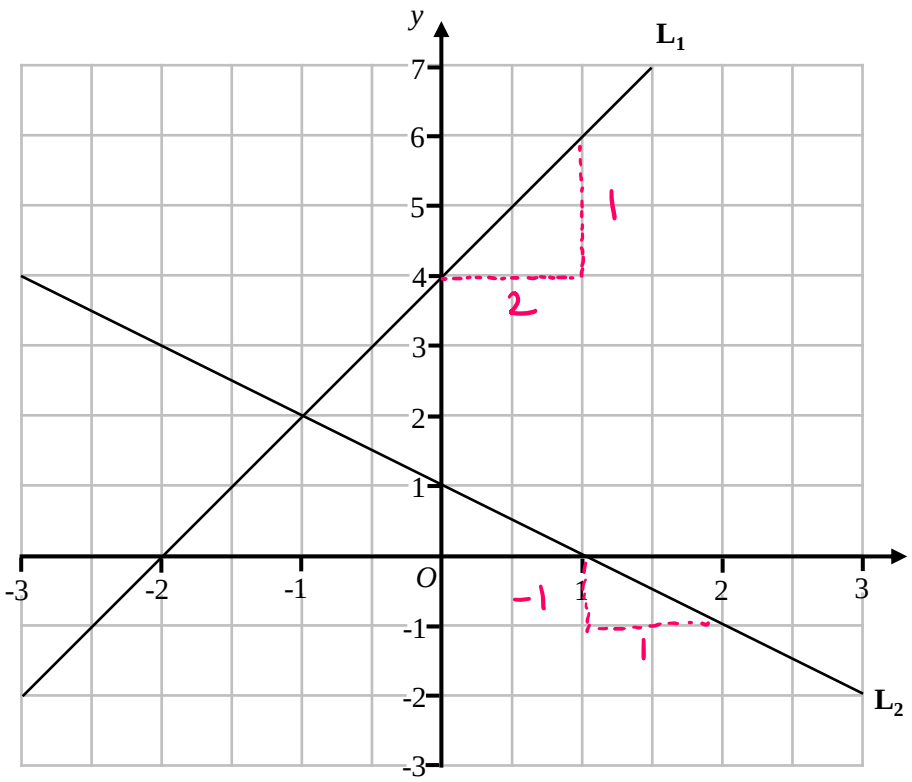
$\frac{-1}{1} = -1$

$y = -x + 3$

(3)

(Total for Question 7 is 6 marks)

8 The lines $\mathbf{L_1}$ and $\mathbf{L_2}$ are shown on the grid.



(a) Find and equation for $\mathbf{L_1}$

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

$y = 2x + 4$

(3)

(b) Find and equation for $\mathbf{L_2}$

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

$y = -x - 1$

(3)

(Total for Question 8 is 6 marks)

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

$y = 2.5x + 3$

(0 , 3)

(1)

(b) Write down the gradient of the line $2y = 5x + 6$

2.5

(1)

x y

(c) Is the point (2, 8) on the line $2y = 5x + 6$?
You must show your working.

$2 \times 8 = 16$ Yes

$5 \times 2 + 6 = 16$

(2)

(Total for Question 9 is 4 marks)

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

$y = 10 + 3x$

(0 , 10)

(1)

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

3

(1)

x y

(c) Is the point (2, 8) on the line $y - 3x = 10$?
You must show your working.

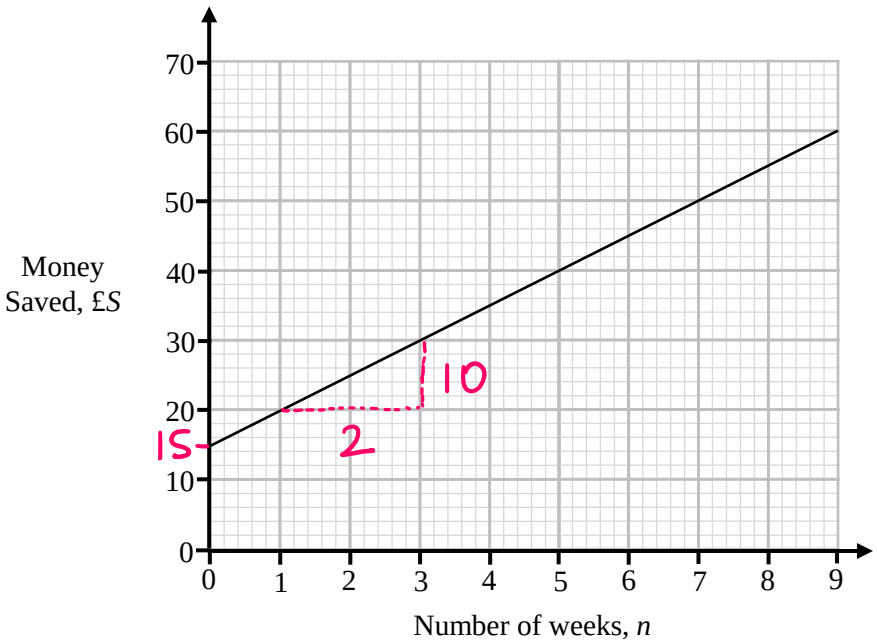
$-2 - 3 \times 4 = -2 - 12$

$= -14$ not 10 NO

(2)

(Total for Question 10 is 4 marks)

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



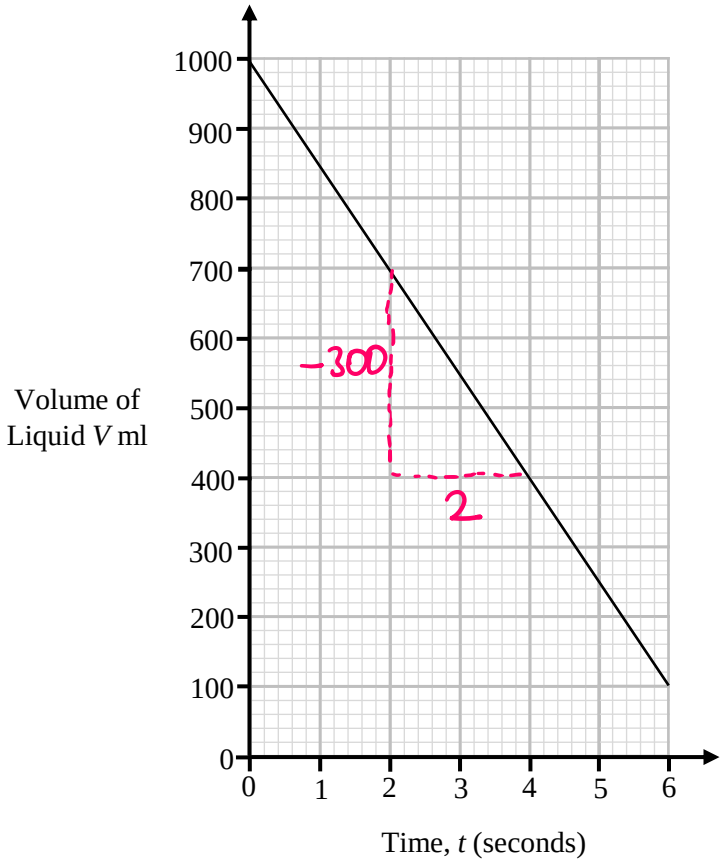
Work out a formula for S in terms of n.

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

$S = 5n + 15$

(Total for Question 11 is 3 marks)

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



Work out a formula for V in terms of t.

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

$V = -150t + 1000$

(Total for Question 12 is 3 marks)

$x_1\ y_1 \quad x_2\ y_2$

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

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

4

(Total for Question 13 is 2 marks)

$x_1\ y_1 \quad x_2\ y_2$

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

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

−0.5

(Total for Question 14 is 2 marks)

15 A straight line

has gradient 4
and $x\ y$
passes through the point (3, 10)

Work out the equation of the line.
Give your answer in the form $y = mx + c$

$y = 4x + c$

$10 = 4 \times 3 + c$

$10 = 12 + c$

$c = -2$

$y = 4x - 2$

(Total for Question 15 is 3 marks)

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 $y = mx + c$

$y = -2x + c$
$-17 = -2 \times 10 + c$
$-17 = -20 + c$
$c = 3$

$y = -2x + 3$

(Total for Question 16 is 3 marks)

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 $y = mx + c$

$y = 0.5x + c$

$-3 = 0.5 \times 8 + c$
$-3 = 4 + c$
$c = -7$

$y = 0.5x - 7$

(Total for Question 17 is 3 marks)

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

$x_1 y_1$ $x_2 y_2$

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

$y = 2x + c$

$5 = 2 \times 3 + c$

$5 = 6 + c$

$c = -1$

$y = 2x - 1$

(Total for Question 18 is 4 marks)

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

$x_1 y_1$ $x_2 y_2$

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

$y = 0.5x + c$

$5 = 0.5 \times 2 + c$

$5 = 1 + c$

$c = 4$

$y = 0.5x + 4$

(Total for Question 19 is 4 marks)

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

$x_1 y_1$ $x_2 y_2$

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

$y = -3x + c$

$16 = -3 \times 3 + c$

$16 = -9 + c$

$c = 25$

$y = -3x + 25$

(Total for Question 20 is 4 marks)