

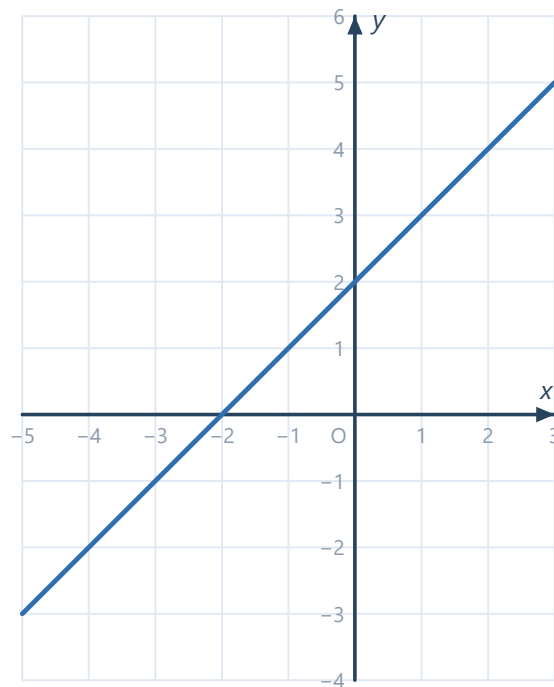
GCSE Maths: Finding the equation of a straight line (Higher): answers

GCSE Maths - Straight-Line Graphs and Coordinates - Higher - Lesson 12.6

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch12-straight-line-graphs-coordinates/higher/finding-the-equation-of-a-straight-line/

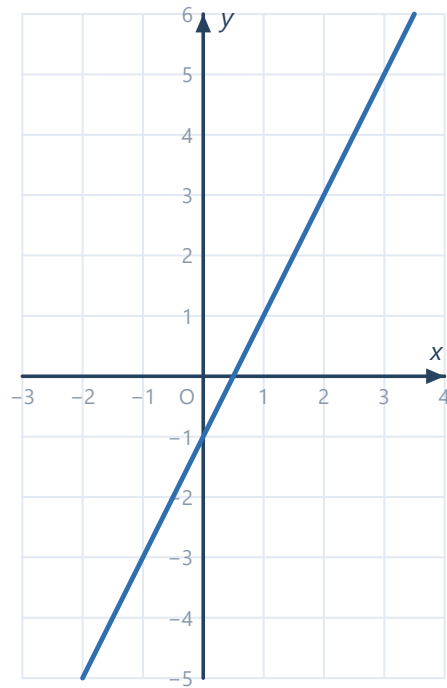
Exercise 12G Equations of lines from graphs Non-calculator

- 1 Find the equation of the line.



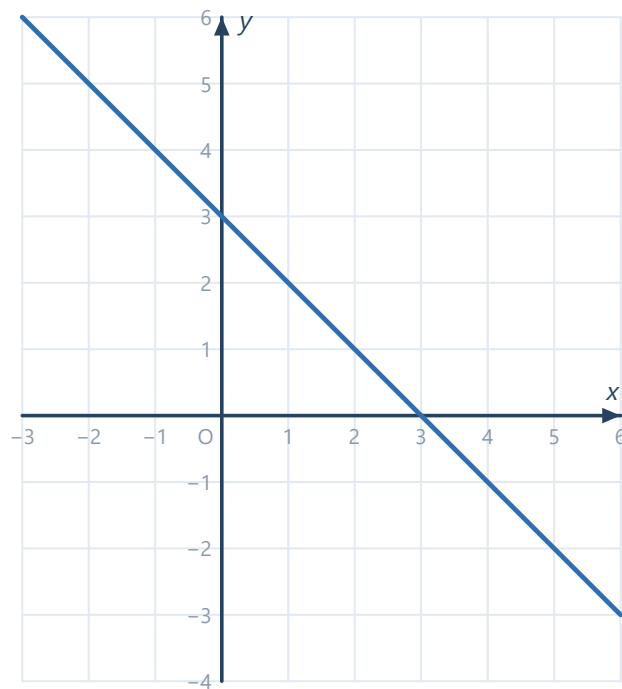
Answer: $y = x + 2$

- 2 Find the equation of the line.



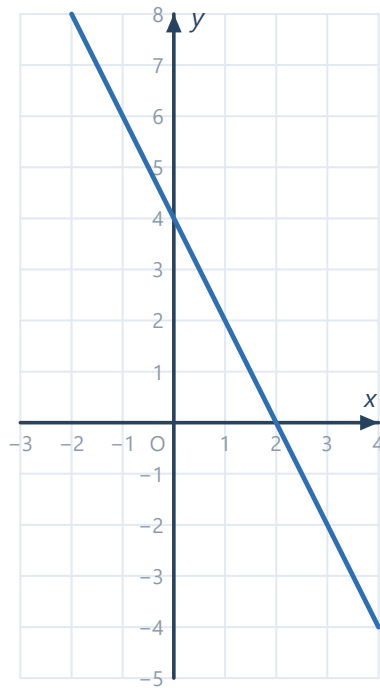
Answer: $y = 2x - 1$

3 Find the equation of the line.



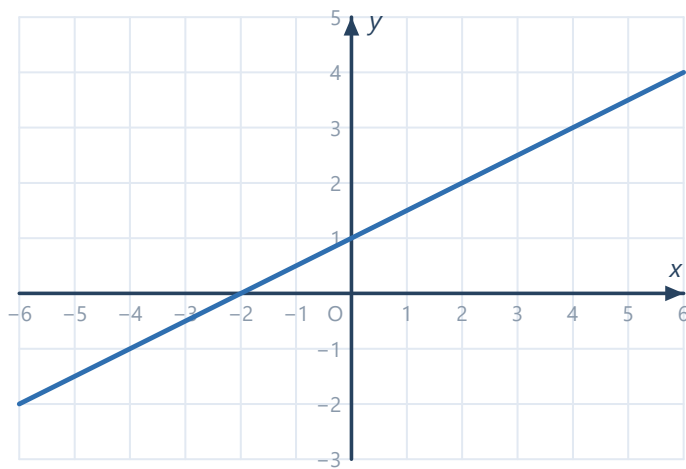
Answer: $y = -x + 3$

4 Find the equation of the line.



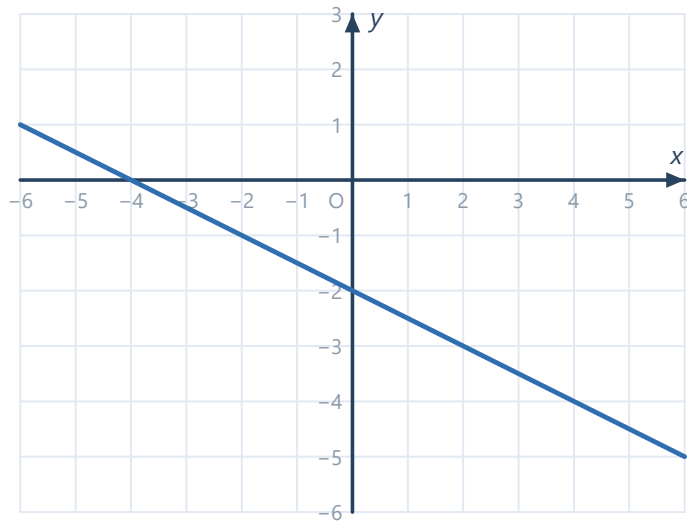
Answer: $y = -2x + 4$

5 Find the equation of the line.



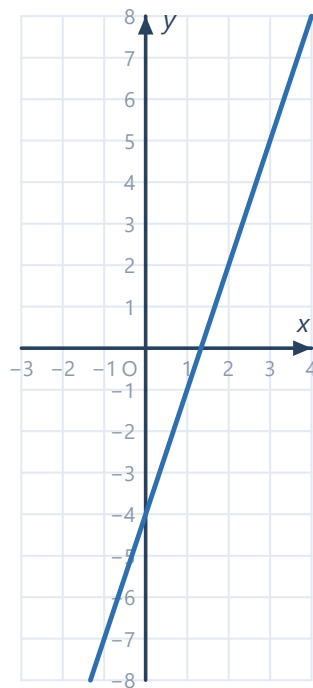
Answer: $y = \frac{1}{2}x + 1$

6 Find the equation of the line.



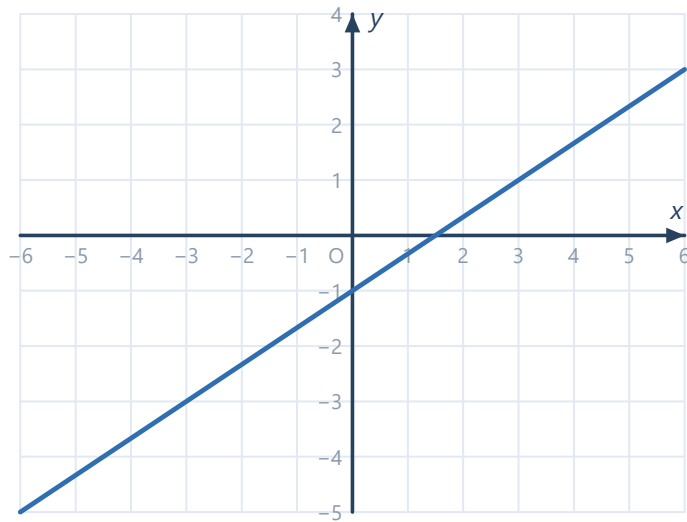
Answer: $y = -\frac{1}{2}x - 2$

7 Find the equation of the line.



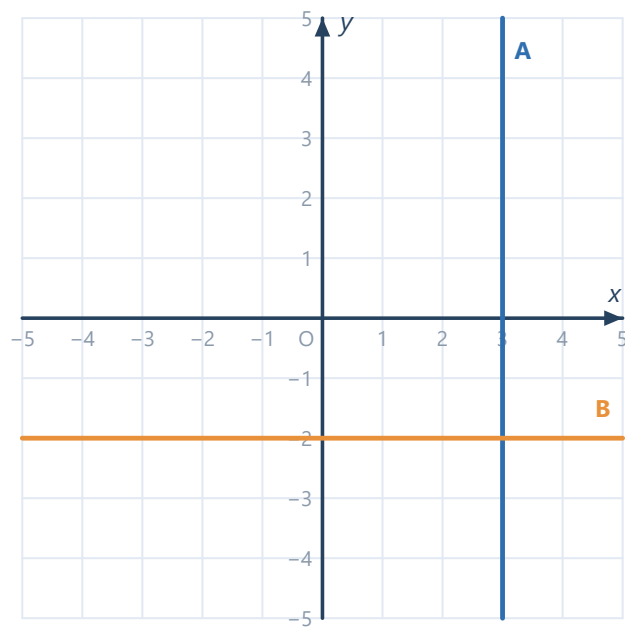
Answer: $y = 3x - 4$

8 Find the equation of the line.



Answer: $y = \frac{1}{3}x - 1$

9 Write down the equations of the two lines A and B.



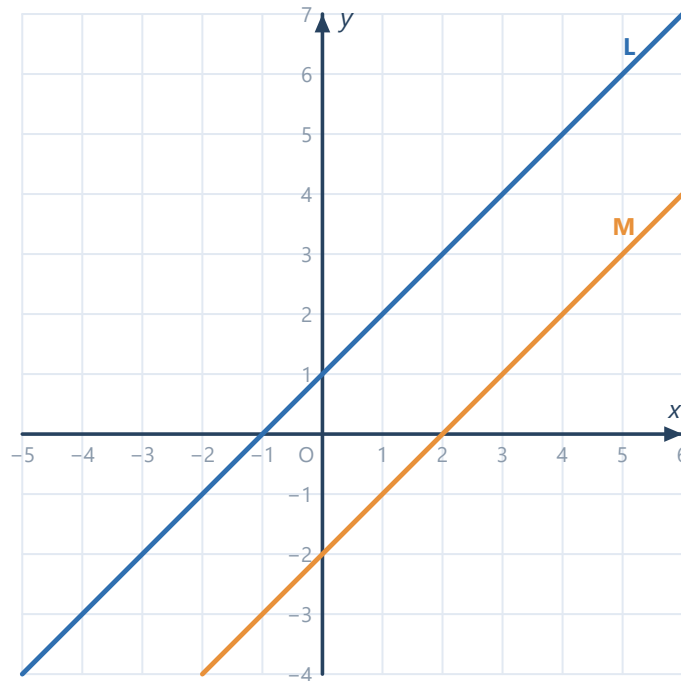
(a) line A

Answer: $x = 3$

(b) line B

Answer: $y = -2$

10 The grid shows two lines, L and M.



- (a) Find the equation of line L.

Answer: $y = x + 1$

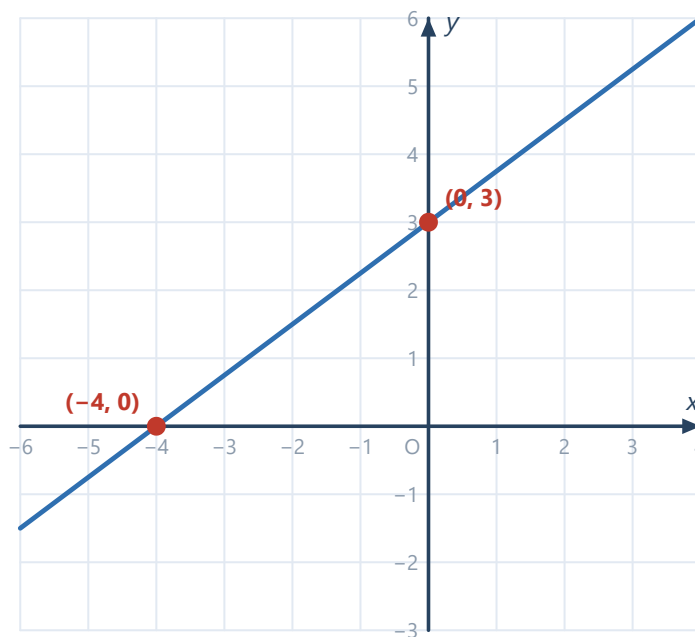
- (b) Find the equation of line M.

Answer: $y = x - 2$

- (c) What do you notice about the two equations? What does this tell you about the lines?

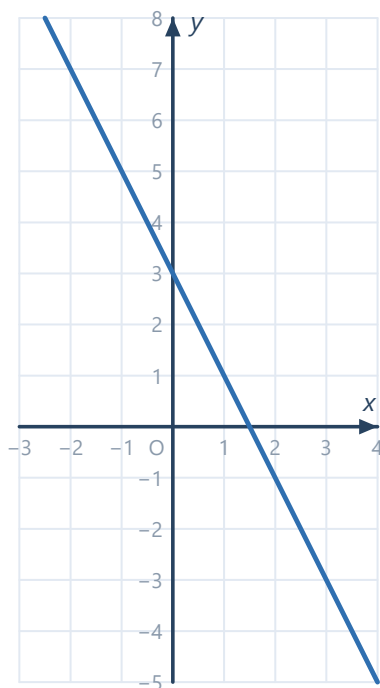
Answer: Both have gradient 1, so L and M are parallel.

- 11** A line crosses the x-axis at $(-4, 0)$ and the y-axis at $(0, 3)$. Find the equation of the line.



Answer: $y = \frac{3}{4}x + 3$

- 12** The line in the diagram is the boundary of a fence on a map. Write down its equation in the form $y = mx + c$.



Answer: $y = -2x + 3$

- 13** A line passes through (0, 3) and (4, -1). Without calculating, explain how you can tell the gradient is negative.

Answer: The line goes down from left to right

Exercise 12H Equations of lines from points and gradients Non-calculator

- 1** Find the equation of the line with the given gradient that passes through the given point.

- (a) gradient 2, point (1, 5)

Answer: $y = 2x + 3$

- (b) gradient -1, point (3, 4)

Answer: $y = -x + 7$

- (c) gradient 3, point (-2, -1)

Answer: $y = 3x + 5$

- (d) gradient $\frac{1}{2}$, point (4, 3)

Answer: $y = \frac{1}{2}x + 1$

- 2** Find the equation of the line through each pair of points.

- (a) (0, 1) and (2, 5)

Answer: $y = 2x + 1$

(b) (1, 2) and (3, 8)

Answer: $y = 3x - 1$

(c) (0, 5) and (5, 0)

Answer: $y = -x + 5$

(d) (-1, -3) and (3, 5)

Answer: $y = 2x - 1$

3 Find the equation of the line through each pair of points. The gradient may be a fraction.

(a) (2, 1) and (6, 3)

Answer: $y = \frac{1}{2}x$

(b) (-3, -2) and (3, 2)

Answer: $y = \frac{2}{3}x$

(c) (0, -3) and (6, 1)

Answer: $y = \frac{2}{3}x - 3$

(d) (-2, 4) and (4, -5)

Answer: $y = -\frac{3}{2}x + 1$

4 A line passes through (1, 1) and (3, 5). Does it pass through the point (5, 9)? Show your working.

Answer: Yes

5 A line passes through (-1, -7) and (3, 5). Find its equation and then the value of y when $x = 10$.

Answer: $y = 3x - 4$; $y = 26$

6 Pete finds the equation of the line through (1, 3) and (3, 7). He gets $m = 2$ and writes $y = 2x + 3$. Show that he is wrong and find the correct equation.

Answer: $y = 2x + 1$

7 A line has gradient -2 and passes through (4, 3). Find the coordinates of the point where the line crosses the x -axis.

Answer: (5.5, 0)

8 Find the equation of the line through each pair of points.

(a) (2, -1) and (6, -1)

Answer: $y = -1$

(b) (3, 2) and (3, 7)

Answer: $x = 3$

9 Show that the points A(-1, -3), B(2, 3) and C(4, 7) lie on a straight line, and find the equation of the line.

Answer: Both gradients are 2; $y = 2x - 1$

- 10** The line $y = mx + c$ passes through (1, 5) and (3, 11). Write down two equations in m and c and use them to find m and c .

Answer: $m = 3, c = 2$