The equation of a line through a point

ANSWERS

1

Find the equation of the line with gradient **2** that passes through (3, 10).

$y = 2x + c$

$10 = 2 \times 3 + c$

$c = 4$

Answer $y = 2x + 4$

2

Find the equation of the line with gradient **3** that passes through (2, 11).

$y = 3x + c$

$11 = 3 \times 2 + c$

$c = 5$

Answer $y = 3x + 5$

3

Find the equation of the line with gradient **4** that passes through (3, 10).

$y = 4x + c$

$10 = 4 \times 3 + c$

$c = -2$

Answer $y = 4x - 2$

4

Find the equation of the line with gradient **2** that passes through (5, 7).

$y = 2x + c$

$7 = 2 \times 5 + c$

$c = -3$

Answer $y = 2x - 3$

5 *Notice the change!*

Find the equation of the line with gradient **−2** that passes through (3, 4).

$y = -2x + c$

$4 = -2 \times 3 + c$

$c = 10$

Answer $y = -2x + 10$

6

Find the equation of the line with gradient **3** that passes through (−2, 1).

$y = 3x + c$

$1 = 3 \times (-2) + c$

$c = 7$

Answer $y = 3x + 7$

7

Find the equation of the line with gradient $\frac{1}{2}$ that passes through (4, 6).

$y = \frac{1}{2}x + c$

$6 = \frac{1}{2} \times 4 + c$

$c = 4$

Answer $y = \frac{1}{2}x + 4$

8

Find the equation of the line with gradient **−4** that passes through (0, 3).

$y = -4x + c$

$3 = -4 \times 0 + c$

$c = 3$

Answer $y = -4x + 3$

The equation of a line through a point *further practice*

ANSWERS

9

Find the equation of the line with gradient −3 that passes through (2, −1).

$-1 = -3 \times 2 + c$

$-1 = -6 + c,\ c = 5$

Answer $y = -3x + 5$

10

A line with gradient 2 crosses the x axis at (4, 0). Find its equation.

$0 = 2 \times 4 + c$

$c = -8$

Answer $y = 2x - 8$

11

Find the equation of the line parallel to $y = 3x - 7$ that passes through (2, 9).

parallel: $m = 3$

$9 = 6 + c,\ c = 3$

Answer $y = 3x + 3$

12

Find the equation of the line with gradient $\frac{2}{3}$ that passes through (6, 1).

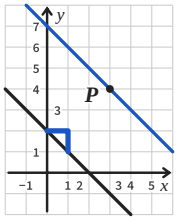
$1 = \frac{2}{3} \times 6 + c$

$1 = 4 + c,\ c = -3$

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

13

The line through P is parallel to the line on the grid. Find its equation.



the line on the grid: $m = -1$

$4 = -3 + c,\ c = 7$

Answer $y = -x + 7$

14

An electrician charges a call out fee plus £30 for each hour. A 2 hour job costs £95. Write a formula for the cost C in pounds of a job that takes h hours.

$95 = 30 \times 2 + c$

$c = 35$

Answer $C = 30h + 35$

15

A line with gradient 2 passes through (5, 4). Where does it cross the x axis?

$y = 2x - 6$

$0 = 2x - 6$, so $x = 3$

Answer (3, 0)

16

Ana finds the line with gradient 3 that passes through (2, 5).

She writes $y = 3x + 5$.

Explain her mistake and find the right equation.

5 is the y value, not c

$5 = 6 + c,\ c = -1$

Answer $y = 3x - 1$