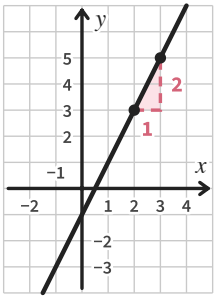
Finding the Equation of a Line

ANSWERS

1

Find the equation of the line.



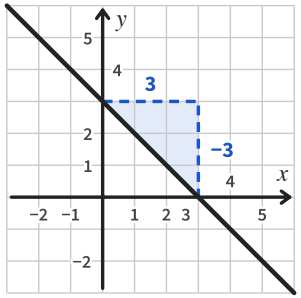
$c =$ **−1**

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

Equation $y = 2x - 1$

2

Find the equation of the line.



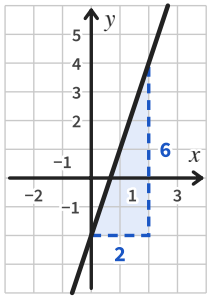
$c =$ **3**

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

Equation $y = -x + 3$

3

Find the equation of the line.



$c =$ -2

$m =$ $\frac{6}{2} = 3$

Equation $y = 3x - 2$

4

A line has gradient 2 and passes through the point **(3, 11)**. Find the equation of the line.

$y = 2x + c$

$11 = 2 \times 3 + c$

$c =$ 5

Equation $y = 2x + 5$

5

A line has gradient −4 and passes through the point **(1, 6)**. Find the equation of the line.

$y = -4x + c$

$6 = -4 \times 1 + c$

$c =$ 10

Equation $y = -4x + 10$

6

Find the equation of the line through **(1, 3)** and **(4, 15)**.

gradient = $\frac{15 - 3}{4 - 1} = \frac{12}{3} = 4$

$3 = 4 \times 1 + c$

$c =$ -1

Equation $y = 4x - 1$

7 *Notice the change!*

Find the equation of the line parallel to $y = 3x + 4$ that passes through **(2, 9)**.

gradient = 3

$9 = 3 \times 2 + c$

$c =$ 3

Equation $y = 3x + 3$

8

Ravi finds the line through **(1, 4)** and **(3, 10)**. He writes $y = 3x + 4$.
Explain his mistake.
Find the correct equation.

4 is a y coordinate, not c

$4 = 3 \times 1 + c$, so $c = 1$

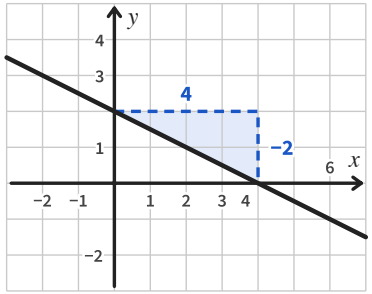
Equation $y = 3x + 1$

Finding the Equation of a Line *further practice*

ANSWERS

9

Find the equation of the line.



c = 2, down 2 for every 4 across

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

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

10

Find the equation of the line through (−2, 5) and (2, −3).

gradient = −8 ÷ 4 = −2

5 = −2 × (−2) + c, so c = 1

Answer $y = -2x + 1$

11

Find the equation of the line through (2, 4) and (8, 7).

gradient $= \frac{3}{6} = \frac{1}{2}$

$4 = \frac{1}{2} \times 2 + c$, *so* $c = 3$

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

12

Find the equation of the line parallel to $2y = 6x + 1$ that passes through (1, 5).

y = 3x + 0.5: gradient 3

5 = 3 × 1 + c, so c = 2

Answer $y = 3x + 2$

13

Which two of these lines are parallel?

A $y = 4x - 3$

B $2y = 4x + 7$

C $y = 3 + 4x$

D $4y = x + 4$

gradients: A 4, B 2, C 4, D $\frac{1}{4}$

A and C have the same gradient

Answer *A and C*

14

A line passes through (0, −3) and (4, 5). Does it pass through (7, 11)? Show how you know.

y = 2x − 3

2 × 7 − 3 = 11, so yes

Answer *Yes*

15

A line crosses the y axis at 6 and the x axis at 3. Find its equation.

through (0, 6) and (3, 0)

gradient = −6 ÷ 3 = −2, c = 6

Answer $y = -2x + 6$

16

The line $y = 3x + c$ passes through (2, 1) and $(k, 10)$. Find c and k.

1 = 3 × 2 + c, so c = −5

10 = 3k − 5, so k = 5

Answer $c = -5$, $k = 5$