

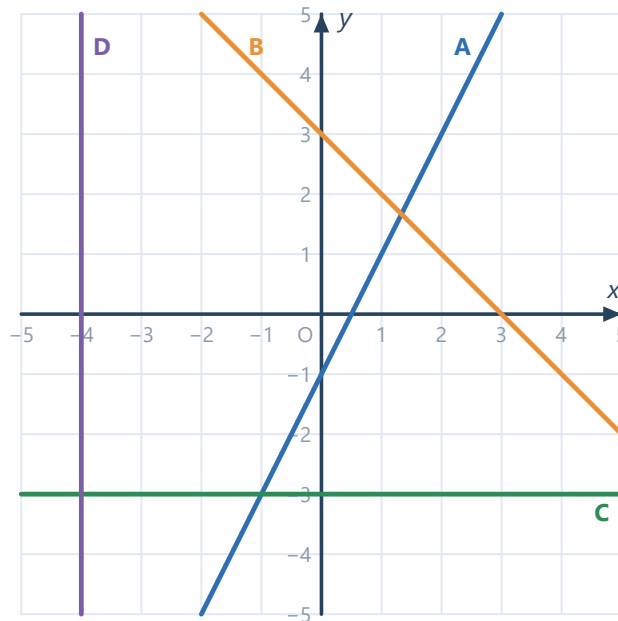
GCSE Maths: Gradient (Foundation): answers

GCSE Maths - Straight-Line Graphs and Coordinates - Foundation - Lesson 12.4

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/foundation/gradient/

Exercise 12E Gradient Non-calculator

- 1 State whether the gradient of each line A, B, C and D is positive, negative, zero or undefined.



- (a) line A

Answer: positive

- (b) line B

Answer: negative

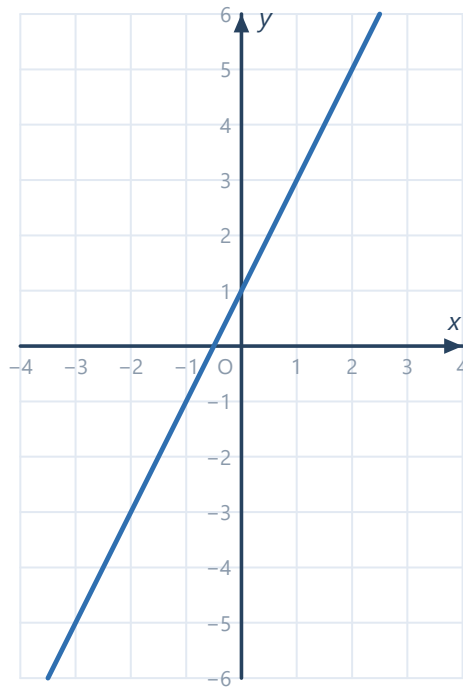
- (c) line C

Answer: zero

- (d) line D

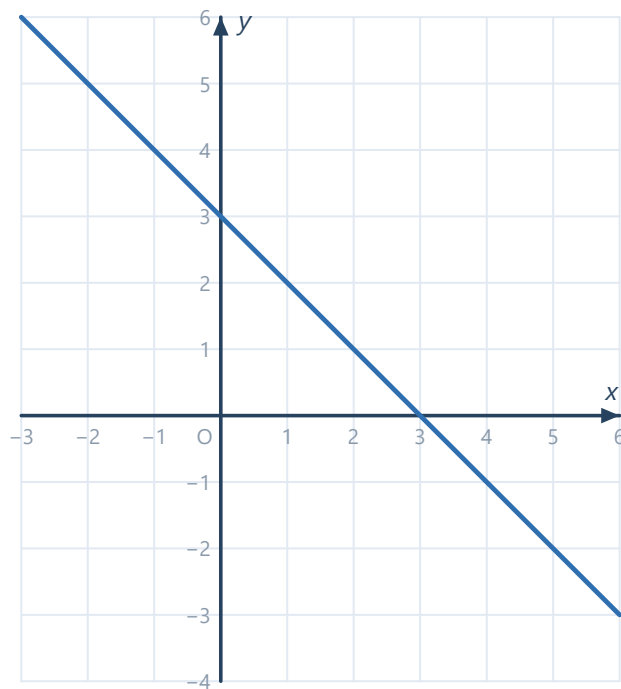
Answer: undefined

- 2 Work out the gradient of the line.



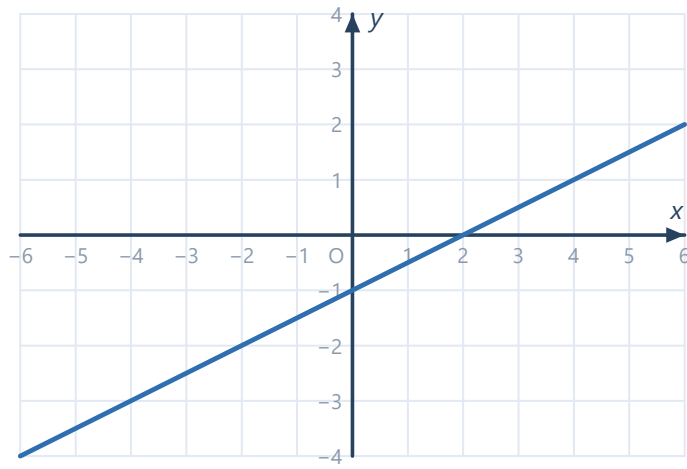
Answer: 2

- 3** Work out the gradient of the line.



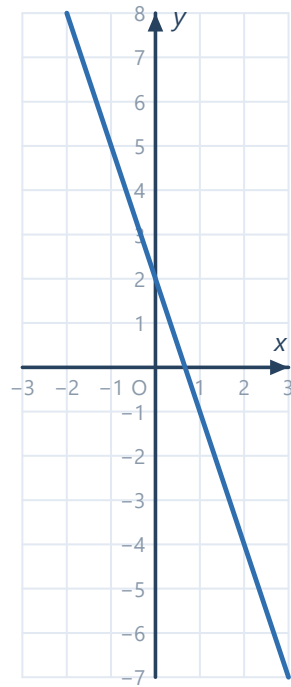
Answer: -1

- 4** Work out the gradient of the line.



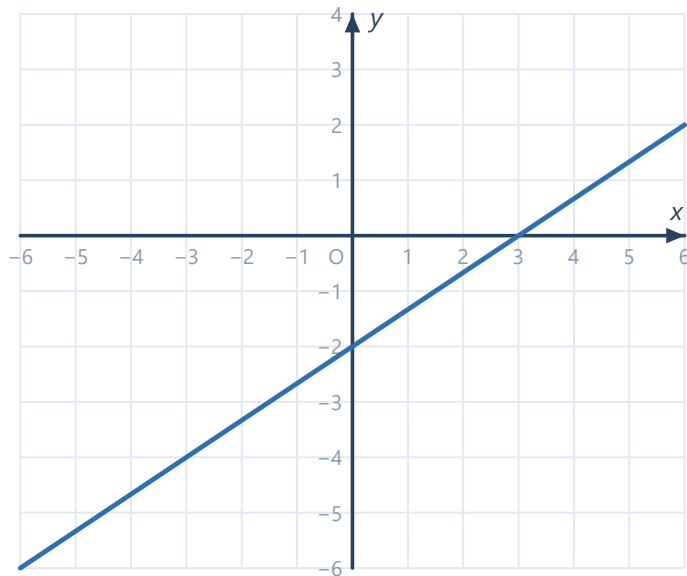
Answer: $\frac{1}{2}$

5 Work out the gradient of the line.



Answer: -3

6 Work out the gradient of the line.



Answer: $\frac{2}{3}$

7 Work out the gradient of the line through each pair of points.

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

Answer: 3

(b) (0, 5) and (4, 1)

Answer: -1

(c) (-2, -1) and (2, 5)

Answer: $\frac{3}{2}$

(d) (-3, 4) and (1, -4)

Answer: -2

8 A line goes through (1, 1) and (4, 10). Complete: rise = $10 - 1 = \underline{\quad}$; run = $4 - 1 = \underline{\quad}$; gradient = rise $\div$ run = $\underline{\quad}$.

Answer: rise = 9, run = 3, gradient = 3

9 Work out the gradient of the line through each pair of points.

(a) (-3, 2) and (4, 2)

Answer: 0

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

Answer: undefined

10 A road rises 12 m over a horizontal distance of 150 m. Work out the gradient as a fraction in its simplest form and as a percentage.

Answer: $\frac{2}{25} = 8\%$

- 11** A wheelchair ramp rises 0.4 m over a horizontal distance of 5 m. The rules say the gradient must be no more than $\frac{1}{12}$. Does the ramp meet the rule? Show your working.

Answer: Yes: $\frac{2}{25}$ is less than $\frac{1}{12}$

- 12** The line through the points (2, k) and (6, 11) has gradient 2. Find the value of k .

Answer: $k = 3$

- 13** Line A goes through (0, 0) and (2, 5). Line B goes through (0, 0) and (3, 7). Which line is steeper? Show how you know.

Answer: Line A (gradient 2.5 against 2.33...)

- 14** Ben works out the gradient of the line through (1, 2) and (3, 8). He says it is $2/6 = 1/3$. Find his mistake and give the correct gradient.

Answer: He used run $\div$ rise. The gradient is 3.

- 15** Show that the points A(0, 1), B(2, 5) and C(5, 11) lie on a straight line.

Answer: Both gradients are 2

- 16** Four lines have gradients 3, -5 , $\frac{1}{2}$ and -1 . Which line is the steepest? Explain.

Answer: The line with gradient -5