

GCSE Maths: The equation $y = mx + c$ (Foundation): answers

GCSE Maths - Straight-Line Graphs and Coordinates - Foundation - Lesson 12.5

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/the-equation-y-mx-c/

Exercise 12F Gradient, intercept and sketching lines Non-calculator

1 Write down the gradient and the y -intercept of each line.

(a) $y = 2x + 3$

Answer: gradient 2, y -intercept 3

(b) $y = 5x - 1$

Answer: gradient 5, y -intercept -1

(c) $y = -x + 4$

Answer: gradient -1 , y -intercept 4

(d) $y = \frac{1}{2}x - 2$

Answer: gradient $\frac{1}{2}$, y -intercept -2

(e) $y = 3x$

Answer: gradient 3, y -intercept 0

(f) $y = -4x + 6$

Answer: gradient -4 , y -intercept 6

2 Write down the equation of the line with the given gradient and y -intercept.

(a) gradient 4, y -intercept -3

Answer: $y = 4x - 3$

(b) gradient -2 , y -intercept 5

Answer: $y = -2x + 5$

(c) gradient 1, y -intercept 0

Answer: $y = x$

(d) gradient $\frac{1}{3}$, y -intercept 2

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

3 Write down the gradient and the y -intercept of each line. Rewrite the equation in the form $y = mx + c$ first.

(a) $y = 5 - 3x$

Answer: gradient -3 , y -intercept 5

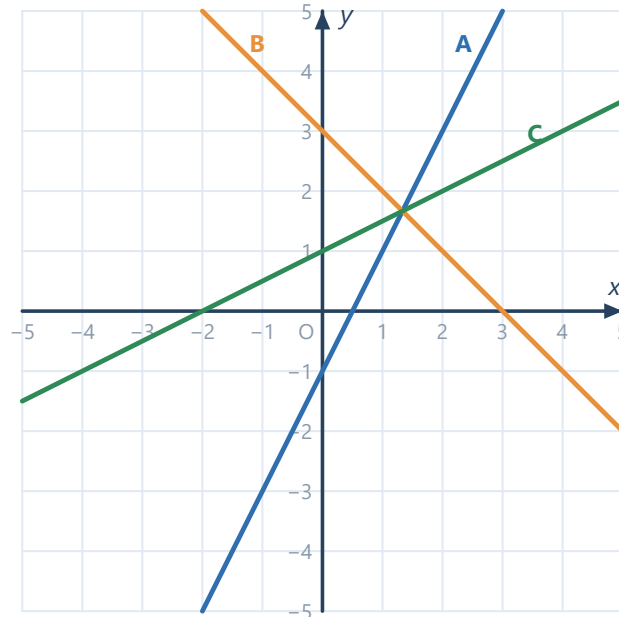
(b) $y = -1 + 2x$

Answer: gradient 2, y-intercept -1

(c) $y = 7 - x$

Answer: gradient -1, y-intercept 7

4 The graph shows three lines A, B and C. Match each equation to its line.



(a) $y = -x + 3$

Answer: B

(b) $y = \frac{1}{2}x + 1$

Answer: C

(c) $y = 2x - 1$

Answer: A

5 Sketch the graph of $y = 2x + 1$. Use the gradient and the y-intercept.

Answer: A straight line through (0, 1) and (1, 3)

6 Sketch the graph of $y = -x + 3$. Use the gradient and the y-intercept.

Answer: A straight line through (0, 3) and (1, 2)

7 Sketch the graph of $y = \frac{1}{2}x - 2$. Use the gradient and the y-intercept.

Answer: A straight line through (0, -2) and (2, -1)

8 Rearrange each equation into the form $y = mx + c$.

(a) $y - 2x = 3$

Answer: $y = 2x + 3$

(b) $2x + y = 7$

Answer: $y = -2x + 7$

(c) $2y = 8x - 6$

Answer: $y = 4x - 3$

(d) $3y = 6x + 9$

Answer: $y = 2x + 3$

9 Each line has equation $y = mx + c$. Find the value of c .

(a) gradient 3, passes through (2, 5)

Answer: -1

(b) gradient -2 , passes through (1, 4)

Answer: 6

(c) gradient $\frac{1}{2}$, passes through (4, 3)

Answer: 1

10 Find the coordinates of the point where each line crosses (i) the y -axis and (ii) the x -axis.

(a) $y = 2x - 6$

Answer: (0, -6) and (3, 0)

(b) $y = -x + 4$

Answer: (0, 4) and (4, 0)

(c) $y = \frac{1}{2}x + 3$

Answer: (0, 3) and (-6 , 0)

(d) $y = 3x + 12$

Answer: (0, 12) and (-4 , 0)

11 A line has gradient 3 and passes through the point (0, -4). Does the line pass through (2, 2)? Show your working.

Answer: Yes

12 Explain why the lines $y = 2x + 3$ and $y = 2x - 1$ never meet.

Answer: They have the same gradient, so they are parallel

13 Jo says the line $y = 3 - 2x$ has gradient 3 and y -intercept -2 . Is she correct? Give the correct values.

Answer: No. Gradient -2 , y -intercept 3

14 Sketch the line $2x + y = 6$ by finding where it crosses the axes.

Answer: Crosses the axes at (3, 0) and (0, 6)

15 The line $y = -2x + 6$ and the two axes make a triangle. Work out its area.

Answer: 9

