

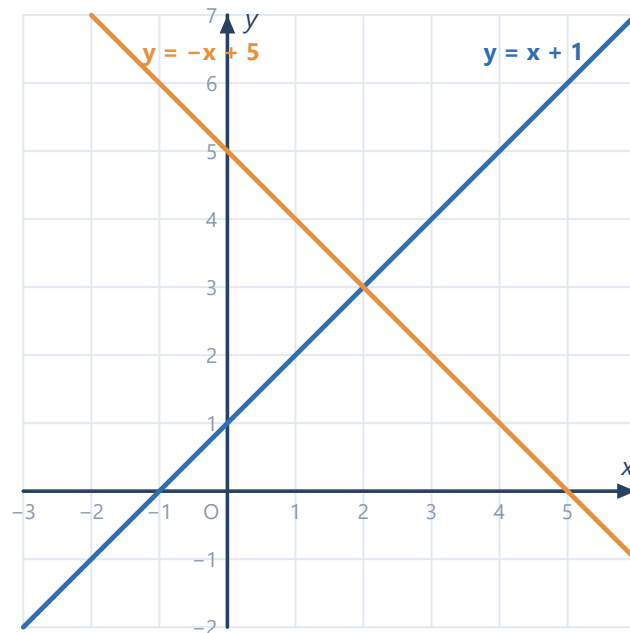
GCSE Maths: Where lines cross (Higher): answers

GCSE Maths - Straight-Line Graphs and Coordinates - Higher - Lesson 12.9

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/where-lines-cross/

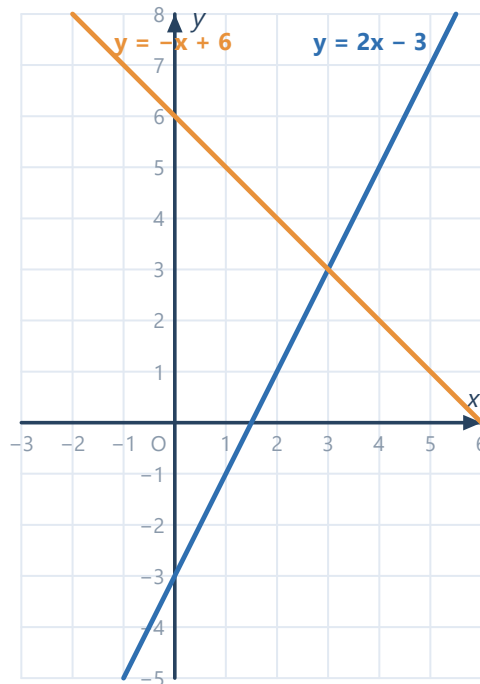
Exercise 12M Intersections of lines Non-calculator

- 1 The graph shows the lines $y = x + 1$ and $y = -x + 5$. Write down the coordinates of the point where they cross.



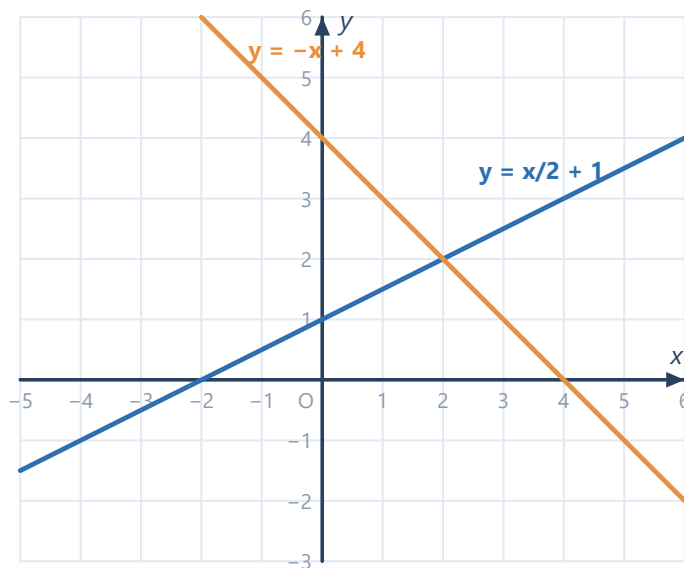
Answer: (2, 3)

- 2 The graph shows the lines $y = 2x - 3$ and $y = -x + 6$. Write down the coordinates of the point where they cross.



Answer: (3, 3)

- 3 The graph shows the lines $y = \frac{1}{2}x + 1$ and $y = -x + 4$. Write down the coordinates of the point where they cross.



Answer: (2, 2)

- 4 On the same grid, draw the graphs of $y = x + 2$ and $y = 4 - x$ for x from -1 to 4 . Write down the coordinates of the point where they cross.

Answer: (1, 3)

- 5 On the same grid, draw $y = 2x - 1$ and $y = 5 - x$ for x from 0 to 4 . Find the point where the lines cross.

Answer: (2, 3)

6 Find the coordinates of the point where the line $y = 2x + 1$ crosses each of these lines.

(a) the y -axis ($x = 0$)

Answer: (0, 1)

(b) the x -axis ($y = 0$)

Answer: (-0.5, 0)

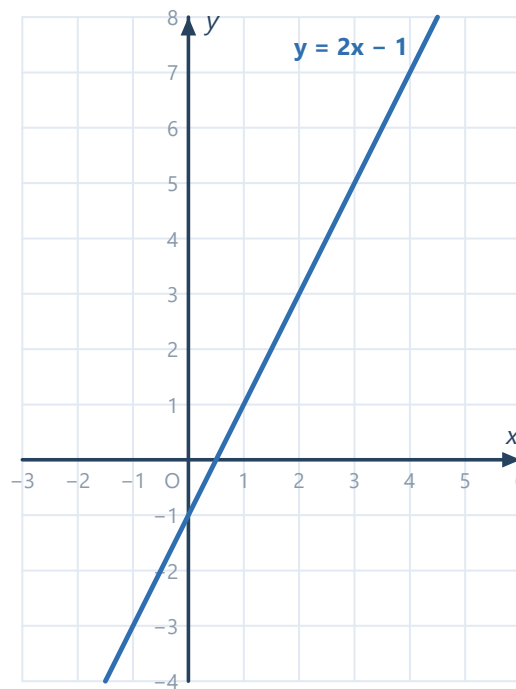
(c) the line $x = 3$

Answer: (3, 7)

(d) the line $y = -3$

Answer: (-2, -3)

7 The graph of $y = 2x - 1$ is drawn. Use the graph to solve each equation.



(a) $2x - 1 = 5$

Answer: $x = 3$

(b) $2x - 1 = -3$

Answer: $x = -1$

(c) $2x - 1 = 0$

Answer: $x = 0.5$

8 The point P(2, 5) is said to be where the lines $y = 3x - 1$ and $y = x + 3$ cross.

(a) Is P on the line $y = 3x - 1$?

Answer: Yes

(b) Is P on the line $y = x + 3$?

Answer: Yes

(c) Is P the point of intersection of the two lines? Explain.

Answer: Yes; it is on both lines

9 A fence runs along the line $x = -2$. A straight path follows the line $y = \frac{1}{2}x + 3$. Find the coordinates of the point where the path crosses the fence.

Answer: $(-2, 2)$

10 Do the lines $y = 3x + 1$ and $y = 3x - 4$ cross? Give a reason for your answer.

Answer: No; they are parallel

11 Explain why two different straight lines cannot cross at two points.

Answer: Only one straight line passes through two given points

12 Use algebra to find the coordinates of the point where each pair of lines cross.

(a) $y = 2x + 1$ and $y = -x + 7$

Answer: $(2, 5)$

(b) $y = 3x - 2$ and $y = x + 4$

Answer: $(3, 7)$

(c) $y = 4x - 5$ and $y = -2x + 7$

Answer: $(2, 3)$

(d) $y = \frac{1}{2}x + 1$ and $y = -x + 4$

Answer: $(2, 2)$

13 The lines $y = x$ and $y = -x + 6$ and the x -axis form a triangle. Work out the area of the triangle.

Answer: 9