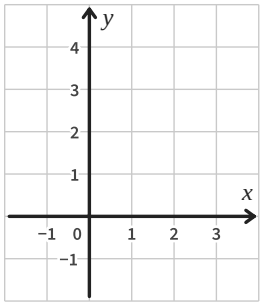
Simultaneous equations: special cases

1

Draw both lines. How many solutions do the simultaneous equations have?

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

x	y (1)	y (2)
0	2	−1
1	3	
2	4	



Answer

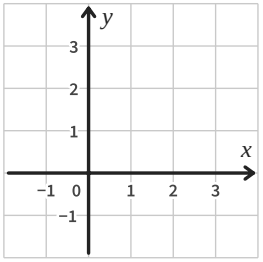
The lines

2

Draw both lines. How many solutions do the simultaneous equations have?

(1) $y = 3 - x$ (2) $x + y = 3$

x	y (1)	y (2)
0	3	
1		
2		



Answer

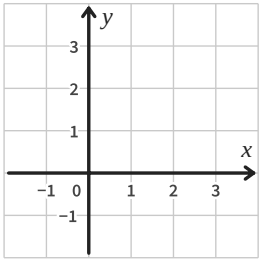
The lines

3

Draw both lines. How many solutions do the simultaneous equations have?

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

x	y (1)	y (2)
0		
1		
2		



Answer

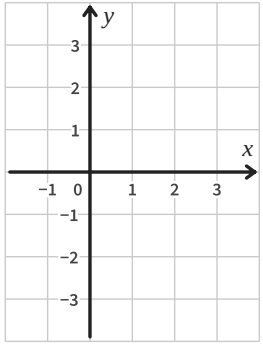
The lines

4

Draw both lines. How many solutions do the simultaneous equations have?

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

x	y (1)	y (2)
0		
1		
2		



Answer

The lines

5

How many solutions do the simultaneous equations have?

(1) $y = 5x + 1$ (2) $y = 5x - 3$

	(1)	(2)
Gradient	5	5
y intercept		

Answer

The lines

6

How many solutions do the simultaneous equations have?

(1) $y = 2x + 4$ (2) $y = 4 - 2x$

	(1)	(2)
Gradient		
y intercept		

Answer

The lines

7

How many solutions do the simultaneous equations have?

(1) $2y = 6x + 8$ (2) $y = 3x + 4$

(1) $y = 3x + 4$

	(1)	(2)
Gradient		
y intercept		

Answer

The lines

8

Sam says $y = 4x - 2$ and $3y = 12x - 6$ have no solution, because the equations are different. Explain why Sam is wrong.

Answer

Simultaneous equations: special cases *further practice*

9

How many solutions do $y = 6x - 2$ and $2y = 12x + 4$ have? Give a reason.

Answer _____

10

Which pair of equations has infinitely many solutions?

A $y = 2x + 3$ and $y = 3x + 2$

B $y = 4 - x$ and $x + y = 4$

C $y = x$ and $y = x + 1$

Answer _____

11

Write the equation of a line that gives no solution with $y = 5x - 2$.

Answer _____

12

$y = kx + 3$ and $y = 2x - 4$ have no solution. Find k.

Answer _____

13

Gym A costs £20 to join and then £15 a month. Gym B costs £35 to join and then £15 a month. Will the total cost of the two gyms ever be the same? Explain how you know.

Answer _____

14

How many solutions do $6x + 3y = 9$ and $y = 2x + 3$ have? If there is one, find it.

Answer _____

15

Ria solves $y = 3x + 4$ and $y = 3x - 1$ by writing $3x + 4 = 3x - 1$. She gets $4 = -1$. What does this tell you about the solutions and about the lines?

Answer _____

16

Find values of a and b so that $y = ax + 2$ and $y = 3x + b$ have (a) no solution, (b) infinitely many solutions.

Answer _____