Simultaneous equations: what a solution is

ANSWERS

1

Complete both tables. Find the pair that is in both.

$x + y = 8$

x	0	2	4	5	6
y	8	6	4	3	2

$x - y = 2$

x	0	2	4	5	6
y	−2	0	2	3	4

Pair in both: $x =$ 5 $y =$ 3

2

Complete both tables. Find the pair that is in both.

$2x + y = 9$

x	0	1	2	3	4
y	9	7	5	3	1

$x + y = 6$

x	0	1	2	3	4
y	6	5	4	3	2

Pair in both: $x =$ 3 $y =$ 3

3

Complete both tables. Find the pair that is in both.

$x + 2y = 10$

x	0	2	4	6	8
y	5	4	3	2	1

$y - x = -1$

x	0	2	4	6	8
y	−1	1	3	5	7

Pair in both: $x =$ 4 $y =$ 3

4

Make a table of pairs for each equation. Find the pair that is in both.

$3x + y = 13$

x	1	2	3	4	5
y	10	7	4	1	−2

$x + y = 5$

x	1	2	3	4	5
y	4	3	2	1	0

Pair in both: $x =$ 4 $y =$ 1

5

Does (4, 3) solve both equations? Check it in each one.

(1) $2x + y = 11$

(2) $x + 3y = 13$

(1) $2 \times 4 + 3 =$ 11 ✓

(2) $4 + 3 \times 3 =$ 13 ✓

Answer Yes

6

Does (7, 1) solve both equations? Check it in each one.

(1) $x + 3y = 10$

(2) $2x - y = 6$

(1) $7 + 3 \times 1 =$ 10 ✓

(2) $2 \times 7 - 1 = 13 \neq 6$ ✗

Answer No

7

Does (2, −3) solve both equations? Check it in each one.

(1) $2x + y = 1$

(2) $x - 3y = 11$

(1) $2 \times 2 + (-3) = 1$ ✓

(2) $2 - 3 \times (-3) = 11$ ✓

Answer Yes

8

Does (4, 5) solve both equations? Does (5, 4)?

(1) $x + y = 9$

(2) $3x - y = 11$

(4, 5)

(1) $4 + 5 = 9$ ✓

(2) $3 \times 4 - 5 = 7 \neq 11$ ✗

(5, 4)

(1) $5 + 4 = 9$ ✓

(2) $3 \times 5 - 4 = 11$ ✓

Answer (4, 5): No. (5, 4): Yes

Simultaneous equations: what a solution is *further practice*

ANSWERS

9

Does (3, −1) solve both $2x + 5y = 1$ and $4x - y = 11$? Show your checks.

(1) $2 \times 3 + 5 \times (-1) = 1$ ✓
(2) $4 \times 3 - (-1) = 13 \neq 11$ ✗

Answer No

10

Which pair solves both $x + 2y = 11$ and $3x - y = 5$? Show your checks.

A (1, 5)
B (3, 4)
C (5, 3)

A: (2) $3 \times 1 - 5 = -2 \neq 5$ ✗
B: (2) $3 \times 3 - 4 = 5$ ✓
C: (2) $3 \times 5 - 3 = 12 \neq 5$ ✗
All three fit (1)

Answer B

11

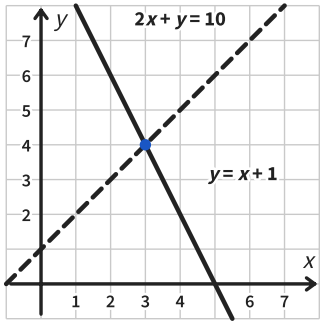
Kai says (2, 3) solves both $4x - y = 5$ and $x + 2y = 10$, because $4 \times 2 - 3 = 5$. Is Kai right? Explain.

He only checked (1).
(2) $2 + 2 \times 3 = 8 \neq 10$, so it is not a solution

Answer No

12

Write down the solution of these simultaneous equations.
Check it in both.



$2 \times 3 + 4 = 10$ ✓, $4 = 3 + 1$ ✓

Answer $x = 3, y = 4$

13

The pair $(3, k)$ fits $2x + y = 10$. Find k.
Does $(3, k)$ also fit $x - y = 1$?

$6 + k = 10, k = 4$
$3 - 4 = -1 \neq 1$ ✗

Answer $k = 4$, no

14

The lines $y = x + 2$ and $x + y = 8$ cross at one point. Use tables of pairs to find it, without drawing.

$y = x + 2$:

x	1	2	3	4
y	3	4	5	6

$x + y = 8$:

x	1	2	3	4
y	7	6	5	4

Answer (3, 5)

15

A notebook costs x pounds and a pen costs y pounds. A notebook and two pens cost £7. A notebook costs £1 more than a pen. Use a table of pairs to find both prices.

$x - y = 1$:

x	2	3	4
y	1	2	3
x + 2y	4	7	10

Answer notebook £3, pen £2

16

Write down three different pairs that fit $2x + y = 6$. Explain why one equation with two unknowns has lots of solutions.

For example (0, 6), (1, 4), (3, 0)
Pick any x, then find the y that fits

Answer Every x has a y