

Simultaneous Equations: What a Solution Is

ANSWERS

1

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

$$x + y = 9$$

x	0	2	4	5	8
y	9	7	5	4	1

$$x - y = 1$$

x	0	2	4	5	8
y	-1	1	3	4	7

Pair in both: $x = 5$ $y = 4$

2

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

$$2x + y = 7$$

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

$$x + y = 4$$

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

Pair in both: $x = 3$ $y = 1$

3

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

$$3x + y = 10$$

x	-1	0	1	2	3
y	13	10	7	4	1

$$y - x = 2$$

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

Pair in both: $x = 2$ $y = 4$

4

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

$$x - y = 2$$

x	1	3	5	7	9
y	-1	1	3	5	7

$$x + 2y = 11$$

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

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

5

Does (1, 4) solve both equations? Check it in each one.

- (1) $3x + y = 7$
(2) $x + 2y = 9$

- (1) $3 \times 1 + 4 = 7$ ☒
(2) $1 + 2 \times 4 = 9$ ☒

Answer Yes

6

Does (6, -2) solve both equations? Check it in each one.

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

- (1) $6 + 2 \times (-2) = 2$ ☒
(2) $6 - (-2) = 8 \neq 4$ ☒

Answer No

7

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

- (1) $x + 4y = 5$
(2) $3x + y = -7$

- (1) $-3 + 4 \times 2 = 5$ ☒
(2) $3 \times (-3) + 2 = -7$ ☒

Answer Yes

8

Does (5, 2) solve both equations? Does (2, 5)?

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

- (5, 2)
(1) $5 + 2 = 7$ ☒
(2) $2 \times 5 - 2 = 8 \neq -1$ ☒
(2, 5)
(1) $2 + 5 = 7$ ☒
(2) $2 \times 2 - 5 = -1$ ☒

Answer (5, 2): No. (2, 5): Yes

Simultaneous Equations: What a Solution Is further practice

ANSWERS

9

Does (2, -3) solve both $4x + y = 7$ and $5x + y = 7$? Show your checks.

- (1) $4 \times 2 + (-3) = 5 \neq 7$ ☒
(2) $5 \times 2 + (-3) = 7$ ☒

Answer No

10

Ali says (0, 5) solves both $x + y = 5$ and $2x + y = 7$, because it works in the first one. Is Ali right? Explain.

- (2) $2 \times 0 + 5 = 5 \neq 7$, so it does not solve both

Answer No

11

The pair (2, k) fits $3x + 2y = 14$. Find k. Does (2, k) also fit $x + y = 6$?

$$6 + 2k = 14, k = 4$$

$$2 + 4 = 6 \checkmark$$

Answer $k = 4$, yes

12

An adult ticket and a child ticket cost £14 together. An adult ticket costs £4 more than a child ticket. Which pair of prices fits both facts?

- A adult £10 and child £4
B adult £9 and child £5
C adult £8 and child £6
D adult £5 and child £9

$$A: 10 + 4 = 14, 10 - 4 = 6$$

$$B: 9 + 5 = 14, 9 - 5 = 4 \checkmark$$

$$C: 8 + 6 = 14, 8 - 6 = 2$$

$$D: 5 + 9 = 14, 5 - 9 = -4$$

Answer B

13

Two numbers add up to 15. Their difference is 3. Find the two numbers.

x	7	8	9	10
y	8	7	6	5

Differ by 3: 9 and 6

Answer 9 and 6

14

A pen costs p pence and a ruler costs r pence. $2p + r = 120$ and $r = p + 30$. Use tables of pairs to find the cost of a pen and of a ruler.

$$2p + r = 120:$$

p	20	25	30	35
r	80	70	60	50

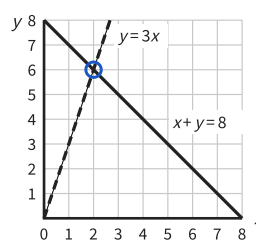
$$r = p + 30:$$

p	20	25	30	35
r	50	55	60	65

Answer pen 30p, ruler 60p

15

Write down the pair that fits both equations. Check it in both.



$$2 + 6 = 8 \checkmark$$

$$6 = 3 \times 2 \checkmark$$

$$x = 2, y = 6$$

Answer $x = 2, y = 6$

16

Sam says $x + y = 10$ has one solution, $x = 5$ and $y = 5$. Explain why Sam is wrong.

Other pairs fit too:
(3, 7), (12, -2)
Every x has a y that fits

Answer Many pairs fit