

Simultaneous Equations: Add or Subtract

ANSWERS

1

Solve the simultaneous equations.

$$(1) \quad 3x + y = 14$$

$$(2) \quad x + y = 6$$

$$(1) - (2)$$

$$2x = 8$$

$$x = 4$$

$$(2) \quad 4 + y = 6$$

$$y = 2$$

$$x = 4, y = 2$$

Check in (1): $12 + 2 = 14$ ✓

2

Solve the simultaneous equations.

$$(1) \quad 3x + y = 14$$

$$(2) \quad x - y = 6$$

$$(1) + (2)$$

$$4x = 20$$

$$x = 5$$

$$(2) \quad 5 - y = 6$$

$$-y = 1$$

$$y = -1$$

$$x = 5, y = -1$$

Check in (1): $15 - 1 = 14$ ✓

3

Solve the simultaneous equations.

$$(1) \quad 5x + 2y = 19$$

$$(2) \quad 3x + 2y = 13$$

$$(1) - (2)$$

$$2x = 6$$

$$x = 3$$

$$(2) \quad 9 + 2y = 13$$

$$2y = 4$$

$$y = 2$$

$$x = 3, y = 2$$

Check in (1): $15 + 4 = 19$ ✓

4

Solve the simultaneous equations.

$$(1) \quad 3x + 2y = 17$$

$$(2) \quad 5x - 2y = 7$$

$$(1) + (2)$$

$$8x = 24$$

$$x = 3$$

$$(1) \quad 9 + 2y = 17$$

$$2y = 8$$

$$y = 4$$

$$x = 3, y = 4$$

Check in (2): $15 - 8 = 7$ ✓

5

Solve the simultaneous equations.

$$(1) \quad 3x - y = 14$$

$$(2) \quad x - y = 6$$

$$(1) - (2)$$

$$2x = 8$$

$$x = 4$$

$$(2) \quad 4 - y = 6$$

$$-y = 2$$

$$y = -2$$

$$x = 4, y = -2$$

Check in (1): $12 + 2 = 14$ ✓

6

Solve the simultaneous equations.

$$(1) \quad x + 3y = 14$$

$$(2) \quad x + y = 6$$

$$(1) - (2)$$

$$2y = 8$$

$$y = 4$$

$$(2) \quad x + 4 = 6$$

$$x = 2$$

$$x = 2, y = 4$$

Check in (1): $2 + 12 = 14$ ✓

7

Solve the simultaneous equations.

$$(1) \quad 3x + y = 5$$

$$(2) \quad x + y = 7$$

$$(1) - (2)$$

$$2x = -2$$

$$x = -1$$

$$(2) \quad -1 + y = 7$$

$$y = 8$$

$$x = -1, y = 8$$

Check in (1): $-3 + 8 = 5$ ✓

8

Solve the simultaneous equations.

$$(1) \quad 2x + 3y = 9$$

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

$$(1) - (2)$$

$$4y = 8$$

$$y = 2$$

$$(2) \quad 2x - 2 = 1$$

$$2x = 3$$

$$x = \frac{3}{2}$$

$$x = \frac{3}{2}, y = 2$$

Check in (1): $3 + 6 = 9$ ✓

Simultaneous Equations: Add or Subtract further practice

ANSWERS

9

Solve the simultaneous equations.

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

$$(2) \quad x + 4y = 21$$

$$(1) + (2)$$

$$6y = 24$$

$$y = 4$$

$$(1) \quad -x + 8 = 3$$

$$-x = -5$$

$$x = 5$$

Answer $x = 5, y = 4$

10

Solve the simultaneous equations.

$$3y + 2x = 21$$

$$2x - y = 1$$

$$(1) \quad 2x + 3y = 21$$

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

$$(1) - (2)$$

$$4y = 20$$

$$y = 5$$

$$(2) \quad 2x - 5 = 1$$

$$2x = 6$$

$$x = 3$$

Answer $x = 3, y = 5$

11

Solve the simultaneous equations.

$$(1) \quad 2x + 5y = 1$$

$$(2) \quad -2x + y = 11$$

$$(1) + (2)$$

$$6y = 12$$

$$y = 2$$

$$(2) \quad -2x + 2 = 11$$

$$-2x = 9$$

$$x = -\frac{9}{2}$$

Answer $x = -\frac{9}{2}, y = 2$

12

A large tin holds L litres of paint and a small tin holds S litres. 2 large and 3 small tins hold 41 litres. 2 large tins and 1 small tin hold 27 litres. How much does each tin hold?

$$(1) \quad 2L + 3S = 41$$

$$(2) \quad 2L + S = 27$$

$$(1) - (2)$$

$$2S = 14$$

$$S = 7$$

$$(2) \quad 2L + 7 = 27$$

$$2L = 20$$

$$L = 10$$

Answer $L = 10, S = 7$

13

A plank 210 cm long is cut into a long piece, L cm, and a short piece, S cm. The long piece is 46 cm longer than the short piece. Write two equations. Find both lengths.

$$(1) \quad L + S = 210$$

$$(2) \quad L - S = 46$$

$$(1) + (2)$$

$$2L = 256$$

$$L = 128$$

$$(2) \quad 128 - S = 46$$

$$-S = -82$$

$$S = 82$$

Answer $128 \text{ cm and } 82 \text{ cm}$

14

Sam solves these simultaneous equations.

$$(1) \quad 4x - 2y = 10$$

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

Sam writes $(1) - (2)$: $3x - 4y = 9$.

What has Sam done wrong?

Solve the equations.

$$-2y - (-2y) = 0, \text{ so there is no } y$$

$$\text{term: } 3x = 9$$

Answer $x = 3, y = 1$

15

Write a pair of simultaneous equations that you would add to solve. Their solution must be $x = 2, y = -1$.

For example. The y terms are opposite. Check: $2 + (-1) = 1$ and $2 - (-1) = 3$

Answer $x + y = 1, x - y = 3$

16

Explain why adding $4x + 2y = 21$ and $4x - 2y = 19$ removes y .

The y terms are opposite, so they add to zero and leave $8x = 40$.

Answer $2y + (-2y) = 0$