Simultaneous Linear Equations


Elimination
Method

A few hints . . .

(1) Scale up each term in one, or both equations to make the same number in front of **either** the x terms **or** the y terms.

(2) **Subtract** if the signs in front of these are the **same**.

(3) **Add** if the signs in front of these are **different**.

1

$5x + y = 20$ … (1)

$2x + y = 11$ … (2)

$3x = 9$

$x = 3$

$2 \times 3 + y = 11$

$6 + y = 11$

$y = 5$

Number the Equations

Subtract (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$7x + y = 43$ … (1)

$3x + y = 23$ … (2)

$4x = 20$

$x = 5$

$3 \times 5 + y = 23$

$15 + y = 23$

$y = 8$

Number the Equations

Subtract (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$$8x + 3y = 57 \quad \ldots (1)$$
$$6x + 3y = 51 \quad \ldots (2)$$

$$2x = 6$$

$$x = 3$$

$$6 \times 3 + 3y = 51$$
$$18 + 3y = 51$$
$$3y = 33$$

$$y = 11$$

Number the Equations

Subtract (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$3x + y = 19$ … (1)

$x - y = 1$ … (2)

$4x = 20$

$x = 5$

$1 \times 5 - y = 1$

$5 - y = 1$

$y = 4$

Number the Equations

Add (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$7x + 2y = 32$ … (1)

$3x - 2y = 8$ … (2)

$10x = 40$

$x = 4$

$3 \times 4 - 2y = 8$

$12 - 2y = 8$

$2y = 4$

$y = 2$

Number the Equations

Add (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$$9x + 4y = 82 \quad \dots (1)$$
$$3x - 4y = -10 \quad \dots (2)$$

$$12x = 72$$

$$x = 6$$

$$3 \times 6 - 4y = -10$$
$$18 - 4y = -10$$
$$4y = 28$$

$$y = 7$$

Number the Equations

Add (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

Simultaneous Equations

- Scaling up -

A few hints - Reminder . . .

(1) Scale up each term in one, or both equations to make the same number in front of **either** the x terms **or** the y terms.

$x = 2$

$4 \times 2 - y = 5$

$8 - y = 5$

$y = 3$

Number the Equations

Scale up one of the equations

Add (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$x = 7$

$3 \times 7 + y = 24$

$21 + y = 24$

$y = 3$

Number the Equations

Scale up one of the equations

Subtract (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$x = 2$

$5 \times 2 + y = 18$

$10 + y = 18$

$y = 8$

Number the Equations

Scale up one of the equations

Add (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$x = 5$

$2 \times 5 + 5y = 20$

$10 + 5y = 20$

$5y = 10$

$y = 2$

Number the Equations

Scale up both of the equations

Add (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$x = 9$

$5 \times 9 - 3y = 36$

$45 - 3y = 36$

$3y = 9$

$y = 3$

Number the Equations

Scale up both of the equations

Subtract (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)

$$x = 21$$

$$7 \times 21 + 4y = 191$$
$$147 + 4y = 191$$
$$4y = 44$$
$$y = 11$$

Number the Equations

Scale up both of the equations

Subtract (to get rid of a letter)

Divide (to find x)

Substitute in (2) (to find y)