



Simultaneous Linear Equations

A bright yellow, multi-pointed starburst shape with approximately 12 points, centered on the page. The points are of varying lengths, giving it a dynamic, explosive appearance. It serves as a background for the text.

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.

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$$5x + y = 20 \quad \dots (1)$$

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

$$3x = 9$$

$$x = 3$$

$$2 \times 3 + y = 11$$

$$6 + y = 11$$

$$y = 5$$

Number
the
Equations

Subtract
(to get rid
of a letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

$$7x + y = 43 \quad \dots (1)$$

$$3x + y = 23 \quad \dots (2)$$

$$4x = 20$$

$$x = 5$$

$$3 \times 5 + y = 23$$

$$15 + y = 23$$

$$y = 8$$

Number
the
Equations

Subtract
(to get rid
of a letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

$$8x + 3y = 57 \quad \dots (1)$$

$$6x + 3y = 51 \quad \dots (2)$$

$$2x = 6$$

$$x = 3$$

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

$$18 + 3y = 51$$

$$3y = 33$$

$$y = 11$$

Number
the
Equations

Subtract
(to get rid
of a letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

$$\begin{array}{rcl} 3x & + & y = 19 \end{array} \dots (1)$$

$$\begin{array}{rcl} x & - & y = 1 \end{array} \dots (2)$$

$$4x = 20$$

$$x = 5$$

$$1 \times 5 - y = 1$$

$$5 - y = 1$$

$$y = 4$$

Number
the
Equations

Add
(to get rid
of a letter)

Divide
(to find x)

Substitute
in (2)
(to find y)

$$7x + 2y = 32 \quad \dots (1)$$

$$3x - 2y = 8 \quad \dots (2)$$

$$10x = 40$$

$$x = 4$$

$$3 \times 4 - 2y = 8$$

$$12 - 2y = 8$$

$$2y = 4$$

$$y = 2$$

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.

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)

$$x = 2$$

$$4 \times 2 - y = 5$$

$$8 - y = 5$$

$$y = 3$$

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)

$$x = 7$$

$$3 \times 7 + y = 24$$

$$21 + y = 24$$

$$y = 3$$

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)

$$x = 2$$

$$5 \times 2 + y = 18$$

$$10 + y = 18$$

$$y = 8$$

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)

$$x = 5$$

$$2 \times 5 + 5y = 20$$

$$10 + 5y = 20$$

$$5y = 10$$

$$y = 2$$

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)

$$x = 9$$

$$5 \times 9 - 3y = 36$$

$$45 - 3y = 36$$

$$3y = 9$$

$$y = 3$$

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

$$7 \times \textcolor{red}{21} + 4y = 191$$

$$147 + 4y = 191$$

$$4y = 44$$

$$y = \textcolor{red}{11}$$