

Simultaneous equations

Can you find the
the mistake?

1 2 3 4 5 6 7 8 9

Solve the simultaneous equations.

$$5x + y = 11$$

$$3x - y = 9$$

Solution: Subtract equation 2 from equation 1

2x = 2 and so x = 1

Therefore 5 + y = 11 and so y = 6

$$2x + 4y = 26$$

$$3x - y = 4$$

Solution: Multiply equation 2 by -4 to get

$$2x + 4y = 26$$

$$-12x + 4y = 4$$

Subtract the equations to give $14x = 22$

$$\text{So } \underline{x = 11/7}$$

$$\text{Therefore } 22/14 + 4y = 26 = 364/14$$

$$4y = 342/14 \text{ and so } \underline{y = 342/56 = 171/28}$$

$$5x + 2y = -34$$

$$4x - 3y = -41$$

Solution: Multiply equation 1 by 3 and equation 2 by 2 to get

$$15x + 6y = -102$$

$$8x - 6y = -82$$

Add the equations to give $23x = -20$

$$\text{So } \underline{x = -20/23}$$

$$\text{Therefore } -100/23 + 2y = -34 = -782/23$$

$$2y = -882/23 \text{ and so } \underline{y = -441/23}$$

$$4x - y = 17$$

$$y = x - 2$$

Solution: Rearrange equation 2 to get

$$4x - y = 17$$

$$x + y = -2$$

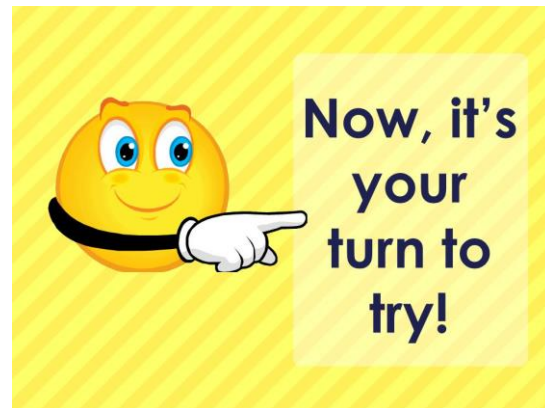
Add the equations to give $5x = 15$

$$\text{So } \underline{x = 3}$$

$$\text{Therefore } y = 3 - 2 \text{ and so } \underline{y = 1}$$

Simultaneous equations

Solve the simultaneous equations.



Solve these simultaneous equations by **subtracting**.

$$5x + 5y = 35$$

$$7x - 2y = 22$$

$$9x + 6y = 39$$

$$2x + 5y = 26$$

$$5x - 2y = 14$$

$$5x + 6y = 35$$

Solve these simultaneous equations by **adding**.

$$x + 2y = 20$$

$$3x + 4y = 48$$

$$5x - 3y = -3$$

$$9x - 2y = 80$$

$$7x - 4y = 32$$

$$7x + 3y = 39$$

Skill 1

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Manipulate **one** of the equations to be able to solve these simultaneous equations.

$$5x + 2y = 20$$

$$2x + y = 5$$

$$2x + 9y = 69$$

$$2x + 4y = 24$$

$$x + 3y = 5$$

$$x + 3y = 24$$

$$x + 2y = 8$$

$$3x + 2y = 26$$

$$2x + y = 13$$

$$2x + 3y = 14$$

$$4x - y = 20$$

$$5x - 4y = 13$$

Skill 2

Manipulate **both** of the equations to be able to solve these simultaneous equations.

$$2x + 5y = 24$$

$$5x + 3y = 23$$

$$5x + 2y = 13$$

$$4x + 3y = 20$$

$$2x - 4y = 12$$

$$2x + 6y = 26$$

$$5x - 7y = 27$$

$$2x - 3y = -4$$

$$2x - 7y = 17$$

$$3x - 4y = 16$$

$$3x + 2y = 7$$

$$5x + 3y = -1$$

Skill 3

Stretch 1

5 adult tickets and 3 child tickets to a concert costs £99. 8 adult tickets and 6 child tickets costs £168. How much do adult and child tickets cost?

Stretch 2

$$4x - 0.5y = 12.5$$

$$3x + 0.8y = 8.2$$