

To **solve an equation**, you need to reverse all operations until you have the unknown on its own and equal to a **value**.

The reverse calculations:

- + and -

$$x + 2 = 6 \rightarrow x = 4$$

$-2 \quad -2$

- \times and \div

$$2x = 10 \rightarrow x = 5$$

$\div 2 \quad \div 2$

- powers and roots

$$\sqrt{x^2} = \sqrt{16} \rightarrow x = 4$$

Whatever calculation you do to one side of an equation, you have to do exactly the same to the other side.

The order you reverse calculations in matters. When an equation has several operations to reverse, make sure to be careful of the order in which you do this in.

Questions

$$m - 3 = 4$$

$$3n + n = 24$$

$$4x - 7 = 37$$



Questions

$$2(5x - 4) = 21$$

$$\frac{3y}{4} = 12$$

$$12x + 8 = 5x + 36$$



Algebra - Class 2

To **solve an inequality**, you need to reverse all operations in the same way you would do when solving an equation, the only difference is the signs ($>$ or $<$).

If you need to multiply or divide by a **negative** number then the inequality sign will **flip**.

Example:

$$2x - 3 > 5$$
$$+3 \qquad +3$$

$$2x > 8$$
$$\div 2 \qquad \div 2$$

$$x > 4$$

Questions

$$7x - 27 < 8$$

$$14n > 11n + 6$$

$$-3y + 2 > -7$$



To make 'x' the **subject of the formulae**, you need to reverse all operations in the same way you would do when solving an equation, however, there will usually be more letters.

Example:

Make x the subject of the formulae

$$xy + 3 = 2$$

$$xy = 2 - 3$$

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

Questions

Make a the subject of the formulae

$$p = 3a - 9$$

Make b the subject of the formulae

$$c = \frac{b+2}{4}$$

Make c the subject of the formulae

$$3f = 2c + 1$$

Algebra - Class 2

To **substitute** a value into an equation or expression, you need to replace the relevant letters with the matching numbers and remember to apply **BIDMAS**. Sometimes you need to first rearrange and then substitute to find what the question is asking for.

Example:

$$C = 2a + b$$

Work out the value of C when $a = 4$ and $b = 3$

$$\begin{aligned} C &= 2 \times 4 + 3 \\ &= 8 + 3 \\ &= 11 \end{aligned}$$

Questions

$$T = 3x + 4y$$

Work out the value of T when $x = 5$ and $y = -7$

Work out the value of y when $T = 38$ and $x = 6$