Algebra Solving

Algebra is like balancing scales whatever happens to one side of the = must happen to the other side

In order to find the missing letter do the **opposite** of what is happening to it.

$x + 3 = 8$ (−3 −3)

$x = 5$

↑ take the 3 from both sides

$4x = 12$ (÷4 ÷4)

$x = 3$

↑ x is being multiplied by 4 so divide by 4 both sides

$3x + 2 = 17$ (−2)

$3x = 15$ (÷3)

$x = 5$

1st −the 2 then ÷ by 3

$5x - 1 = 19$ (+1)

$5x = 20$ (÷5)

$x = 4$

1st +the 1 then ÷ by 5

MORE COMPLICATED SOLVING

When x is both sides

$2x + 3 = x + 7$ (−x)

$x + 3 = 7$ (−3)

$x = 4$

take the x from the right remember you also have to take it from the other side!

With brackets

$2(x + 4) = 32$

1st x out the brackets

$2x + 8 = 32$ (−8)

$2x = 24$ (÷2)

$x = 12$

Negative x

$5 - x = 2$ (+x)

$5 = 2 + x$ (−2)

$3 = x$

move x to the other side to make it +ve

With a fraction:

$\frac{x+1}{3} = 6$ (×3)

$x + 1 = 18$ (−1)

$x = 17$

get rid of denominator by x both sides by 3

RULES OF INDICES

① $x^a \times x^b = x^{a+b}$

Eg $x^2 \times x^3 = x \times x \times x \times x \times x = x^5$

$x^5 \times x^{-2} = x^3$

② $x^a \div x^b = x^{a-b}$

Eg $x^6 \div x^2 = \frac{x \times x \times x \times x \times x \times x}{x \times x} = x^4$

$x^{-3} \div x^7 = x^{-10}$

③ $(x^a)^b = x^{a \times b}$

$(x^4)^2 = x^4 \times x^4 = x^8$

$(x^{-2})^5 = x^{-10}$