

Solving One-Step Equations

Remember that an equation is a mathematical statement with 2 expressions that have the same value. The 2 expressions are separated by an equal sign.

$$2x = 10$$

$$\frac{4}{3} = -1$$

$$3a - 2 = 4$$

$$4 + 2s = 3(s - 2) + 1$$

} These are all examples of equations

The equation $x + 2 = 5$ contains the variable x . The equation can be either true or false, depending on the number you substitute for the variable. If you replace x with 3, the equation is true.

$$\begin{aligned}x + 2 &= 5 \\(3) + 2 &= 5 \\5 &= 5 \checkmark\end{aligned}$$

If you use any other number, the equation becomes false.

$$\begin{aligned}x + 2 &= 5 \\(4) + 2 &= 5 \\6 &\neq 5 \\&\text{not true.}\end{aligned}$$

$$\begin{aligned}x + 2 &= 5 \\(6) + 2 &= 5 \\8 &\neq 5 \\&\text{not true}\end{aligned}$$

A number that replaces a variable to make an equation true is called a solution of an equation. Therefore $x = 3$ is the solution to the equation $x + 2 = 5$.

Solving a linear equation means that you are trying to determine what value the variable needs to be in order to make the equation true. There are 2 main steps to solving one-step equations.

① Isolate the variable on one side of the equal sign by using opposite operations to undo the operations performed on the variable. When undoing operations, you need to use the reverse order of operations. Whatever you do to one side, you must do to the other side to keep the equation balanced.

② Perform a left and right side check to verify your answer. This is done by substituting your answer into the equation and evaluating it. Both sides will have the same value if your solution is correct.

ie) Left side = Right Side

Ex. 1 $x + 3 = -8$

Ex. 3 $7x = 56$

Ex. 2 $12 = x - 4$

Ex. 4 $\frac{x}{6} = 3$