

## What is an Equation and Solution of an Equation



An equation is a mathematical statement that shows that two mathematical expressions are equal. For instance,  $3x + 5 = 14$  is an equation, in which  $3x + 5$  and 14 are two expressions separated by an 'equal' sign.

### Example of an Equation:

$$4y + 2 = 18$$

$$4 \times 2 + 3x - 28 = 0$$

### Solution of an Equation

The value of the variable which makes the equation a true statement is the solution of the equation.



### Let us understand with an example:

**Example:** Verify that  $x = 3$  is the solution of an equation  $4x - 8 = -5 + 3x$

**Solution:** Substitute  $x = 3$  in the given equation

$$\text{LHS: } 4x - 8 = 4(3) - 8 = 12 - 8 = 4$$

$$\text{RHS: } -5 + 3x = -5 + 3(3) = -5 + 9 = 4$$

$$\text{LHS} = \text{RHS}$$

So,  $x = 3$  is the solution of an equation  $4x - 8 = -5 + 3x$ .