

# Introduction to Linear Equations

Created: Wednesday, 20 July 2011 12:02 | Published: Wednesday, 20 July 2011 12:02 | Written by [Super User](#) | [Print](#)

## Equation (H 1)

A statement of equality which involves one or more variables is called an equation. Every equation has two sides, namely, the left hand side (written as L.H.S.) and the right hand side (written as R.H.S.).

In the equation,  $x + 3 = 8$ ,  $x + 3$  is L.H.S. and 8 is R.H.S. The literal numbers involved in an equation are called variables or unknowns. Usually the variables are denoted by letters from the later part of the English alphabet, e.g. x, y, z, u, v, w etc.

An equation may contain any number of variables. The equation  $x^2 - x = 5$  has only one variable whereas in equation  $2x - 3y = 5$  there are two variables x and y.

## Linear Equation (S H 2)

An equation, in which the highest power of the variable is 1 or an equation involving only linear polynomials is called a linear equation.

For example, equations  $3x - 7 = 5$ ,  $3x - 2y = 7$  are linear equations.

The equations  $2x^2 + x = 1$ ,  $y + 5 = y^2$  are not linear equations, because the highest power of the variable in each equation is greater than one.

## Illustration

Write the L.H.S. and the R.H.S. of the following equation:

$$3x = 15 - 2x$$

$$\text{L.H.S.} = 3x$$

$$\text{R.H.S.} = 15 - 2x$$

## Let's Practice:

1. When 6 is added to four times a number, the result is 50.

Step 1: What are we trying to find?

A number.

Step 2: Assign a variable for the number.

Let's call it n.

Step 3: Write down what the variable represents.

Let n = a number

Step 4: Write an equation.

We are told 6 is added to 4 times a number. Since n represents the number, four times the number would be 4n. If 6 is added to that, we get  $6 + 4n$ . We know that answer is 50, so now we have an equation  $6 + 4n = 50$ .

2. Write the following statement in the form of equation - The sum of three times x and 11 is 32

Solution: Three times x is 3x Sum of 3x and 11 is  $3x + 11$ . The sum is 32

The equation is  $3x + 11 = 32$

Try these questions now:

1. When 6 is added to four times a number, the result is 50.

2. The sum of a number and 9 is multiplied by -2 and the answer is -8.

Now try it yourself! Should you still need any help, click here to schedule live online session with e Tutor!

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Reference Links:

<http://en.wikipedia.org/wiki/Variable> (mathematics)

<http://en.wikipedia.org/wiki/Equation>

[http://en.wikipedia.org/wiki/Linear equation](http://en.wikipedia.org/wiki/Linear_equation)

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