BAL BHARATI PUBLIC SCHOOL , PITAMPURA

Class -9

Mathematics

LINEAR EQUATIONS IN TWO VARIABLES (Part – 1)

Guidelines :

Dear Students

Kindly read the content given below and view the links shared for better understanding.

- **Solve the given questions in the yellow register provided in the notebook set.**

Link for the chapter : http://ncert.nic.in/textbook/textbook.htm?jemh1=3-15
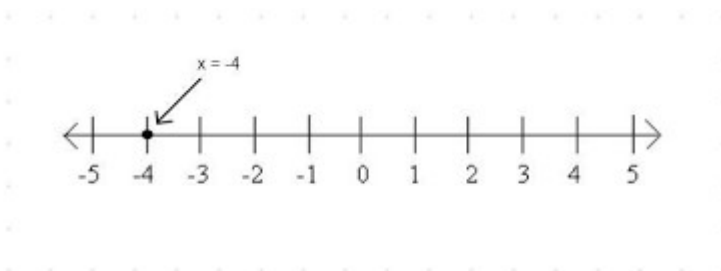
Introduction :

Let us recall that when an equation has only one variable of degree one, then that equation is known as linear equation in one variable.

Example : Consider the equation 2x + 8 = 0

2x = - 8

 x= -8/2 = - 4.

This can be represented on the number line as shown below :

- Standard form: ax + b = 0, where a and b are real numbers and a ≠ 0
- Examples of linear equation in one variable are : 3x − 9 = 0 , − 2t = 5

While solving an equation, you must always keep the following points in mind:

The solution of a linear equation is not affected when:

(i) **the same number is added to (or subtracted from) both the sides of the equation.**
(ii) **you multiply or divide both the sides of the equation by the same non-zero number.**

 Let us now consider the following situation:

The total number of lions and peacocks in a certain zoo is 50. The total number of legs is140.

SOLUTION :

Let the number of lions be **x** and the number of peacocks be **y.**

 The total number of lions and peacocks in a certain zoo is 50.

So, $x + y = 50$

The total number of their legs is 140.
Lion has 4 legs while peacock has 2.
Therefore , $4x + 2y = 140$

$\Rightarrow 2x + y = 70$

which is the required equation. This is an example of a **linear equation in two variables.**

 An equation of the form $ax + by + c = 0$, where a, b, c are real numbers such that a and b not both zero is called a **linear equation in two variables.**

For Example: $2x + 3y + 5 = 0$, where $a = 2, b = 3$ which are not zero. So this is linear equation in two variables.

Example : Write each of the following equations in the form ax + by + c = 0 and indicate the values of a, b and c in each case: (i) 4x + 9y = 4.3   (ii) x – 4 = 3 y   (iii) 5x = y

@Solution : (i) 4x + 9y = 4.3 can be written as 4x + 9y – 4.3 = 0. Here a = 4, b = 9 and c = – 4.3.

(ii)   The equation x – 4 = 3 y can be written as x – 3 y – 4 = 0. Here a = 1, b = – 3 and c = – 4.

(iii)   The equation 5x = y can be written as 5x – y + 0 = 0 . Here a = 5 , b = – 1 , c = 0

Solution of a linear equation : A linear equation in two variables has infinitely many solutions .

Example : Find the solution for the equation 2x + y = 7.

Solution: To calculate the solution of the given equation we will take different values of x :

For x = 0	For x = 1	For x = - 1	For x = 2
2(0) + y = 7	2 (1) + y = 7	2 (-1) + y = 7	2 (2) + y = 7
y = 7	or, y = 7 – 2 = 5	or,(-2) + y = 7	4 + y = 7
Hence,	Hence,	y = 7 + 2 = 9	or,y = 7 - 4
solution is(0, 7).	solution is (1 , 5)	Hence,	y = 3
		Solution is(-1, 9)	Hence,
			Solution is (2, 3)

In the same way , we can find infinite solutions , for a linear equation in two variables.

POINTS TO BE REMEMBERED
- An equation of the form ax **+ by + c = 0** where a, b and c are real numbers such that a and b are not both zero is called a linear equation in two variables.
- A pair of values of x and y which satisfy the equation **ax + by + c = 0** is called a solution of the equation.
- A linear equation in two variables has **infinitely many solutions**.

Important links:

Solutions of Linear equation in two variables:

https://examfear.com/free-video-lesson/Class-9/Maths/Linear-Equations-In-2-Variables/part-4/Linear_Equation_in_2_variables_Part_4_(Solutions).htm

Visit   https://examfear.com/ for further reference.

Following questions to be done in register:

Exercise 4.1 :

Q 1

Q2 (ii) , (iii) , (viii)

Exercise 4.2 :

Q2 (i) , (ii)

Q 4