BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

SUBJECT:- MATHEMATICS

CHAPTER:-3

TOPIC:- (Pair Of Linear Equations In Two Variables)

STEP 1:-   **GUIDELINES AND INTRODUCTION**

Dear students, kindly refer to the following notes/video links for the Chapter- "Pair of Linear Equations in Two Variables" and thereafter do the questions in your math notebook.

(Chapter3 – Part 1)

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

Introduction: A general form of linear equation in two variables is: $ax + by + c = 0$, where a, b and c are real numbers and at least one of a and b is non zero. The solution of such an equation is a pair of values for x and y which make both sides of the equation equal.

The geometrical or graphical representation of a linear equation in two variables is always a straight line. Hence, a pair of linear equations in two variables will be two straight lines which are considered together in the same plane.

If there are two lines in a plane, three cases are possible:

- The two lines will intersect at one point. {Fig.1 (a)}

- They will not intersect, i.e., they are parallel. {Fig.1 (b)}

- The two lines will be coincident. {Fig.1 (c)}

(a)   (b)   (c)
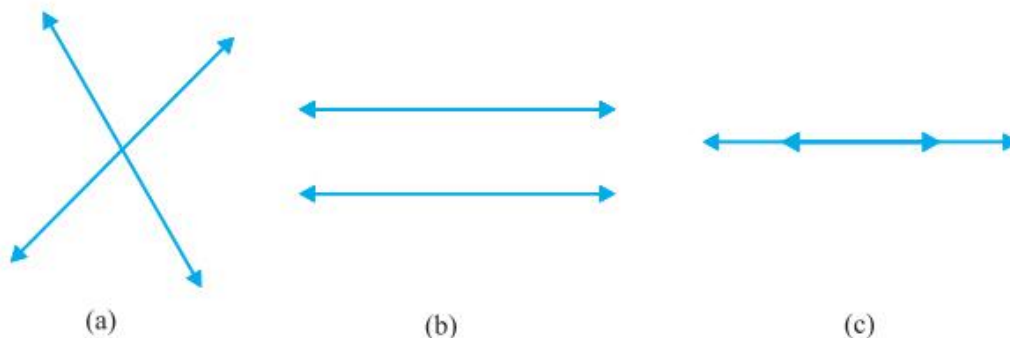
In this chapter we are going to learn about the point of intersection i.e. the common solution of the pair of linear equations, if any.

STEP 2:-

Subtopics:-

   i)   Graphical method of solving a pair of linear equations in two variables.

ii)   Real life application (statement questions) based on a pair of linear equations.

STEP 3:-

Key points and important links for reference:-

1. Recapitulation of linear equation in two variables-

   Refer to the link https://www.youtube.com/watch?v=skC8O86qbKY

2. A pair of linear equations in two variables is said to form a system of simultaneous linear equations in two variables. Example :- **x + 2 y =10**
                                          2x +y =5

   The most general form of a pair of linear equations in two variables is:
    a_1 x +b_1y +c_1 =0
    a_2 x +b_2y +c_2 =0
   Where a_1, , b_1 ,c_1 ,a_2, ,,b_2,, c_2 are real numbers and $a_1{}^2$+ $b_1{}^2$ ≠ 0 and $a_2{}^2$+ $b_2{}^2$ ≠ 0

3. A pair of values of x and y satisfying each of the equation of the given pair is the solution of a pair of linear equations in two variables.

   Refer to this link to enhance your knowledge.
   https://www.youtube.com/watch?v=hZ6-RHL4lB8

5. Framing of a pair of linear equations in two variables:

   https://www.youtube.com/watch?v=ldaSoLWenyo&feature=youtu.be

   https://www.youtube.com/watch?v=D8gPL18CtYI

6. Graphical solution of system of linear equation:

    https://www.youtube.com/watch?v=NPzlCNDEJqA

Without solving , how can we identify whether the system of linear equation /pair of linear equations in two variables represents parallel lines, intersecting lines or coincident lines? The following link will answer this question:

   https://www.youtube.com/watch?v=T7T-z3i49l8

STEP 4:-   Points to Remember

Conditions for solubility (or consistency)
***If a pair of linear equation is given by** $a_1x + b_1y + c_1 = 0$ **and** $a_2x + b_2y + c_2 = 0,$

ASSIGNMENT :-

(Exercise3.1 and 3.2 from NCERT including examples)

MORE QUESTIONS FOR PRACTICE

Pair of linear equation in two variables

1. Express y in terms of x in the expression $3x - 7y = 10$.

2. The point of intersection of the lines x=2 and y= 3 is given by _____.

3. The area of the triangle formed by the line$\dfrac{x}{a} + \dfrac{y}{b} = 1$ and the two coordinate axes is

   a) ab   b)2ab   c) ½ ab   d) ¼ ab

4. The area of the triangle formed by the lines y=x ,x=6 and y=0 is

  a) 36 sq.units   b) 18 sq.units   c) 9 sq.units   d) 72 sq.units.

5. The area of the triangle formed by the lines x=3, y=4 and x=y is

  a) ½ sq.units   b) 1 sq.units   c) 2 sq.units   d)none of these

6. If a pair of linear equations is consistent, their graph lines will be

 a) parallel

 b) always coincident

 c) always intersecting

8. Does the point (2,3) lie on the graph of $3x - 2y = 5$?

9. A pair of linear equations which has a unique solution $x = 2$ and $y = -3$ is
(a) $x + y = 1$ and $2x - 3y = -5$
(b) $2x + 5y = -11$ and $2x - 3y = -22$
(c) $2x + 5y = -11$ and $4x + 10y = 22$

(d) x – 4*y* – 14 = 0 and 5*x* – *y* – 13 = 0

10. If a pair of linear equations in two variables is consistent, the lines represented by two equations are:
(a) Intersecting   (b) Parallel
(c) always coincident   (d)intersecting or coincident

11. For $2x + 3y = 4$, *y* can be written in terms of *x* as _____

12. Solve graphically the pair of linear equations $5x – y = 5$ and $3x – 2y = – 4$
Also find the co-ordinates of the points where these lines intersect *y*-axis.

13. Ram is walking along the line joining (1, 4) and (0, 6)
Rahim is walking along the line joining (3, 4) and (1, 0)
Represent on the graph and find the point where both of them cross each other.

14. Given the linear equation $2x + 3y – 12 = 0$, write another linear equation in these variables, such that geometrical representation of the pair so formed is:
    (i)   Parallel Lines   (*ii*) Coincident Lines

15. If we draw lines of $x = 2$ and $y = 3$,what kind of lines do we get?