



**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 6**

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

**Introduction:** Let us recall all the concepts learnt in this chapter and we will also discuss a few important word problems through links.

**STEP 2:-**

**Subtopics:** i) Overview of the chapter

ii) Attempt the quiz at the end and check your score.

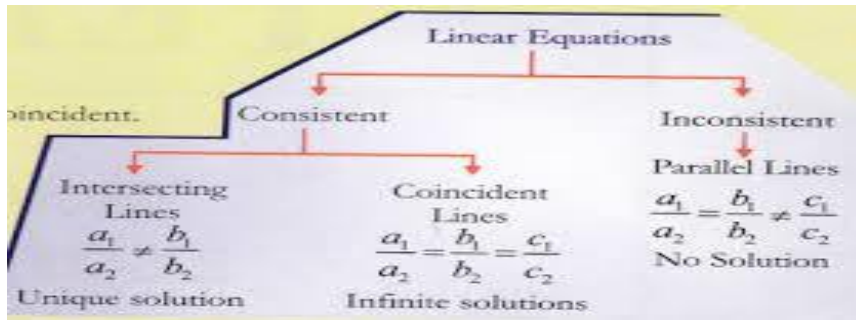
**(Link for quiz given in the assignment.)**

**STEP 3:-**

**Key points and important links for reference**

**Overview of the chapter**

1. To solve a pair of linear equations in two variables, we use
  - i) Graphical Method
  - ii) Algebraic Method
    - a) Substitution Method
    - b) Elimination Method
    - c) Cross Multiplication Method
2. Few pair of equations in two variables can be reduced to a pair of linear equations in two variables. Hence, they can further be solved by any of the methods mentioned above.
3. Let us do a quick recapitulation of all the concepts.



## SUBSTITUTION

Let the equations be

$$a_1x + b_1y + c_1 = 0 \text{ ----- (i)}$$

$$a_2x + b_2y + c_2 = 0 \text{ ----- (ii)}$$

### STEPS

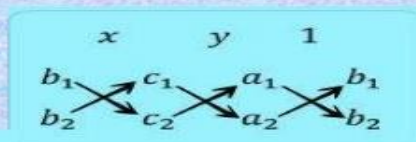
1. Choose either of the two equations, say (i) and find the value of one variable, say 'y' in terms of x
2. Substitute the value of y, obtained in the previous step in equation (ii) to get an equation in x
3. Solve the equation obtained in the previous step to get the value of x.
4. Substitute the value of x and get the value of y.

## CROSS- MULTIPLICATION METHOD

$$a_1x + b_1y + c_1 = 0$$

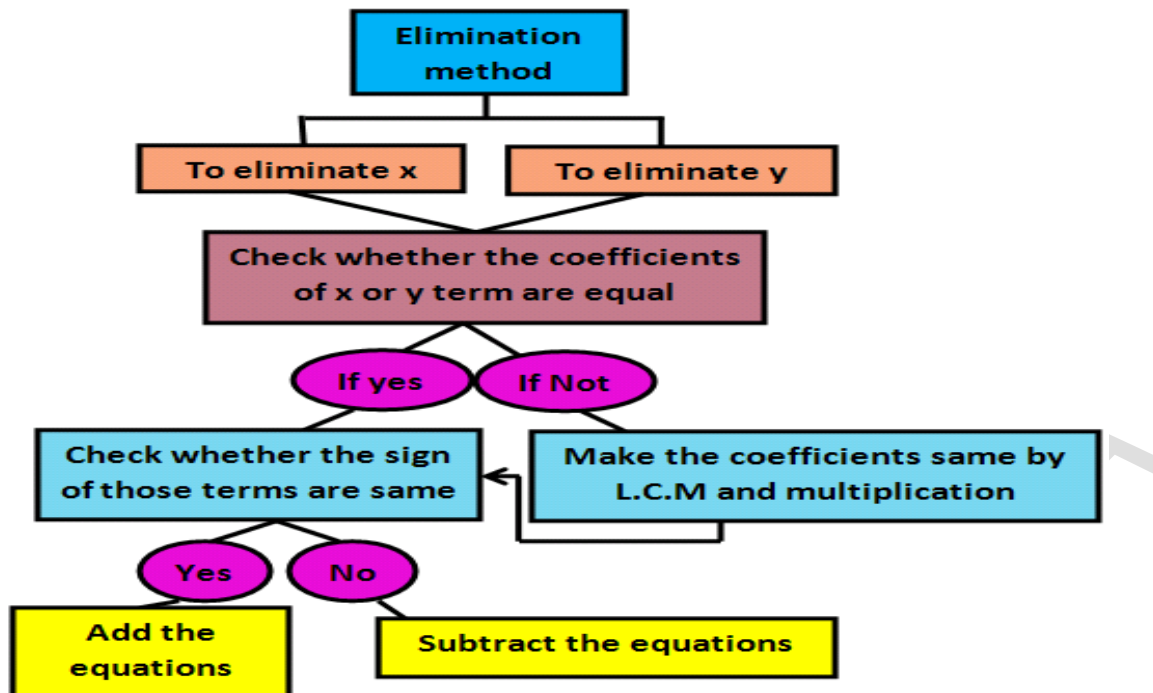
$$a_2x + b_2y + c_2 = 0$$

To solve this pair of equations for x and y using cross-multiplication, we'll arrange the variables and their coefficients  $a_1, a_2$  and  $b_1, b_2$  and the constants  $c_1$  and  $c_2$



$$\Rightarrow x = \frac{b_1c_2 - b_2c_1}{a_1b_2 - a_2b_1}$$

$$\Rightarrow y = \frac{c_1a_2 - c_2a_1}{a_1b_2 - a_2b_1}$$



Go through the following links to understand word problems based on reducible equations thoroughly:

<https://www.youtube.com/watch?v=27v2CLZ-8go> 3.6 Q2 (i)

[https://www.youtube.com/watch?v=jv\\_2xpxmLpE](https://www.youtube.com/watch?v=jv_2xpxmLpE) 3.6 Q2 (ii)

<https://www.youtube.com/watch?v=kS3oxJQmzb8> 3.6 Q2 (iii)

**ASSIGNMENT:** Attempt the quiz by clicking on the following link:

[https://docs.google.com/forms/d/e/1FAIpQLSe6H2vunKY0BWtO17eE1HICWkc\\_sl\\_RacPKpE-TaeAk21KsQw/viewform](https://docs.google.com/forms/d/e/1FAIpQLSe6H2vunKY0BWtO17eE1HICWkc_sl_RacPKpE-TaeAk21KsQw/viewform)

**Attempt these questions in your practice register:**

1. If the lines  $3x + 2ky = 2$  and  $2x + 5y + 1 = 0$  are parallel, then find the value of  $k$ .
2. The sum of the digits of a two digit number is 12. The number obtained by Interchanging the two digits exceeds the given number by 18. Find the number.
3. The sum of the numerator and the denominator of a fraction is 12. If 1 is added to both numerator and denominator, the fraction becomes  $\frac{1}{6}$ . Find the fraction.
4. 4 men and 6 boys can finish a piece of work in 5 days while 3 men and 4 boys can finish it in 7 days. Find the time taken by 1 man alone or by 1 boy alone.
5. A man travels 600km partly by train and partly by car. It takes 8 hours and 40 minutes if he travels 320 km by train and rest by car. It would take 30 minutes more if he travels 200 km by train and the rest by car. Find the speed of the train and car separately.
6. Solve the equations graphically-  $2x+y=2$  and  $2y-x=4$ . Also find the area of the triangle formed by the two lines and  $y=0$

**NOTE-**

Refer to the following links to practise more questions and watch more videos:

**a)**

[https://diksha.gov.in/play/collection/do\\_312796455240941568116824?referrer=utm\\_source%3Ddiksha\\_mobile%26utm\\_content%3Ddo\\_312796455240941568116824%26utm\\_campaign%3Dshare\\_content](https://diksha.gov.in/play/collection/do_312796455240941568116824?referrer=utm_source%3Ddiksha_mobile%26utm_content%3Ddo_312796455240941568116824%26utm_campaign%3Dshare_content)

**b) From Khan Academy Assignments**

<https://www.khanacademy.org/math/in-in-grade-10-ncert>

**c) [www.examfear.com](http://www.examfear.com)**

**d) <http://www.ei-india.com/mindspark-math> (free trial for 60 days )**