

LESSON PLAN (CONSOLIDATED)
SUBJECT: MATHEMATICS
GRADE: X

Chapter Number and Title of Chapter	3 : LINEAR EQUATIONS IN TWO VARIABLES
No. of Periods	Total: 6 periods (approx. 40 min each)
Learning Objectives	Given the content (chapter) the learners will be able to • The student will be able to: • write general form of pair of linear equations in two variables • draw graphs of pair of linear equations in two variable to show that they are parallel, intersecting or coincident • solve a system of equations using graphical method as well as the algebraic method such as substitution , elimination, cross multiplication. • understand the conditions of solvability of pair of linear equations, types of graphs, consistency or inconsistency of pair of linear equation • frame a pair of linear equations in two variables form a given situation and solve the relevant problem •
Teaching Aids / Resources	PPT (Teaching and Explanation) Concept Map Additional Resources URL (Web links)
Previous Knowledge/ Curiosity Questions	This lesson required: • Knowledge of linear equations in one variable $ax+b=0$, $a \neq 0$ and linear equation in two variables $ax+by+c=0$, where a and b together not zero. • Knowledge about coordinate plane, x-axis,y-axis, graphs of linear equation in one variable and linear equations in two variables. Q1. What is difference between equation and expression? Q2. What is the meaning of term linear? Q3. What is the general form of linear equation in one variable and linear equation in two variables? sQ4. How many solutions does a linear equation in two variables have?
Announcement of topic	Q1. What do you understand by pair of linear equations in two variables? Q2. How many solutions does a pair of linear equations in two variables can have? Q3. How do you find the solution to a pair of linear equations in two variables? After getting unsatisfactory response of these questions from the students the teacher will announce today we will learn about PAIR OF LINEAR EQUATIONS IN TWO VARIABLES ; their solutions and different methods to solve (WITH CONCEPT MAP)

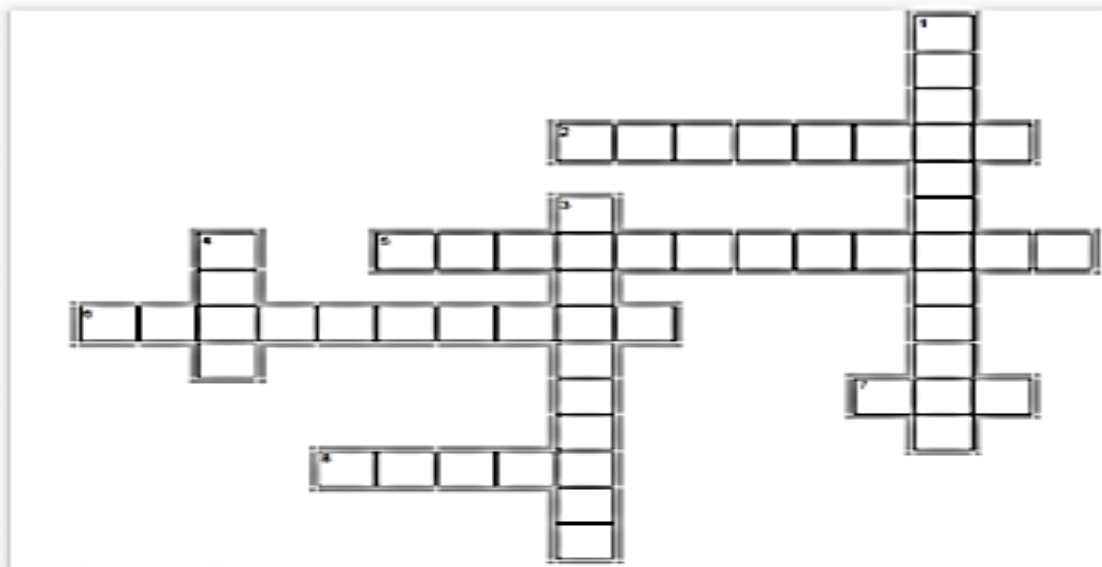
Teaching Methodology/ Strategy	Transaction would proceed in the following manner- Suggestive Methodologies: Inductive-Deductive method Problem solving method Brain Storming / Curiosity Questioning Q1. What do you understand by pair of linear equations in two variables? Q2. How many solutions does a pair of linear equations in two variables can have? Q3. How do you find the solution to a pair of linear equations in two variables? The class would start with a discussion on what the students have already learnt in previous classes and hence what is that they would learn now. They would be told the significance of the topic that they would be studying. Active learning- Concept map, topics to be covered, ppt and digital content would be shared Guided practice followed by individual practice ; NCERT questions and examples to be discussed topic wise in class room along with • MCQ'S; • VERY SHORT ANSWER WITH REASONS ; • SHORT ANSWERS; • LONG ANSWERS; • HOTS from NCERT exemplar. Group learning-. • MATH RELAY • QUIZ • LAB ACTIVITY
Content Obligatory Vocabulary (Keywords)	EQUATION; LINEAR EQUATION; LINEAR EQUATION IN ONE VARIABLE; LINEAR EQUATION IN TWO VARIABLES; PAIR OF LINEAR EQUATION IN TWO VARIABLES; SOLUTION OF EQUATION; GRAPHICAL REPRESENTATION; SUBSTITUTION METHOD; ELIMINATION METHOD; CROSS MULTIPLICATION METHOD
Learning Concepts/ Teaching Points	• Introduction of chapter with concept map and ppt • Linear equation in one variable • Linear equation in two variables • Pair of linear equations in two variables • Solution of pair of linear equations in two variables by algebraic method and graphical method • Solution of pair of linear equations in two variables by substitution method, elimination method ,cross multiplication method • Equations Reducible to a Pair of Linear Equations in Two Variables • Summary of the chapter • Extra questions from ; <i>CBSE EXEMPLAR AND PREVIOUS YEAR QUESTION PAPERS</i>

Hard Spots/ Focus Spots	Word problems on pair of linear equations in two variables. • Word problems related to upstream and downstream. • Word problems related to pipes and water tank or cistern. • Word problems related to speed, distance and time. ➤ They may have trouble picking up clues in word problems because of difficulty in comprehending English. ➤ They face difficulty to figure out what actually they have to do. ➤ They skip important parts due to which they form wrong algebraic equations	
Experiential Content	To verify the conditions for consistency or inconsistency of a pair of linear equations in two variables by graphical method. • $X+Y-7=0$ and $2X-Y+1=0$ • $X-2Y+3=0$ and $4X-8Y+12=0$ • $5X+3Y=30$ and $5X+3Y=1$ Facilitator will ask the learners to list different observation from the graph in observation table. ➤ Construct your own five pair of linear equations using the form $ax+by+c=0$, and solve each of them by using both algebraic and graphical method.	
Subject Enrichment Activities for Internal Assessment	EXPERIENTIAL LEARNING ACTIVITY SUBJECT: MATHEMATICS GRADE: 10th	
	CHAPTER 3	PAIR OF LINEAR EQUATIONS IN TWO VARIABLES
	TOPIC/CONCEPT	Consistent and Inconsistent pair of linear equations
	NAME OF THE ACTIVITY	To verify the conditions for consistency or inconsistency of a pair of linear equations in two variables by graphical method. • $X+Y-7=0$ and $2X-Y+1=0$ • $X-2Y+3=0$ and $4X-8Y+12=0$ • $5X+3Y=30$ and $5X+3Y=1$
	TYPE OF ACTIVITY	Individual
	LEARNING OUTCOME	Students will be able to understand that some pairs of linear equations have : • INTERSECTING LINES (CONSISTENT) having unique solution • COINCIDENT LINES (CONSISTENT) having infinitely many solutions • PARALLEL LINES (INCONSISTENT) having no solution

	PROCEDURE/ METHODOLOGY Consider all the three pairs of linear equations - X+Y-7=0 and 2X-Y+1=0 - X-2Y+3=0 and 4X-8Y+12=0 5X+3Y=30 and 5X+3Y=1 ❖ Draw the graph of each set of pair of linear equation on graph paper ❖ Observe the graphs and check the lines are intersecting, parallel or coincident. ❖ Prepare the observation table OBSEVATION TABLE<table><tr><th>GIVEN EQUATIONS</th><th>$\frac{a_1}{a_2}$</th><th>$\frac{b_1}{b_2}$</th><th>$\frac{c_1}{c_2}$</th><th>Compare the ratios</th><th>Types of lines</th><th>Consistent/ inconsistent</th></tr><tr><td>X+Y-7=0 ; 2X-Y+1=0</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>X-2Y+3=0 4X-8Y+12=0</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5X+3Y=30 5X+3Y=1</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	GIVEN EQUATIONS	$\frac{a_1}{a_2}$	$\frac{b_1}{b_2}$	$\frac{c_1}{c_2}$	Compare the ratios	Types of lines	Consistent/ inconsistent	X+Y-7=0 ; 2X-Y+1=0							X-2Y+3=0 4X-8Y+12=0							5X+3Y=30 5X+3Y=1						
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	QUESTIONS 1. What type of lines we will get if a pair of linear equations is consistent? 2. How many solutions does the pair of X=0 and X=4 have? 3. Two equations in two variables taken together are also called.....																												
	SOLUTIONS/ HINTS 1.intersecting or coincident 2.no solution 3.simultaneous equations																												

Recapitulation :

Solve the following crossword using the clues given below.



Across

2. When two linear equations have no solutions, their graph will represent...
5. A system of equations having no solution
6. A system of equations having at least one solution
7. $2x+3y=5$ and $3x+2y=7$ hassolution(s)
8. Every pair of linear equations in two variables has a solution

Down

1. When a pair of linear equations has a unique solution, their graph will represent...
3. When pair of linear equations has infinite solutions, their graph will represent...
4. $3x+2y=6$ and $6x+4y=12$ hassolution (s)

Assignment:

**QUESTION BANK
CLASS -X
CHAPTER-3
PAIR OF LINEAR
EQUATIONS IN TWO
VARIABLES**