LESSON PLAN 4

CLASS : 9 SUBJECT : MATHEMATICS TEACHER'S NAME :

NAME OF THE UNIT	SUB-TOPICS	NO OF PERIODS REQUIRED			Time line for teaching	
		Teaching	Practice	TOTAL	From	To
LINEAR EQUATIONS IN TWO VARIABLES	4.1 INTRODUCTION	2	2	4		
	4.2 LINEAR EQUATION	2	3	5		
	4.3 SOLUTION OF A LINEAR EQUATION	2	7	9		
	TOTAL	6	12	18		

PRE-REQUISITES & SKILLS

Every Pupil is expected to have basic knowledge and skills in

- # Different Number systems N.W,Z,Q,Q^{1}R
- # four basic operations like +,-,x and ÷
- # Linear equaations in one Variable and finding their solutions by different methods
- # Cartesian Plane and co -ordinate system

Learning Outcomes

After Completion of this lesson every student will be able to

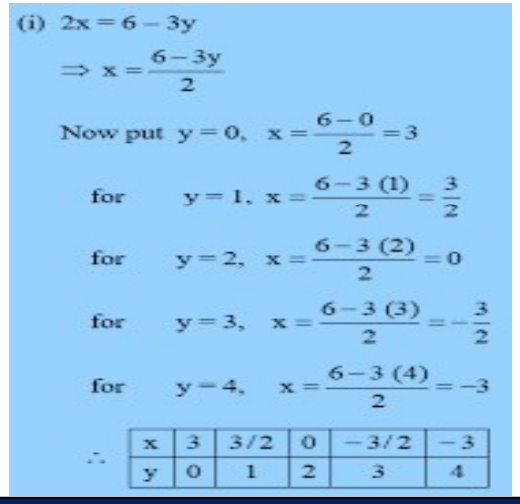
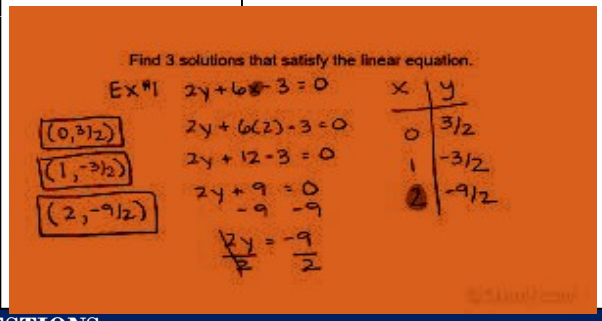
- # express any linear equation in two variables in standard form
- # find any number of solutions to any sort of linear equation in two variables
- # check whether the given pair of co-ordinates is a solution to the given equation or not.
- # utilize the concept of Linear Equations in two variables in real life situations and appreciate its significanace

Teaching Learning Process

INTRODUCTION /INDUCTION	Experience & Reflection
Teacher introduces the chapter of Linear Equations in two variables by citing some real life examples where we use Linear Equations. Teacher casually asks a question to find what could be the cost of a pencil and a pen if Bhaavajna buys 5 Pencils and 4 Pens total at a cost of Rs.60. Here pupils can give different answers like Cost of Each Pencil @4/- and each pen @10/- or each pencil @ 6/- and each pen @ 7.5/- or each pencil @ 2/- and each pen @ 12.5/- Now Teacher asks children how problem can be represented in the form of a linear equation. Here Pupil has a desperate need of writing linear equation in two variables only as those two items are independent.	# Pupils will recollect their knowledge on Linear equations in one variable and utilize that in the current situation of exploring linear equations in two variables and finding solutions # Students will experience the usage of Linear equations in two variables in real life situations.

EXPLICIT TEACHING/TEACHER MODELLING (I DO)	GROUP WORK (WE DO)	INDEPENDENT WORK (YOU DO)	NOTES
4.1. INTRODUCTION Teacher recalls the pupils' knowledge on Linear equations in 1 variable and with the help of that teacher introduces the concept of linear equations in 2 variables by posing some questions of real life which desparately need an equation in 2 variables	Hetrogeneous groups will be formed and each group will be asked to give atleast one solution for a question posed by the teacher. If Vidhijna buys 4 pens and 3 note books @ 130/- then find the value of each pen and each notebook.	Every individual will participate in the activity and each one will give a solution for the problem	1st degree equations having two variables are called Linear Equations in Two variables Ex : 3x+4y= 10 √8 x +√7 y = √10

EXPLICIT TEACHING/TEACHER MODELLING (I DO)	GROUP WORK (WE DO)	INDEPENDENT WORK (YOU DO)	NOTES
4.2 . LINEAR EQUATION Teacher illustrates linear equations in one variable first and asks children to find its solution and represent it on number line and later teacher gives some examples for linear equations in two variables and guides children to generalize the common form of the linear equation in 2 variables	Pupils groups will be given different Linear equations in 2 variables and are asked to frame some more by themselves and now using those examples they will be directed to draw a generalized form of linear equation in two variables Solution of $2x - 5 = 0$ $x = {}^{5}/_{2}$ to represent in on number line  • **Linear Equation in two Variables:** Equation of the form: $ax + by + c = 0$ Here, a, b and c are real numbers, where a and b are not both zero. Example: $2x + 3y - 9 = 0$ is a linear equation of two variables because 2, 3 & -9 are all real numbers and also both $a, b \neq 0$. • There are infinitely many solutions for a linear equation of two variables. • The graph of every linear equation in two variables is a straight line.	Students will solve example sums and sums of exercise 4.1 on their own under the guidance of teacher	The general form of liner equation in two variables is $ax+by+c=0$

EXPLICIT TEACHING/TEACHER MODELLING (I DO)	GROUP WORK (WE DO)	INDEPENDENT WORK (YOU DO)	NOTES
4.3 SOLUTION OF A LINEAR EQUATION Teacher demonstrates the procedure of finding solutions to a linear equation in two variables by some illustrative examples and makes children know that a linear equation in two variables can have any number of solutions.	Children are engaged in finding the Solutions to the linear equations in two variables by giving different values to one variable and will get the value for the other variable' correspondingly  (i) $2x = 6 - 3y$ $\Rightarrow x = \frac{6-3y}{2}$ Now put $y = 0$, $x = \frac{6-0}{2} = 3$ for $y = 1$, $x = \frac{6-3(1)}{2} = \frac{3}{2}$ for $y = 2$, $x = \frac{6-3(2)}{2} = 0$ for $y = 3$, $x = \frac{6-3(3)}{2} = -\frac{3}{2}$ for $y = 4$, $x = \frac{6-3(4)}{2} = -3$ $\therefore$		Students will participate in the activity and will solve the example sums as well as sums of exercise 4.2 on their own under the guidance of teacher 

x	3	3/2	0	−3/2	−3
y	0	1	2	3	4

CHECK FOR UNDERSTANDING QUESTIONS	
1. Factual	1) The general form of a linear equation in two variables is ..... 2) Give some examples of linear equations in two variables
2. Open Ended/Critical Thinking	1) check whether (2,3) is a solution for 2x+3y=13 or not? 2) How many solutions does a linear equation in two variables has? 3) What does a linear equation in 2 variables represent if we plot all of its solutions on a plane?
3.Student Practice questions & Activities	1. Frame atleast 5 linear equations by taking real life examples 2. Find atlest 5 solutions for the linear equation $\sqrt{2}x - \sqrt{3}y = \sqrt{10}$
4. Assessment	Exercise sums and worksheet on Linear equations in two variables