Strand:	Algebra	**Sub-Strand:**	Variables and Equations
Content Standard:	B7.2.3.1 Demonstrate an understanding of linear equations of the form x + a = b (where a and b are integers) by modeling problems as a linear equation and solving the problems concretely, pictorially, and symbolically.		

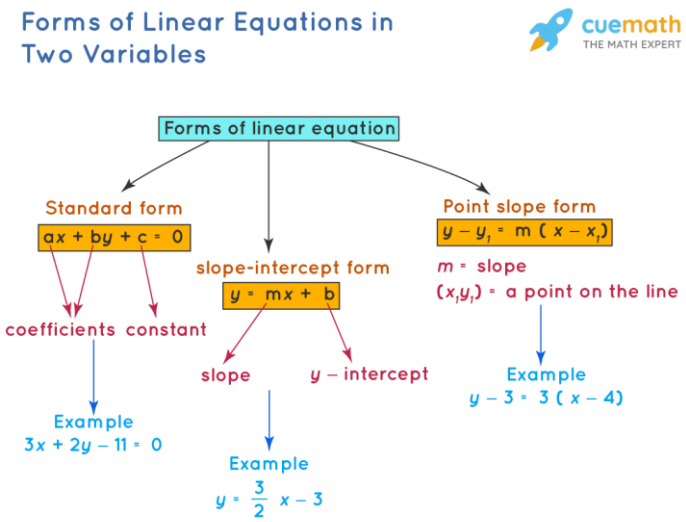
BASIC 7

WEEKLY LESSON PLAN – WEEK 8

Indicator (s)	B7.2.3.1.4 Solve linear equations in one variable		**Performance Indicator** Learners can solve linear equations in one variable.		
Week Ending	01-03-2024				
Class	B.S.7	**Class Size:**		**Duration:**	
Subject	Mathematics				
Reference	Mathematics Curriculum, Teachers Resource Pack, Learners Resource Pack, Textbook.				
Teaching / Learning Resources	Poster, Pictures, Charts, Video.		**Core Competencies:**	• Implement strategies with accuracy • Ability to combine Information and ideas from several sources to reach a conclusion • Implement strategies with accuracy	

DAY/DATE	**PHASE 1 : STARTER**	**PHASE 2: MAIN**	**PHASE 3: REFLECTION**
MONDAY	Write examples of one variable equation on the chalkboard.	1. Learners brainstorm to give examples of one variable equation. 2. Demonstrate solving examples of one variable equation. 3. Assist Learners to solve equations algebraically when the variable appears on both sides of the equation. **Example:** Consider the equation $x - 6 = -2x + 3$. To isolate the variable, we need to get all the variable terms to one side and the constant terms to the other side. Next, we combine like terms and then isolate the variable by multiplying or dividing. Solve $x - 6 = -2x + 3$ **Solution:** Step 1: Get all the variable terms to one side and the constant terms to the other side. $x - 6 = -2x + 3$ $x - 6 + 2x + 6 = -2x + 3 + 2x + 6$ *(Add 2x & 6 to both sides)* Step 2: Combine like terms $2x + x = 3 + 6$ $3x = 9$ Step 3: Divide or multiply to isolate the variable	Learners brainstorm to solve more examples equations with the variable appearing on both sides of the equation. **Exercise;** 1. $5x + 8 = 7x$ 2. $4w + 8 = 6w - 4$ 3. $6(g + 3) = -2(g + 31)$

		3x = 9 *(Divide by 3)* x = 3 **Example:** Consider the equation 6x – 4 = 3x + 2. To isolate the variable, we need to get all the variable terms to one side and the constant terms to the other side. Next, we combine like terms and then isolate the variable by multiplying or dividing. Solve 6x – 4 = 3x + 2 **Solution:** Step 1: Get all the variable terms to one side and the constant terms to the other side. 6x – 4 = 3x + 2 6x – 4 – 3x + 4 = 3x + 2 – 3x + 4 *(Subtract 3x & add 4 to both sides)* Step 2: Combine like terms 6x – 3x = 2 + 4 3x = 6 Step 3: Divide or multiply to isolate the variable 3x = 6 *(Divide by 3)* x = 2 **Check:** 6x – 4 = 3x + 2 *(substitute x = 2 into the original equation)* 6 • 2 – 4 = 3 • 2 + 2 8 = 8	
TUESDAY	Review Learners knowledge on the previous lesson.	1. Learners brainstorm to form examples of equations with two variables. 2. Demonstrate on how to solve equations with two variables. 3. Assist Learners to solve examples of equations with two variables. 4. Discuss with the Learners on how to solve pairs of linear equations in two variables using 5 different methods. **Linear Equations in Two Variables** A linear equation in two variables is of the form Ax + By + C = 0, in which A, B, C are real numbers and x and y are the two variables, each with a degree of 1. If we consider two such linear equations, they are called simultaneous linear equations. For example, 6x + 2y + 9 = 0 is a linear equation in two variables. There are various ways of solving linear equations in two variables like the graphical method, the substitution method, the cross multiplication method,	Through questions and answers, conclude the lesson.

		the elimination method, and the determinant method. A linear equation in two variables can be in different forms like standard form, intercept form and point-slope form. For example, the same equation 2x + 3y=9 can be represented in each of the forms like 2x + 3y - 9=0 (standard form), y = (-2/3)x + 3 (slope-intercept form), and y - 5/3 = -2/3(x + (-2)) (point-slope form). Look at the image given below showing all these three forms of representing linear equations in two variables with examples. 	
THURSDAY	Discuss with the Learners about the fundamental properties of equality and basic algebraic operations	1. Demonstrate on using the balance model to solve linear equations. 2. Learners brainstorm to use the idea of balance to solve simple linear equations. 3. Assist Learners to use the graphical method for solving linear equations to solve equations in two variables. **Graphical Method for Solving Linear Equations in Two Variables** The steps to solve linear equations in two variables graphically are given below: • **Step 1**: To solve a system of two equations in two variables graphically, we graph each equation. To know how, click here or follow steps 2 and 3 below. • **Step 2**: To graph an equation manually, first convert it to the form y = mx+b by solving the equation for y. • **Step 3**: Start putting the values of x as 0, 1, 2, and so on and find the corresponding values of y, or vice-versa. • **Step 4**: Identify the point where both lines meet. • **Step 5**: The point of intersection is the solution of the given system.	Learners brainstorm to use the distributive property to simplify equations with variables on both sides.

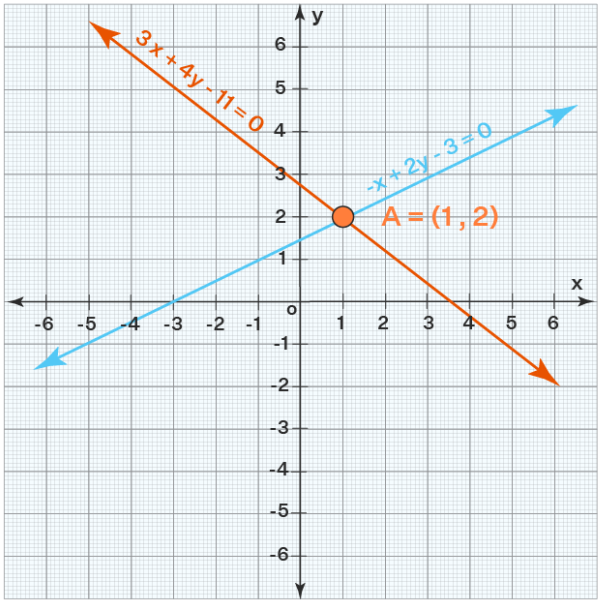
Example: Find the solution of the following system of equations graphically.

-x+2y-3 =0

3x+4y-11=0

Solution: We will graph them and see whether they intersect at a point. As you can see below, both lines meet at (1, 2). Thus, the solution of the given system of linear equations is x=1 and y=2.

Graph of Linear Equations in Two Variables



But both lines may not intersect always. Sometimes they may be parallel. In that case, the pairs of linear equations in two variables have no solution. In some other cases, both lines coincide with each other. In that case, each point on that line is a solution of the given system and hence the given system has an infinite number of solutions.

Consistent and Inconsistent System of Linear Equations:

- If the system has a solution, then it is said to be consistent;
- otherwise, it is said to be inconsistent.

Independent and Dependent System of Linear Equations:

- If the system has a unique solution, then it is independent.
- If it has an infinite number of solutions, then it is

		dependent. It means that one variable depends on the other. Consider a system of two linear equations: $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$. Here we can understand when a linear system with two variables is consistent/inconsistent and independent/dependent.	

Name of Teacher: **School:** **District:**