

**SECOND TERM**  
**WEEKLY LESSON NOTES**  
**WEEK 3**

<b>Week Ending:</b> 26-01-2024	<b>DAY:</b>	<b>Subject:</b> Mathematics																	
<b>Duration:</b> 60MINS		<b>Strand:</b> Algebra																	
<b>Class:</b> B9	<b>Class Size:</b>	<b>Sub Strand:</b> Patterns and Relations																	
<b>Content Standard:</b> B9.2.1.1 Demonstrate the ability to construct tables of values for pairs of linear relations, graph the relations in a number plane and determine the intersection of the lines to solve simultaneous linear equations		<b>Indicator:</b> B9.2.1.1.1 Construct a table of values for two linear relations and graph the relation.	<b>Lesson:</b> 1 of 1																
<b>Performance Indicator:</b> Learners can o graph linear relations on a coordinate plane and interpret the slope and y-intercept of a graph.		<b>Core Competencies:</b> Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)																	
<b>References:</b> Mathematics Curriculum Pg. 180																			
<b>New words:</b> values, relation, linear, relations, graph																			
<b>Phase/Duration</b>	<b>Learners Activities</b>	<b>Resources</b>																	
<b>PHASE 1: STARTER</b>	<p>Review the concept of linear relationships, emphasizing that they represent a constant rate of change.</p> <p>Introduce the terms "table of values" and "graph of a linear relation."</p> <p>Share performance indicators and introduce the lesson.</p>																		
<b>PHASE 2: NEW LEARNING</b>	<p>Explain how to create a table of values by choosing input values (x) and calculating corresponding output values (y) using the given equation or rule.</p> <p>Demonstrate with an example, such as <math>y = 2x + 1</math>.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>x</th> <th>2x-3</th> <th>y</th> <th>Ordered pairs</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>2(-1) -3</td> <td>-5</td> <td>(-1,-5)</td> </tr> <tr> <td>1</td> <td>2(1) -3</td> <td>-1</td> <td>(1,-1)</td> </tr> <tr> <td>3</td> <td>2(3) -3</td> <td>3</td> <td>(3,3)</td> </tr> </tbody> </table> <p>Three solutions to the equation <math>y = 2x + 1</math> are; (-1,-5) (1,-1) (3,3)</p>	x	2x-3	y	Ordered pairs	-1	2(-1) -3	-5	(-1,-5)	1	2(1) -3	-1	(1,-1)	3	2(3) -3	3	(3,3)	Graph paper, Rulers, Real-world examples of linear relationships (e.g., distance vs. time, cost vs. quantity)	
x	2x-3	y	Ordered pairs																
-1	2(-1) -3	-5	(-1,-5)																
1	2(1) -3	-1	(1,-1)																
3	2(3) -3	3	(3,3)																

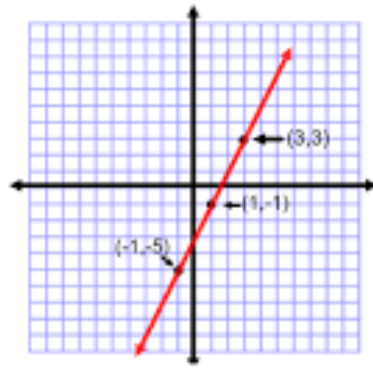
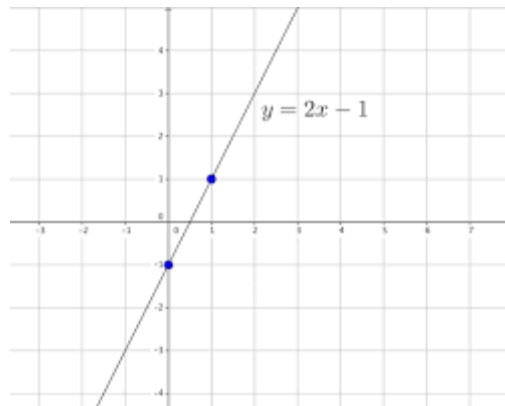


table of values for  $y = 2x + 1$

Guide learners through the process of graphing linear relations on a coordinate plane.

Emphasize labeling the axes and choosing appropriate scales. Demonstrate how to plot points from a table of values and connect them with a straight line.



Discuss the characteristics of graphs of linear relations (always straight lines).

Introduce the concept of slope as the "steepness" of the line and the y-intercept as the point where the line crosses the y-axis.

Demonstrate how to calculate slope using the rise-over-run formula ( $m = (y_2 - y_1) / (x_2 - x_1)$ ).

Explain how the y-intercept can be found by setting  $x = 0$  in the equation.

Provide learners with various equations and real-world scenarios involving linear relations.

Have them create tables of values, graph the relations, and interpret the slope and y-intercept.

Example 1: Copy and complete the table of values for the relations

$$y_1 = -x + 5 \text{ and } y_2 = \frac{1}{2}x - 3 \text{ for } x \text{ from } -4 \text{ to } 3$$

x	-3	-2	-1	0	1	2	3
$y_1 = -x + 5$	8				4		
$y_2 = \frac{1}{2}x - 3$		-4					-1.5

Solution

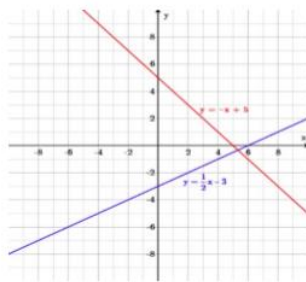
x	-3	-2	-1	0	1	2	3
$y_1 = -x + 5$	8	7	6	5	4	3	2
$y_2 = \frac{1}{2}x - 3$	-4.5	-4	-3.5	-3	-2.5	-2	-1.5

Assessment

1. Copy and complete the table of values for the relations  $x - 2y = -2$  and  $x - 2y = 2$  for  $x$  from -2 to 2

x	x	-2	-1	0	1
$x - 2y = -2$	$y_1 = -x + 5$	0			4
$x - 2y = 2$	$= (x - 2)/2$		$-1\frac{1}{2}$		

2. Draw graph for two linear relations



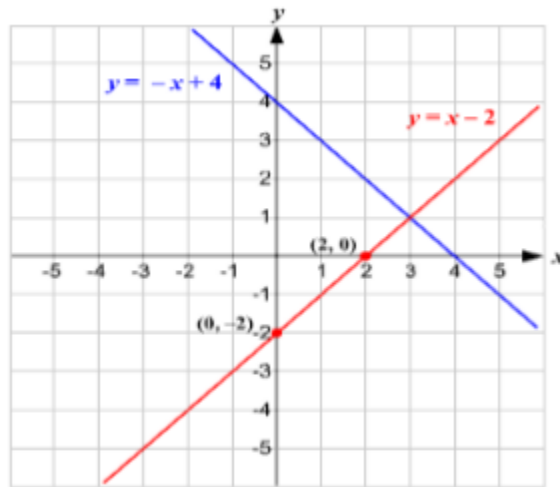
**PHASE 3:  
REFLECTION**

Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.

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<b>Content Standard:</b> B9.2.1.1 Demonstrate the ability to construct tables of values for pairs of linear relations, graph the relations in a number plane and determine the intersection of the lines to solve simultaneous linear equations		<b>Indicator:</b> B9.2.1.1.2 Use graphs of two linear relations to determine subsequent missing elements in ordered pairs of the relation
		<b>Lesson:</b> 1 of 1
<b>Performance Indicator:</b> Learners can interpret and analyze graphs of linear relations to determine missing elements in ordered pairs.		<b>Core Competencies:</b> Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
<b>References:</b> Mathematics Curriculum Pg. 181		
<b>New words:</b>		
<b>Phase/Duration</b>	<b>Learners Activities</b>	<b>Resources</b>
<b>PHASE 1: STARTER</b>	Briefly review key concepts from previous lessons: linear relationships, tables of values, graphs, slope, and y-intercept.  Engage learners with a quick graphing activity to refresh their skills.  Share performance indicators and introduce the lesson.	
<b>PHASE 2: NEW LEARNING</b>	Display a graph of a linear relation with several ordered pairs plotted, but some missing elements (e.g., (2, ?), (?, 6)).  Challenge learners to determine the missing values using only the graph's information.  Guide learners to use the graph's patterns and characteristics to predict missing elements: <ul style="list-style-type: none"> <li>Emphasize the constant rate of change (slope).</li> <li>Encourage them to visualize the line extending beyond plotted points.</li> <li>Demonstrate how to use slope to "count up" or "count down" to find missing y-values.</li> <li>Show how to trace back to the y-axis to find missing x-values.</li> </ul> Provide opportunities for learners to practice with various graphs and missing elements.  Divide learners into pairs or small groups.  Distribute a set of graphs with different missing elements to each group.  Task them with working together to determine the missing values and justify their reasoning.	Graph paper, Rulers

Example: Find the missing elements of ordered pairs on graphs of two linear relations.



The graph below is drawn from two linear relations:

$$y = -x + 4$$

$$y = x - 2$$

- i. Determine the coordinates for the intersection of the two lines.
- ii. Determine the corresponding values for  $y$  for both straight lines if  $x = -1$ .
- iii. Use the graph to find the values for  $y$  for the two relations

X	6-3	7-2	8-1	9-0	1	2
$y = -x + 4$						
$y = x - 4$						

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