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DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 3
Lesson
5

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Lesson Exemplar for Mathematics Grade 8
Quarter 3: Lesson 5 (Week 5)
SY 2025-2026

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Development Team

Writer:
- Argiel L. Agapay (Liliw National High School)

Validator:
- Ysmael V. Caballas (Philippine Normal University – South Luzon)

Management Team

Philippine Normal University
Research Institute for Teacher Quality
SiMERR National Research Centre

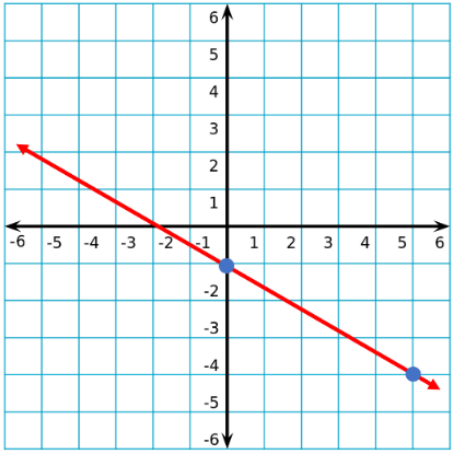
Every care has been taken to ensure the accuracy of the information provided in this material. For inquiries or feedback, please write or call the Office of the Director of the Bureau of Learning Resources via telephone numbers (02) 8634-1072 and 8631-6922 or by email at blr.od@deped.gov.ph.

MATHEMATICS / QUARTER 3 / GRADE 8

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of linear equations in two variables and their graphs.
B. Performance Standards	By the end of the quarter, the learners are able to graph linear equations in two variables.
C. Learning Competencies and Objectives	***Learning Competencies*** The learners find the equation of the line. ***Learning Objectives*** By the end of the lesson, the learners are expected to determine the equation of a line given its: a. slope and y-intercept; b. slope and point in the line; c. two points of the line; and d. x-intercept and y-intercept.
D. Content	**Equation of a Line**
E. Integration	None

II. LEARNING RESOURCES
Admin. (2022, July 21). Different forms of an Equation of a Line - Explained with Graph. BYJUS. https://byjus.com/maths/different-forms-of-the-equation-of-line/ Third Space Learning. (2024, April 13). Equation of a Line - GCSE Maths - Steps, Examples & Worksheet. https://thirdspacelearning.com/gcse-maths/algebra/equation-of-a-line/

<table>
<tr><th colspan="2">III. TEACHING AND LEARNING PROCEDURE</th><th>NOTES TO TEACHERS</th></tr>
<tr><td>A. Activating Prior Knowledge</td><td>
DAY 1
1. Short Review
Activity 1: Do You Remember?
Let the learners transform the following linear equations into slope-intercept form and identify its slope and y-intercept.
<table>
<tr><th>Given</th><th>Slope-intercept form</th><th>m</th><th>y-intercept</th></tr>
<tr><td>a. 3x – y = 9</td><td></td><td></td><td></td></tr>
<tr><td>b. -10x + 5y = 15</td><td></td><td></td><td></td></tr>
<tr><td>c. 3x + 2y – 12 = 0</td><td></td><td></td><td></td></tr>
<tr><td>d. 4x – y – 1 = 0</td><td></td><td></td><td></td></tr>
<tr><td>e. 3x + 5 = 9y</td><td></td><td></td><td></td></tr>
</table>
2. Feedback (Optional)
</td><td>
This activity is intended to recall the concept of transforming linear equations into slope-intercept form as well as identifying the slope and y-intercept.

Answer:
a. $y = 3x - 9;\ 3;\ -9$
b. $y = 2x + 3;\ 2;\ 3$
c. $y = -\frac{3}{2}x + 6\ ;-\frac{3}{2}\ ;6$
d. $y = 4x - 1\ ;4\ ;\ -1$
e. $y = \frac{1}{3}x + \frac{5}{9};\ \frac{1}{3}\ ;\ \frac{5}{9}$
</td></tr>
<tr><td>B. Establishing Lesson Purpose</td><td>
1. Lesson Purpose
Activity 2: Let's Explore
Let the learners analyze the graph below and answer the questions that follow.


</td><td>
Activity 2 is intended to give the learners an idea of how to obtain the equation of a line

You may also add other questions if necessary.
</td></tr>
</table>

	Guide Questions: 1. What is the y-intercept and slope of the line in the graph? 2. Express the equation of the line in the graph in its slope-intercept form? 3. What will be the standard form of the equation of the line in the graph? 4. Do you think there are other ways of obtaining the equation of the line in the graph? **2. Unlocking Content Vocabulary** ● **Linear Equation** is a first-degree equation whose graph is a line. ● **Slope** is the ratio of rise and run. It also determines the steepness of a line. It is denoted by **m**. ● **Intercepts** are points in a cartesian plane where the graph of a linear equation and the axes intersects. The point where it intersects in the x-axis is the x-intercept while the point where it intersects in the y-axis is called y-intercept. ● **Ordered Pair** represents the location of a point in a cartesian plane. The first value is the x-coordinate or abscissa while the second value is the y-coordinate or ordinate.	**Answer:** 1. -1, m=-3/5 2. $y = -\frac{3}{5}x - 1$ 3. 3x + 5y = -1 4. Yes.
C. Developing and Deepening Understanding	**DAY 2-3** **1. Explicitation** Recall that the standard form of an equation of a line is expressed as, ax + by = c where a, b and c are real numbers and a≠0 and b≠0. We will use this form in expressing the equation of the line given the following situations. a. If the slope and y-intercept is given, we can use **slope-intercept form** $y = mx + b$ where: m= slope b = y-intercept b. If the slope and a point in the line is given, we can use the **point-slope form** $y - y_1 = m(x - x_1)$ where: m= slope x_1 = x- coordinate of the point y_1 = y-coordinate of the point	

c. If two points of the line is given, we can use the **two-point form**

$$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$$

where: x_1 = x- coordinate of the first point
y_1 = y-coordinate of the first point
x_2 = x- coordinate of the second point
y_2 = y-coordinate of the second point

d. If the x-intercept and y-intercept of the line is given, we can use the **intercepts form**

$$\frac{x}{a} + \frac{y}{b} = 1$$

where: a = x- intercept
b = y-intercept

2. Worked Example

Example 1: Express in standard form the equation of a line with slope of 5 and y-intercept of 3.

Solution: From the problem, we are given m=5 and y-intercept=3, hence we will use the slope-intercept form

$y = mx + b$ *slope-intercept form*
$y = 5x + 3$ *substitution*
$-5x + y = 3$
$(-1)(-5x + y) = (3)(-1)$ *multiplying both sides by -1*
$5x - y = -3$ *standard form*

Thus, the equation of the line is $5x - y = -3$.

Example 2: Find the equation of the line passing through the point (5, -2) with a slope of 2/3.

Solution: From the problem, we are given (5, -2) and m=2/3, hence we will use the point-slope form

$y - y_1 = m(x - x_1)$ *point-slope form*
$y + 2 = \frac{2}{3}(x - 5)$ *substitution*

You may also add more examples if needed.

$$3[y+2] = \left[\frac{2}{3}(x-5)\right]3$$ *multiplying both sides by 3 to eliminate denominator*

$$3y + 6 = 2(x-5)$$
$$3y + 6 = 2x - 10$$
$$-2x + 3y = -10 - 6$$ *isolating terms with variables and constants*

$$-2x + 3y = -16$$
$$(-1)(-2x + 3y) = (-16)(-1)$$ *multiplying both sides by -1*
$$2x - 3y = 16$$ *standard form*

Thus, the equation of the line is $2x - 3y = 16$.

Example 3: What is the standard form of the equation of the line passing through the points (-4, 3) and (2, 5)?
Solution: From the problem, we are given (-4, 3) and (2, 5), hence we will use the two-point form

$$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$$ *two-point form*

$$y - 3 = \frac{5-3}{2+4}(x + 4)$$ *substitution*

$$y - 3 = \frac{2}{6}(x+4)$$
$$y - 3 = \frac{1}{3}(x+4)$$ *expressing the slope in its lowest term*

$$3[y-3] = \left[\frac{1}{3}(x+4)\right]3$$ *multiplying both sides by 3 to eliminate denominator*

$$3y - 9 = 1(x+4)$$
$$3y - 9 = x + 4$$
$$-x + 3y = 4 + 9$$ *isolating terms with variables and constants*

$$-x + 3y = 13$$
$$(-1)(-x + 3y) = (13)(-1)$$ *multiplying both sides by -1*
$$x - 3y = -13$$ *standard form*

Thus, the equation of the line is $x - 3y = -13$.

Example 4: Find the equation of the line passing through the point (-5, 0) and (0, 3).

Solution: From the problem, we are given (-5, -0) and (0, -3) or x-intercept=-5 and y-intercept=-3, hence we will use the intercepts form

$$\frac{x}{a}+\frac{y}{b}=1 \qquad \textit{intercepts form}$$

$$\frac{x}{-5}+\frac{y}{-3}=1 \qquad \textit{substitution}$$

$$15\left(\frac{x}{-5}+\frac{y}{-3}\right)=(1)15 \qquad \textit{multiplying both sides by their LCD to eliminate denominator}$$

$$-3x-5y=15$$

$$(-1)(-3x-5y)=(15)(-1) \qquad \textit{multiplying both sides by -1}$$

$$3x+5y=-15 \qquad \textit{standard form}$$

Thus, the equation of the line is $3x+5y=-15$.

3. Lesson Activity

Activity 3: Try This!

Let the learners analyze and solve each problem.

1. Find the standard form of the equation of a line with a slope of 0 and passing through the point (5, 4).
2. What is the standard form of the equation of the line passing through points (-2, -3) and (-1, 2)?
3. Express in standard form the equation of a line with slope of 2/5 and y-intercept of -8.
4. Find the standard form of the equation of the line passing through the point (7, 0) and (0, -2).
5. Find the equation of the line joining the point (2, -1) and the midpoint of the line segment from (5,3) to (1, -1).

Rubrics (Max of 3 points for each item)

Score	Indicator/s
3	Provided a complete solution with the correct procedure and arrived at the correct answer.
2	Provided a complete solution with minor errors in the procedure but still arrive at the correct answer.

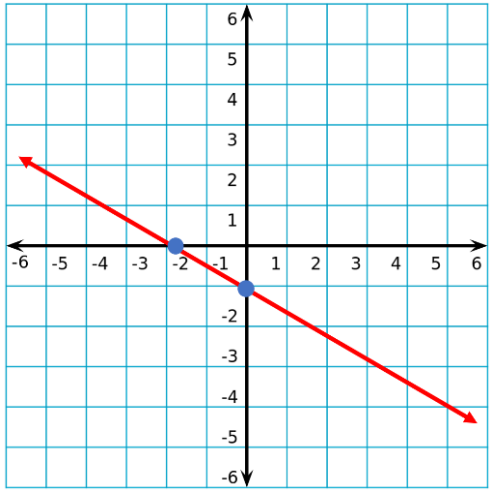
Provide enough time for the learners to accomplish this activity.

You may adjust the indicated time in the worksheet for this activity if necessary.

Answer Key:

1. y=4
2. 5x – y =-7
3. 2x – 5y = 40
4. 2x – 7y = 14
5. 2x – y = 5

	<table><tr><td>1</td><td>Provided an incomplete with major error in the procedures and did not arrive at the correct answer.</td></tr><tr><td>0</td><td>Did not attempt to solve the problem.</td></tr></table>	
D. Making Generalizations	**DAY 4** **Learners' Takeaways and Reflection on Learning** **Activity 4: Closing the Loop!** Instruction: Let the learners answer the following questions. 1. What are the key concepts of our lesson? 2. Which part of the lesson is the easiest for you? Why? 3. Which part of the lesson is the hardest for you? Why? 4. How are we as a class today?	The activity is intended to determine what the learners have learned as well as to give feedback to their experiences during the lesson. Allot enough time to listen and process the responses of your learners. You may also add questions if needed.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**1. Formative Assessment** **Activity 5: Let's Solve It!** Instruction: Let the learners analyze the graph below and answer the questions that follow.  Find the standard form of the equation of the line in the graph by using the following:	Answer Key: x + 2y = -2

a. slope-intercept form
b. point-slope form
c. two-point form
d. intercepts form

Rubrics (Max of 3 points for each item)

Score	Indicator/s
3	Provided a complete solution with correct procedure and arrived at the correct answer.
2	Provided a complete solution with minor error in the procedure but still arrive at the correct answer.
1	Provided an incomplete with major error in the procedures and did not arrive at the correct answer.
0	Did not attempt to solve the problem.

2. Homework (Optional)

B. Teacher's Remarks

Note observations on any of the following areas:	**Effective Practices**	**Problems Encountered**
strategies explored		
materials used		
learner engagement/ interaction		
others		

The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement, and other related stuff.

Teachers may also suggest ways to improve the different activities explored/lesson exemplar.

C. Teacher's Reflection

Reflection guide or prompt can be on:

Teacher's reflection in every lesson conducted/facilitated is

	• *<u>principles behind the teaching</u>* *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* • *<u>students</u>* *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* • *<u>ways forward</u>* *What could I have done differently?* *What can I explore in the next lesson?*	essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.