8

# Lesson Exemplar for Mathematics

Quarter 3

Lesson

6

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**Lesson Exemplar for Mathematics Grade 8**
**Quarter 3: Lesson 6 (Week 6)**
**SY 2025-2026**

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**MATHEMATICS / QUARTER 3 / GRADE 8**

| I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES | |
|---|---|
| **A. Content Standards** | The learners demonstrate knowledge and understanding of systems of linear equations in two variables. |
| **B. Performance Standards** | By the end of the quarter, the learners are able to solve a system of linear equations graphically and algebraically. (NA) |
| **C. Learning Competencies and Objectives** | ***Learning Competencies***<br>At the end of the lesson, the learners are able to:<br>**1. define and illustrate a system of linear equations in two variables.**<br>*Lesson Objective 1: Use real-life situations to illustrate a system of linear equations in two variables.*<br>*Lesson Objective 2: Define a system of linear equations in two variables.*<br><br>**2. solve a system of linear equations (with integer solutions) by graphing.**<br>*Lesson Objective 1: Solve systems of linear equations in two variables by graphing.*<br><br>**3. classify the types of systems of linear equations based on the number of solutions.**<br>*Lesson Objective 1: Identify the kind of system of linear equations based on its graph.*<br>*Lesson Objective 2: Recognize the number of solutions given the graph of systems of linear equations in two variables.*<br><br>**4. solve algebraically a system of linear equations in two variables:**<br>**a) by elimination**<br>**b) by substitution**<br>*Lesson Objective 1: Solve systems of linear equations by using elimination method.*<br>*Lesson Objective 2: Solve systems of linear equations by using substitution method.* |
| **D. Content** | 1. Define and illustrate a system of linear equations in two variables.<br>2. Solve a system of linear equations by:<br>a) graphing<br>b) elimination<br>c) substitution<br>3. Classify the types of systems of linear equations based on the number of solutions. |
| **E. Integration** | |

## II. LEARNING RESOURCES

Color by Number Spring | Coloring worksheets for kindergarten, Preschool activities, Preschool coloring pages. (n.d.). Pinterest. https://www.pinterest.ph/pin/839428818021478685/

G. Bernabe, J., Jose Dilao, S., & B. Orines, F. (2009). Intermediate Algebra Textbook for Second Year (Revised). SD Publications, Inc.

Nivera, G., PhD. (2018). Grade 8 Mathematics Patterns and Practicalities. Salesiana Book by Don Bosco Press Inc.

O. Oronce, O., & O. Mendoza, M. (2007). e-math II Intermediate Algebra (First). Rex Book Store, Inc.

Paige, A., & Paige, A. (2024, May 6). 117 Best Riddles for Kids (With Answers). SplashLearn Blog – Educational Resources for Parents, Teachers & Kids. https://www.splashlearn.com/blog/50-best-riddles-for-kids-of-all-grades-with-answers/#1-27-easy-and-funny-riddles-with-answers-for-kids-

Premium Vector | Young man making fist pump winner gesture with arms raised smiling and shouting for victory. (2022, January 25). Freepik. https://www.freepik.com/premium-vector/young-man-making-fist-pump-winner-gesture-with-arms-raised-smiling-shouting-victory_22701391.htm

Systems of Equations Elimination. (2012). *Systems of Equations Elimination.pdf*. https://cdn.kutasoftware.com/Worksheets/Alg1/Systems%20of%20Equations%20Elimination.pdf

## III. TEACHING AND LEARNING PROCEDURE

**A. Activating Prior Knowledge**

**DAY 1**

**1. Short Review**

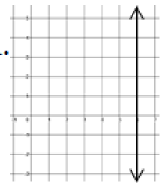
A. Direction: Choose the letter of the correct answer:

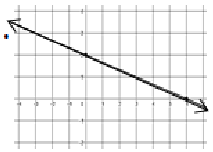
1. Which of the following is a linear equation written in standard form?

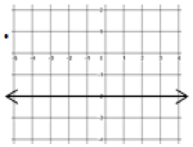
A. 2x = 5 + 3y C. x – 5y = 10

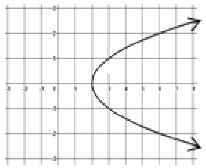
B. 4x = -5y D. $6x - 2 = \frac{3}{y}$

2. All are graphs of linear equations EXCEPT:

A. 

B. 

C. 

D. 

3. Find the solution of the linear equation 2x + 3y = 6.

A. (3,0) C. (-3,-2)

B. (2,0) D. (-2,-3)

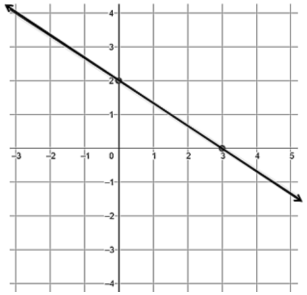
### NOTES TO TEACHERS

**Answers:**

A.
1. C
2. D
3. A
4. B
5. C
6. B

B.

7. YES
8. NO
9. YES
10. YES

<table>
<tr>
<td></td>
<td>Given:<br><br>4. What is the x-intercept of the graph?<br>A. (2,0) B. (3,0) C. (0,2) D. (0,3)<br><br>5. What is the y-intercept of the graph?<br>A. (2,0) B. (3,0) C. (0,2) D. (0,3)<br><br>6. The slope of the line is ___.<br>A. $\frac{2}{3}$ B. $-\frac{2}{3}$ C. $\frac{3}{2}$ D. $-\frac{3}{2}$<br><br>B. Determine whether the given ordered pair is a solution of the linear equations below. Write YES if the ordered pair is a solution and NO if the ordered pair is not a solution to the linear equation.<br>7. 5x+3y=15;(-3,10) 9. 2x+y=5; (2,1)<br>8. 3x+3y=9; (1,3) 10. 3x-2=y; (0,-2)<br><br>2. Feedback (Optional)</td>
<td></td>
</tr>
<tr>
<td>B. Establishing Lesson Purpose</td>
<td>1. Lesson Purpose<br>Coins in Gavin's Hands<br><br>Guess how many coins are there in each hand of Gavin. Here are clues:<br>1) He has 10 coins in all.<br>2) There are four more coins on his left hand than on his right hand.<br><br>1. If x represents the number of coins on Gavin's right hand and y represents the number of coins on Gavin's left hand, what equation can be formed in clue #1?<br>2. Using the same representation in #1, what equation can you form from clue #2?<br>3. How many equations can be formed to solve the problem?<br>4. Is it possible to find the correct number of coins if two equations are used for the problem?</td>
<td>Answers:<br>1. x + y 10<br>2. y = x + 4 or x = y - 4<br>3. 2<br>4. Yes</td>
</tr>
</table>

Two or more equations considered together for a system of linear equations. The equations x + y = 10 and y = x + 4 is a system of linear equations.

2. **Unlocking Content Vocabulary**

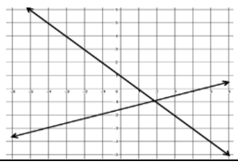
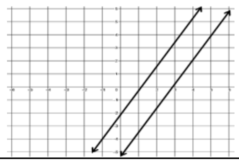
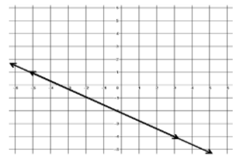
**SYSTEM OF LINEAR EQUATIONS** – two or more linear equations made up of two or more variables such that all equations in the system are considered simultaneously.

**SYSTEM OF LINEAR EQUATIONS** – a pair of equations of the form :

$$a_1x + b_1y = c_1, \text{ where } a_1, b_1 \text{ are not both } 0$$
$$a_2x + b_2y = c_2, \text{ where } a_2, b_2 \text{ are not both } 0$$

**SOLUTION** (to a system of linear equations) – ordered pair that satisfies all conditions of the system of equations.

**KINDS OF SYSTEM OF LINEAR EQUATIONS**

| Kind | Graph | Number of Solution |
|---|---|---|
| 1. CONSISTENT AND INDEPENDENT | The graphs form intersecting lines.  | One.<br>It is the point of intersection of the system. |
| 2. INCONSISTENT | The graphs form parallel lines.  | No solution. |
| 3. CONSISTENT AND DEPENDENT | The graphs coincide.  | Infinite number of solutions. |

Note: Give emphasis that since the lesson is new to the learners, only two equations will be used as system of linear equations.

**C. Developing and Deepening Understanding**

**SUB-TOPICS:**

**2. Solve a system of linear equations (with integer solutions) by graphing.**

**3. Classify the types of systems of linear equations based on the number of solutions.**

**1. Explicitation**

In your previous lessons, you learned how to graph linear equations. You can either use the Intercept Method or the Slope-Intercept Method to easily determine the graph of the equation.

This time, using the equations in “Coins in Gavin’s Hand”, graph the equation x + y = 10 using the intercept method.

Given: x + y = 10

To find the x–intercept, let y = 0

$$x + y = 10$$
$$x + (0) = 10$$
$$x = 10$$

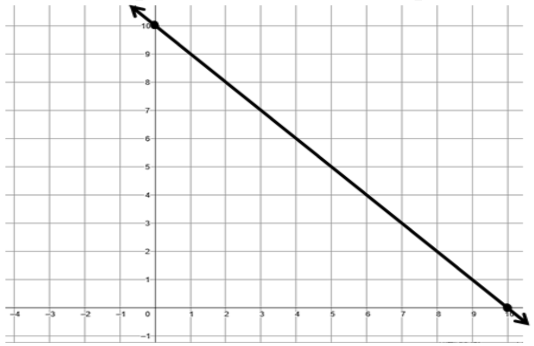
Therefore, x – intercept is 10 or (10,0).

To find the y–intercept, let x = 0

$$x + y = 10$$
$$(0) + y = 10$$
$$y = 10$$

Therefore, y – intercept is 10 or (0,10).

Plot the x-intercept and the y-intercept in the Cartesian plane.



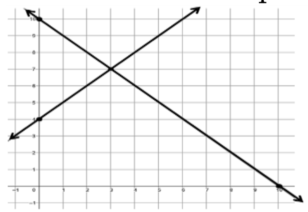
This time, graph the remaining equation y = x + 4. For this equation, it is easier to graph if you use the Slope-Intercept Method. Use the same Cartesian plane for the second equation.

Plot the slope and the y-intercept on the same Cartesian plane.

Given: y = x + 4

slope = 1 or $\frac{1(rise)}{1(run)}$

y-intercept = 4 or (0,4)



**Questions:**

1. What can you say about the graphs of the equations in the “Coins in Gavin’s Hands”?
2. Do the graphs of the linear equations x + y = 10 and y = x + 4 intersect at a point?
3. What do you think is their point of intersection?
4. If the intersection is (3,7), the abscissa or the x-coordinate represents the number of coins in Gavin’s right hand, while the ordinate represents the coins in Gavin’s left hand. How many coins are there in each of Gavin’s hands?
5. Do your answers satisfy the given clues?
6. What kind of system of linear equations does the graph represent?

**Answers:**

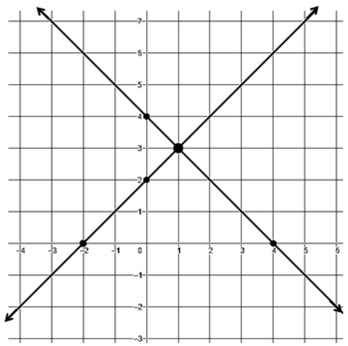
1. The lines are intersecting.
2. Yes.
3. (3,7)
4. There are 3 coins in Gavin’s right hand and 7 coins in his left hand.
5. Yes. This shows that he has 10 coins in all. 7 – 3 = 4. This also means Gavin has 4 more coins on his left hand than on his right hand.
6. Consistent and independent system.

**2. Worked Example**

One way to solve a system of linear equations is by graphing. This is the easiest way to identify the kind of system of equations. This method will also help you determine the number of solutions in the system of equations. The point of intersection of the lines represents the solution of the system of equations.

Example 1: Solve the system of equations x + y = 4 and x – y = –2 by graphing.
Solution: (using the Intercept Method)

| | |
|---|---|
| Given: x + y = 4<br>x–intercept = 4 or (4,0)<br>y–intercept = 4 or (0,4) | Given: x – y = -2<br>x–intercept = -2 or (-2,0)<br>y–intercept = 2 or (0,2) |



**Questions:**

1. What kind of lines are formed?
2. Is there a point of intersection?
3. Identify the point of intersection.
4. Based on the graphs, what kind of system of equation does it illustrate?
5. How many solutions are there in this kind of system of linear equation?

**Answers:**

1. Intersecting lines
2. Yes
3. (1,3)
4. Consistent and Independent System
5. one

To check whether **(1,3)** is really a solution of the system of equation of equation or not, substitute x = 1 and y = 3 from the given system of equation.

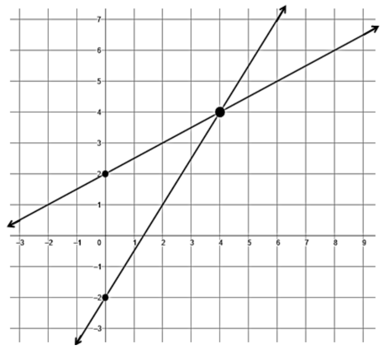
Check:

| x + y = 4 | x – y = -2 |
|---|---|
| 1 + 3 = 4 | 1 – 3 = -2 |
| 4 = 4 | -2 = -2 |

**Therefore, (1,3) is the solution of the system of equation**
**x + y = 4 and x – y = –2.**

Example 2: Solve the system of equations 4y = 2x + 8 and 3x – 2y = 4 by graphing.
Solution: (using the Slope-Intercept Method)

| Given: | Given: |
|---|---|
| 4y = 2x + 8 | 3x – 2y = 4 |
| y = $\frac{2x+8}{4}$ | 2y = 3x – 4 |
| y = $\frac{1}{2}$x + 2 | y = $\frac{3x-4}{2}$ |
| slope = $\frac{2}{4}$ or $\frac{1}{2}$ | slope = $-\frac{1}{3}$ |
| y–intercept = 2 or (0,2) | y–intercept = -2 or (0,-2) |



For the Slope-Intercept method, start plotting the y-intercept then from the y-intercept, use $\frac{rise}{run}$ for its slope.

**Questions:**
1. What kind of lines is formed?
2. Is there a point of intersection?
3. Identify the point of intersection.
4. Based on the graphs, what kind of system of equation does it illustrate?
5. How many solutions are there in this kind of system of linear equation?

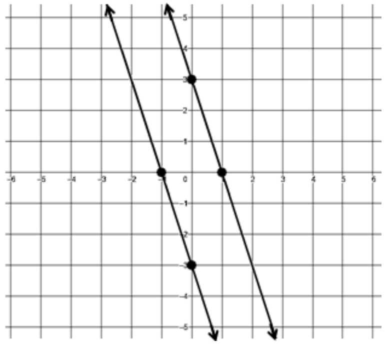
**Answers:**
1. Intersecting lines
2. Yes
3. (4,4)
4. Consistent and Independent System
5. one

To check whether **(4,4)** is really a solution of the system of equation of equation or not, substitute x = 4 and y = 4 from the given system of equation.
Check:

| 4y = 2x + 8 | 3x – 2y = 4 |
|---|---|
| 4(4) = 2(4) + 8 | 3(4) – 2(4) = 4 |
| 16 = 16 | 12 – 8 = 4 |
| | 4 = 4 |

**Therefore, (4,4) is the solution of the system of equation**
**4y = 2x + 8 and 3x – 2y = 4.**

Example 3: Solve the system of equations 3x + y = -3 and 3x + y = 3 by graphing.
Solution: (using the Intercept Method)



| | |
|---|---|
| Given:<br>3x + y = -3<br>x –intercept = -1 or (-1,0)<br>y–intercept = -3 or (0,-3) | Given:<br>3x + y = 3<br>x–intercept=1 or (1,0)<br>y–intercept= 3 or (0,3) |

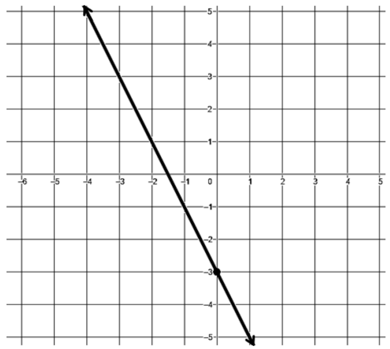
**Questions:**

1. What kind of lines is formed?
2. Is there a point of intersection?
3. If there is no point of intersection, will the system of equation have a solution?
4. Based on the graphs, what kind of system of equation does it illustrate?
5. How many solutions are there in this kind of system of linear equation?

**Answers:**
1. Parallel lines
2. None
3. No
4. Inconsistent System
5. No solution

**Since the system of equation 4y = 2x + 8 and 3x – 2y = 4 is inconsistent, therefore it has no solution.**

Example 4: Solve the system of equations 2x + y = -3 and 4y = -8x – 12 by graphing.
Solution: (using the Slope-Intercept Method)



| | |
|---|---|
| Given:<br>2x + y = -3<br>y = -2x - 3<br>slope = $-2$ or $\frac{-2}{1}$<br>y–intercept = -3 or (0,-3) | Given:<br>4y = -8x – 12<br>y = $\frac{-2x-12}{4}$<br>slope = $-2$ or $\frac{-2}{1}$<br>y–intercept = -3 or (0,-3) |

**Questions:**

1. What kind of lines is formed?
2. Is there a point of intersection?
3. Name some points that are solution to the system of equation?
4. Based on the graphs, what kind of system of equation does it illustrate?
5. How many solutions are there in this kind of system of linear equation?

**Answers:**

1. Coincident lines
2. Since, the lines exist in the same location, then all the points are their points of intersection.
3. (1,-5), (0,-3),(-1,-1), (-2,1), (-3,3), (-4,5)
4. Consistent and independent system
5. Infinitely many solutions

**3. Lesson Activity**
Refer to Worksheet Activity No. 1

**DAY 2**

**SUB-TOPIC 4: Solve algebraically a system of linear equations in two variables by elimination**

**1. Explicitation**

Find the sum of the following:

1. $3 + (-3) =$ ___
2. $-4 + 4 =$ ___
3. $8 + (-8) =$ ___
4. $-a + a =$ ___
5. $x + (-x) =$ ___
6. $-y + y =$ ___

**Questions:**

1. What can you say about the given addends?
2. What is the sum when you add a number or term and its additive inverse?
3. What about if this is applied to a system of equation,

$$\begin{cases} x + y = 5 \\ x - y = 3 \end{cases}$$

which do you think will be eliminated when you add each of the given terms?

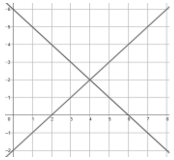
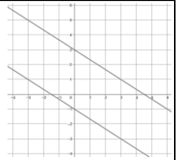
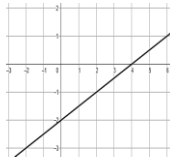
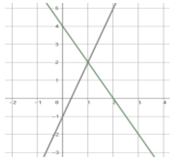
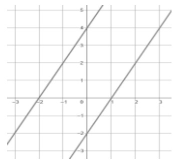
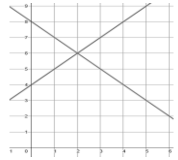
**2. Worked Example**

Aside from graphing, one way to solve system of linear equations is by ELIMINATION. Elimination is a process in which a variable is removed from a system of linear equations by adding or subtracting the two equations.

Example 1. Solve the system of linear equation $x + y = 5$ and $x - y = 3$ by elimination.
Solution:

| | |
|---|---|
| Step 1: $\begin{array}{rr} & x + y = 5 \\ (+) & \underline{x - y = 3} \\ & 2x \quad = 8 \end{array}$ | Write the equations in standard form. By adding the terms from the two equations, the variable y is eliminated because y and –y are additive inverses which when added is equal to zero |
| Step 2: $\frac{2x}{2} = \frac{8}{2}$ $\mathbf{x = 4}$ | Solve for the resulting equation. |
| Step 3: If $x = 4$, $x + y = 5$ | Use any of the given equation in the system and substitute the result in step 2. |

**Activity 1 Answers:**

| | |
|---|---|
| a. 1.  2. Consistent and Independent 3. one 4. (4,2) | b. 1.  2. Inconsistent 3. no solution 4. none |
| c. 1.  2. Consistent and Dependent 3. many 4. (-4,-4), (-2,-3),(0,-2), (2,-1),(4,0), (6,1),… | d. 1.  2. Consistent and Independent 3. one 4. (1,2) |
| e. 1.  2. Inconsistent 3. no solution 4. none | f. 1.  2. Consistent and Independent 3. one 4. (2,6) |

| | |
|---|---|
| 4 + y = 5<br>y = 5 – 4<br>**y = 1** | |

**The solution is (4,1).**

To check if the solution is correct, substitute the obtained value of x and y in the system of linear equation.

| | |
|---|---|
| x + y = 5<br>(4) + (1) = 5<br>5 = 5 | x – y = 3<br>(4) – (1) = 3<br>3 = 3 |

Since, the solution satisfies the system of liner equation, **therefore (4,1) is the solution of the system.**

Example 2. Solve the system of linear equation -x + 3y = 6 and x + 3y = 12 by elimination.

Solution:

| | |
|---|---|
| Step 1:<br>-x + 3y = 6<br>(+) x + 3y = 12<br>6y = 18 | Write the equations in standard form.<br>By adding the terms from the two equations, the variable x is eliminated because –x and x are additive inverses which when added is equal to zero. |
| Step 2:<br>$\frac{6y}{6} = \frac{18}{6}$<br>**y = 3** | Solve for the resulting equation. |
| Step 3:<br>If y = 3,<br>x + 3y = 12<br>x + 3(3) = 12<br>x = 12 – 9<br>**x = 3** | Use any of the given equation in the system and substitute the result in step 2. |

**The solution is (3,3).**

To check if the solution is correct, substitute the obtained value of x and y in the system of linear equation.

| | |
|---|---|
| -x + 3y = 6<br>-(3) + 3(3) = 6<br>-3 + 9 = 6<br>6 = 6 | x + 3y = 12<br>(3) + 3(3) = 12<br>3 + 9 = 12<br>12 = 12 |

**Answers:**

| | | |
|---|---|---|
| 1. 0 | 3. 0 | 5. 0 |
| 2. 0 | 4. 0 | 6. 0 |

**Answers:**

1. They are additive inverses of each other.
2. zero
3. y will be eliminated

Since, the solution satisfies the system of liner equation, **therefore (3,3) is the solution of the system.**

Example 3. Solve the system of linear equation 5x – 2y = -6 and 2x + y = -6 by elimination.

Solution:

| | |
|---|---|
| Step 1:<br>5x – 2y = -6<br>2x + y = -6 | Write the equations in standard form.<br>Observe that no variable can be eliminated since the given variables are not additive inverses of each other. |
| 5x – 2y = -6<br>(2)(2x + y = -6) | Choose a variable you want to eliminate. Then multiply one or both equations by a non-zero number so that the variable you want to eliminate becomes additive inverses of each other. |
| 5x – 2y = -6<br>(+) 4x + 2y = -12<br>9x = -18 | By adding the terms from the two equations, the variable y is eliminated because –2y and 2y are additive inverses which when added is equal to zero |
| Step 2:<br>$\frac{9x}{9} = \frac{-18}{9}$<br>**x = -2** | Solve for the resulting equation. |
| Step 3:<br>If x = -2,<br>2x + y = -6<br>2(-2)+ y = -6<br>-4 + y= -6<br>y = -6 + 4<br>**y = -2** | Use any of the given equation in the system and substitute the result in step 2. |

**The solution is (-2,-2).**

To check if the solution is correct, substitute the obtained value of x and y in the system of linear equation.

| | |
|---|---|
| 5x – 2y = -6 | 2x + y = -6 |
| 5(-2) – 2(-2) = -6 | 2(-2) + (-2) = -6 |
| -10 + 4 = -6 | -4 – 2 = -6 |
| -6 = -6 | -6 = -6 |

Since, the solution satisfies the system of liner equation, **therefore (-2, -2) is the solution of the system.**

Example 4. Solve the system of linear equations $3x - 3y = 12$ and $-6x + 6y = 6$ by elimination.
Solution:

| | |
|---|---|
| Step 1:<br>$3x - 3y = 12$<br>$-6x + 6y = 6$ | Write the equations in standard form.<br>Observe that no variable can be eliminated since the given variables are not additive inverses of each other. |
| $(2)(3x - 3y = 12)$<br>$-6x + 6y = 6$ | Choose a variable you want to eliminate. Then multiply one or both equations by a non-zero number so that the variable you want to eliminate becomes additive inverses of each other. |
| $6x - 6y = 24$<br>$\underline{(+)-6x + 6y = 6}$<br>$0 = 30$ | By adding the terms from the two equations, both the variables x and y are eliminated.<br>The result is a false statement. |

**The system is inconsistent since there is no solution.**

**3. Lesson Activity**
Refer to Worksheet Activity No. 2

**Activity 2 Answers:**

| BECAUSE | THEY | ARE | ALWAYS | STUFFED |
|---|---|---|---|---|
| (4,2) | (7,-2) | (4,0) | (1,4) | (9,5) |

**DAY 3**

**SUB-TOPIC 4: Solve algebraically a system of linear equations in two variables by substitution**

**1. Explicitation**

Recall the problem about the "Coins in Gavin's Hands."

**Questions:**

1. If x represents the number of coins on Gavin's right hand and y represents the number of coins on Gavin's left hand, what equation can be formed in clue #1?
2. Using the same representation in #1, what equation can you form from clue #2?

For question #1, you have formed the equation $x + y = 10$.
For question #2, your equation was $y = x + 4$.

Therefore, the system of linear equation is:

$$\begin{cases} x + y = 10 \\ y = x + 4 \end{cases}$$

Observe that the second equation says that y is equivalent to x + 4. This means you can replace y by x + 4.

$$x + \quad y \quad = 10$$
$$x + (x + 4) = 10$$

By doing this, you can get:

$$2x + 4 = 10$$
$$2x = 10 - 4$$
$$2x = 6$$
$$\mathbf{x = 3}$$

**Questions:**

1. Is the obtained value of x the same with the value x that was solved earlier when the system of equation was solved by graphing?
2. What will be the value of y in the system of equation if x=3?
3. What is the solution of the system of linear equation x + y = 10 and y = x + 4?
4. Does the obtained solution the same with what was solved in the previous lesson?

**Answers:**

1. Yes.
2. If x = 3,
   y = x + 4
   y= 3 + 7
   **y = 7**
3. (3,7)
4. Yes.

**2. Worked Example**

Another form of solving systems of linear equations is by SUBSTITUTION. Substitution method means you replace or substitute an expression to solve for a variable in the other equation.

Example 1. Solve the system of linear equation 2x + y =5 and y = x – 1 by substitution.

Solution:

| | |
|---|---|
| 2x + y = 5<br>y = x – 1<br>Step 1:<br>2x + y = 5<br>2x + (x – 1) = 5 | From the given system of linear equation, identify the variable that will be substituted in the other equation. |

| | |
|---|---|
| Step 2:<br>$2x + (x - 1) = 5$<br>$3x - 1 = 5$<br>$3x = 5 + 1$<br>$3x = 6$<br>$\frac{3x}{3} = \frac{6}{3}$<br>$\mathbf{x = 2}$ | Solve for x. |
| Step 3:<br>$y = x - 1$<br>$y = 2 - 1$<br>$\mathbf{y = 1}$ | Use any of the given equation in the system and substitute the result in step 2. |

**The solution is (2,1).**
To check if the solution is correct, substitute the obtained value of x and y in the system of linear equation.

| | |
|---|---|
| $2x + y = 5$<br>$2(2) + (1) = 5$<br>$4 + 1 = 5$<br>$5 = 5$ | $y = x - 1$<br>$(1) = (2) - 1$<br>$1 = 1$ |

Since, the solution satisfies the system of liner equation, **therefore (2,1) is the solution of the system.**

Example 2. Solve the system of linear equation $x + 3y = 9$ and $2x - y = 4$ by substitution.
Solution:

| | |
|---|---|
| $x + 3y = 9$<br>$2x - y = 4$<br><br>Step 1:<br>$2x - y = 4$<br>$y = 2x - 4$<br><br>$x + 3y = 9$<br>$x + 3(2x - 4) = 9$ | From the given system of linear equation, identify the variable that will be substituted in the other equation. |
| Step 2:<br>$x + 3(2x - 4) = 9$<br>$x + 6x - 12 = 9$ | Solve for x. |

| | |
|---|---|
| $7x - 12 = 9$<br>$7x = 9 + 12$<br>$7x = 21$<br>$\frac{7x}{7} = \frac{21}{7}$<br>$\mathbf{x = 3}$ | |
| Step 3:<br>$x + 3y = 9$<br>$3 + 3y = 9$<br>$3y = 9 - 3$<br>$\frac{3y}{3} = \frac{6}{3}$<br>$\mathbf{y = 2}$ | Use any of the given equation in the system and substitute the result in step 2. |

**The solution is (3,2).**

To check if the solution is correct, substitute the obtained value of x and y in the system of linear equation.

| | |
|---|---|
| $x + 3y = 9$<br>$(3) + 3(2) = 9$<br>$3 + 6 = 9$<br>$9 = 9$ | $2x - y = 4$<br>$2(3) - (2) = 4$<br>$6 - 2 = 4$<br>$4 = 4$ |

Since, the solution satisfies the system of liner equation, **therefore (3,2) is the solution of the system.**

Example 3. Solve the system of linear equation $4x + 3y = -7$ and $x = 6y + 5$ by substitution.

Solution:

| | |
|---|---|
| $4x + 3y = -7$<br>$x = 6y + 5$<br><br>Step 1:<br>$4x + 3y = -7$<br>$4(6y + 5) + 3y = -7$ | From the given system of linear equation, identify the variable that will be substituted in the other equation. |
| Step 2:<br>$4(6y + 5) + 3y = -7$<br>$24y + 20 + 3y = -7$<br>$27y = -7 - 20$<br>$\frac{27y}{27} = \frac{-27}{27}$<br>$\mathbf{y = -1}$ | Solve for y. |

| | |
|---|---|
| Step 3:<br>x = 6y + 5<br>x = 6(-1) + 5<br>x = -6 + 5<br>**x = -1** | Use any of the given equation in the system and substitute the result in step 2. |

**The solution is (-1,-1).**
To check if the solution is correct, substitute the obtained value of x and y in the system of linear equation.

| | |
|---|---|
| 4x + 3y = -7<br>4(-1) + 3(-1) = -7<br>-4 – 3 = -7<br>-7 = -7 | x = 6y + 5<br>(-1) = 6(-1) + 5<br>-1 = -6 + 5<br>-1 = -1 |

Since, the solution satisfies the system of liner equation, **therefore (-1,-1) is the solution of the system.**

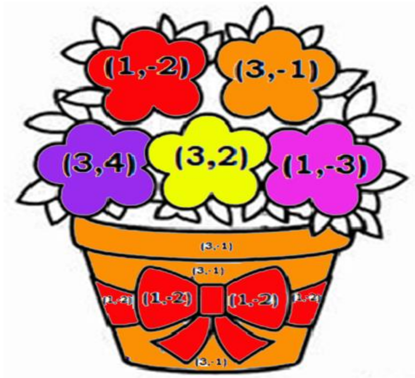
Example 4. Solve the system of linear equation 8x – 2y = -12 and 4x = y – 6 by substitution.
Solution:

| | |
|---|---|
| 8x – 2y = -12<br>4x = y – 6<br><br>Step 1:<br>4x = y – 6<br>y = 4x + 6<br><br>8x – 2y = -12<br>8x – 2(4x + 6) = -12 | <br><br><br>From the given system of linear equation, identify the variable that will be substituted in the other equation. |
| Step 2:<br>8x – 2(4x + 6) = -12<br>8x – 8x – 12 = -12<br>-12 = -12 | Solve for x.<br>The variable x is eliminated but it gave a true statement. Therefore, the system indicates that it has infinitely many solutions. |

**The system is consistent and dependent, therefore it has infinitely many solutions.**

3. **Lesson Activity**
Refer to the Worksheet Activity No. 3

**Activity 3 Answer:**

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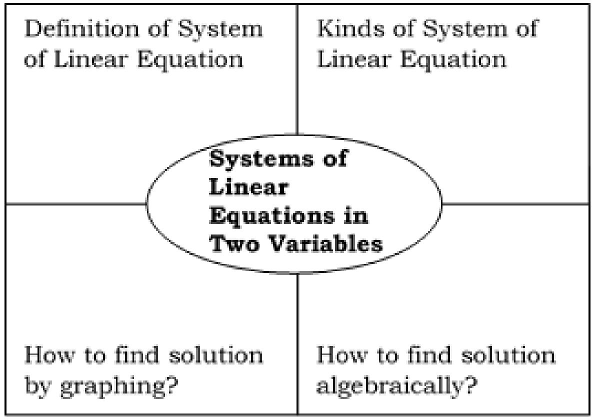
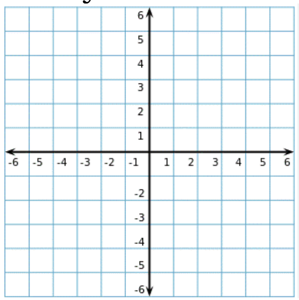
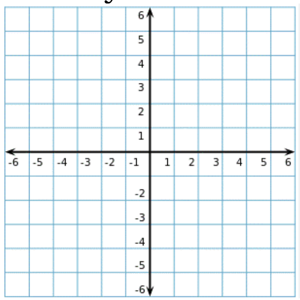
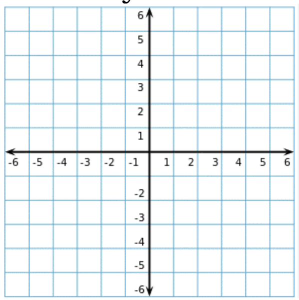
https://www.pinterest.ph/pin/839428818021478685/

| | | |
|---|---|---|
| **D. Making Generalizations** | **DAY 4**<br>**Learners' Takeaways and Reflection on Learning**<br>Use the Frayer Diagram to show what you learned.<br> | |

| **IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION** | | **NOTES TO TEACHERS** |
|---|---|---|
| **A. Evaluating Learning** | **1. Formative Assessment**<br>A. True or False.<br>1. An ordered pair that satisfies both equations of the system of linear equations is called a solution.<br>2. An inconsistent system has one solution.<br>3. The graph of an independent and consistent system forms intersecting lines.<br>4. If lines intersect, their intersection is the solution of the system of linear equations.<br>5. A consistent and dependent system's graph forms parallel lines.<br>6. An independent system of linear equation has infinitely many solutions.<br>7. To eliminate a variable of a system of linear equation, it must be additive reciprocals of each other.<br>8. Coincident lines are graphs of inconsistent systems.<br>9. If a system of linear equation is solved algebraically, and the variable to be solved is eliminated and obtained a false statement, then it has one solution.<br>10. If a system of linear equation is solved algebraically, and the variable to be solved is eliminated and obtained a true statement, then it has infinitely many solutions. | **Answer Key:**<br>A.<br>1. True<br>2. False<br>3. True<br>4. True<br>5. True<br>6. False<br>7. True<br>8. False<br>9. False<br>10. True |

B. Solve the following systems of linear equation by graphing. Identify the solution.

| | | |
|---|---|---|
| 1. $\begin{cases} x + y = 10 \\ x - y = -6 \end{cases}$  | 2. $\begin{cases} x - 4y = 8 \\ 2x + y = -2 \end{cases}$  | 3. $\begin{cases} 2x - 3y = 6 \\ 5x + 3y = 15 \end{cases}$  |

C. Solve the following system of linear equations by elimination.

4. $\begin{cases} x + 3y = 8 \\ 2x - 3y = 7 \end{cases}$

6. $\begin{cases} 2x - 3y = 6 \\ y = 2x + 2 \end{cases}$

5. $\begin{cases} x + 2y = 2 \\ 2x - 3y = 4 \end{cases}$

7. $\begin{cases} 7x - 5y = 4 \\ x + y = 4 \end{cases}$

D. Solve the following system of linear equations by substitution.

8. $\begin{cases} 4x + 3y = 15 \\ y = 2x - 5 \end{cases}$

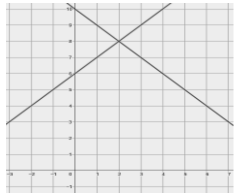
9. $\begin{cases} 4x + y = 12 \\ x - 2y = 12 \end{cases}$

10. $\begin{cases} x + y = 5 \\ 2x - 3y = 10 \end{cases}$

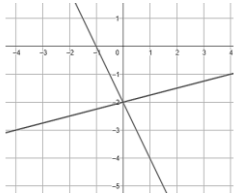
**2. Homework (Optional)**

B.

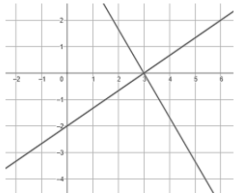
1. Solution: (2,8)



2. Solution: (0,-2)



3. Solution: (3,0)



C.

4. ( 5,1) 6. (2,0)
5. (-3,-4) 7. (2,2)

D.

8. (3,1) 9. (4,-4) 10. (5,0)

<table>
<tr><td rowspan="5">B. Teacher's Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="5">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.<br><br>Teachers may also suggest ways to improve the different activities explored/lesson exemplar.</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
<tr><td>C. Teacher's Reflection</td><td colspan="3">Reflection guide or prompt can be on:<ul><li><u>principles behind the teaching</u><br>What principles and beliefs informed my lesson?<br>Why did I teach the lesson the way I did?</li><li><u>students</u><br>What roles did my students play in my lesson?<br>What did my students learn? How did they learn?</li><li><u>ways forward</u><br>What could I have done differently?<br>What can I explore in the next lesson?</li></ul></td><td>Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.</td></tr>
</table>