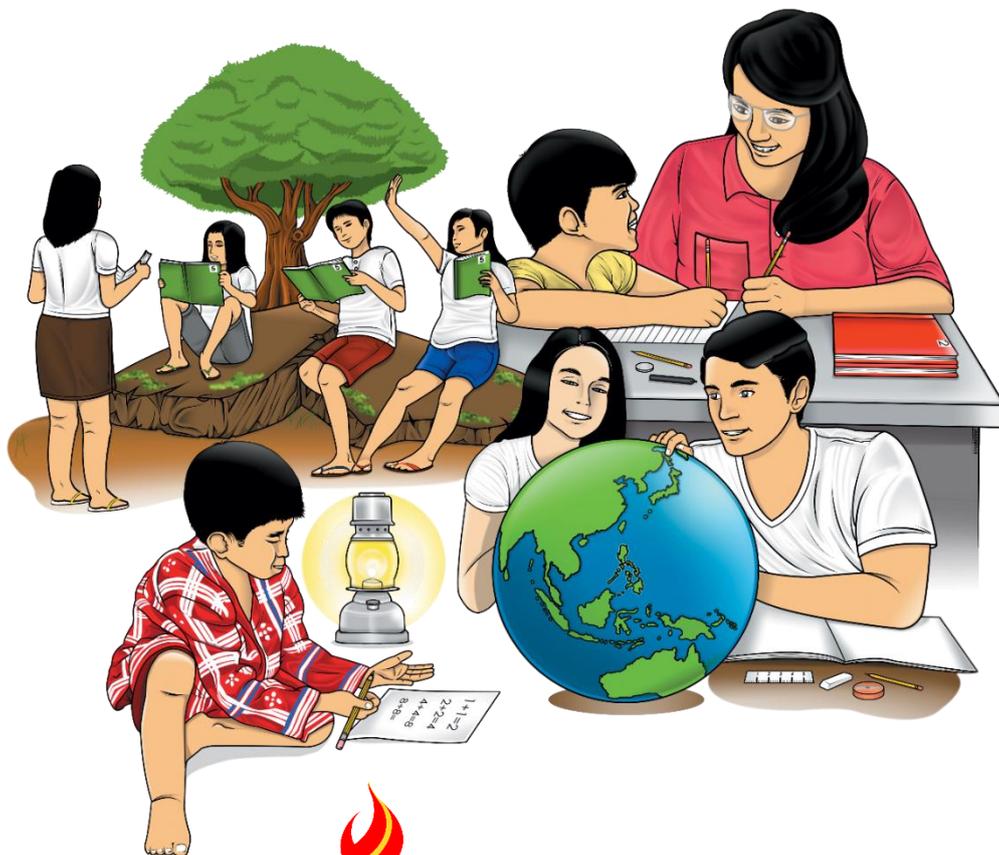


Mathematics

Quarter 1 – Module 13:

“Solving Problems Involving Linear Equations in Two Variables”



Mathematics – Grade 8
Alternative Delivery Mode
Quarter 1 – Module 13: Solving Problems Involving Linear Equation in Two Variables
First Edition, 2020

Republic Act 8293, section 176 states that: No copyright shall subsist in any work of the Government of the Philippines. However, prior approval of the government agency or office wherein the work is created shall be necessary for exploitation of such work for profit. Such agency or office may, among other things, impose as a condition the payment of royalties.

Borrowed materials (i.e., songs, stories, poems, pictures, photos, brand names, trademarks, etc.) included in this book are owned by their respective copyright holders. Every effort has been exerted to locate and seek permission to use these materials from their respective copyright owners. The publisher and authors do not represent nor claim ownership over them.

Published by the Department of Education
Secretary: Leonor Magtolis Briones
Undersecretary: Diosdado M. San Antonio

Development Team of the Module

| | |
|---------------------------|--|
| Writer: | Wilmar N. Espinosa |
| Language Editor: | Merjorie G. Dalagan |
| Content Evaluator: | Michelle R. Alipao |
| Layout Evaluator: | Jake D. Fraga |
| Reviewers: | Nilda A. Mendiola, Manuel L. Limjoco, Jr., Cris Gerom C. Arguilles, Melba G. Lumangcas, Analyn L. Avila, Thelma D. Ramos |
| Illustrator: | Wilmar N. Espinosa |
| Illustrator: | Wilmar N. Espinosa |
| Layout Artist: | Jake D. Fraga |
| Management Team: | Francis Cesar B. Bringas, Isidro M. Biol, Jr., Rhea J. Yparraguirre, Maripaz F. Magno, Josephine Chonie M. Obseñares, Josita B. Carmen, Celsa A. Casa, Regina Euann A. Puerto, Bryan L. Arreo, Leopardo P. Cortes, Jr., Claire Ann P. Gonzaga, Lieu Gee Keeshia C. Guillen |

Printed in the Philippines by _____

Department of Education – Caraga Region

Office Address: Learning Resource Management Section (LRMS)
J.P. Rosales Avenue, Butuan City, Philippines 8600
Tel. No./Telefax No.: (085) 342-8207 / (085) 342-5969
E-mail Address: caraga@deped.gov.ph

Mathematics
Quarter 1 – Module 13:
“Solving Problems
Involving Linear
Equations in Two
Variables”

Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



What I Need to Know

This module was designed and written with you in mind. It is here to help you master on how to solve problems involving linear equations in two variables. The scope of this module permits it to be used in many different learning situations. The language and numeric used recognizes the diverse vocabulary and numeracy level of students. The lessons are arranged to follow the standard sequence of the course. But the order in which you read them can be changed to correspond with the textbook you are now using.

This module contains:

Lesson 1- Solving Problems involving Linear Equation in Two Variables

After going through this module, you are expected to:

1. translate word problems into linear equations;
 2. solve problems involving linear equations in two variables;
- and
3. apply the concepts of solving linear equations in dealing with real-life problems.



What I Know

Directions: Read the questions carefully. Then choose the letter of the correct answer and write it on your paper.

1. Which of the statements below translates the mathematical equation " $4x + 5 = 21$ "?
 - A. Four x plus five with twenty-one.
 - B. Four x a number increased by five is twenty-one.
 - C. Four times a number increased by five is twenty-one.
 - D. Four times a number diminished by five gives twenty-one.

2. A square plywood platform has a perimeter which is 9 times the length of a side, decreased by 35. Find the length of a side.
 - A. 1 unit
 - B. 5 units
 - C. 7 units
 - D. 12 units

3. Lucas has a job mowing lawns in his neighborhood and gets paid P25 per hour. Identify the independent variable in computing his total pay.
 - A. The job
 - B. The lawn mowing
 - C. The total pay
 - D. The number of hours worked

4. You want to buy a hamburger and a mango pie. The hamburger costs P25 each and mango pie at P12 each. You have P160 to spend. If x is the number of hamburger and y is the number of mango pie, write an equation that models the different amount.
 - A. $25x + 12y = 160$
 - B. $12x + 25y = 160$
 - C. $12x + 160 = 25y$
 - D. $25x - 12y = 160$

5. Jonathan is six years older than Joshua. The sum of their ages is 48. Find Joshua's and Jonathan's age. What are the steps in solving Joshua and Jonathan's age in chronological order?
 - I. Translate the problem into an equation, diagram, or chart.
 - II. Understand the problem. List all the components and data that are involve.
 - III. Check to see if the information is used correctly and that the answer make sense.
 - IV. Solve the equations you translated based on the given problem.
 - A. I, II, III, IV
 - B. II, IV, I, III
 - C. II, I, III, IV
 - D. II, I, IV, III

6. Refer to problem no. 5, what mathematical equation is needed to find Joshua's age?

A. $x + 6 = 48$

C. $2x + x = 48$

B. $x + x = 48$

D. $x + x + 6 = 48$

7. Still refer to problem no. 5, what is Jonathan's age?

A. 21 years old

C. 25 years old

B. 23 years old

D. 27 years old

For items 8– 10, refer to the situation below:

Mang Kardo earns P400 per day and additional P100 for every hour overtime as technician.

8. What equation shall best represent the earnings of Mang Kardo when he rendered overtime services as a technician?

A. $y = x + 400$

C. $y = 400x + 100$

B. $y = 2(x + 400)$

D. $y = 100x + 400$

9. What is the amount earned by Mang Kardo when he rendered 3 hours of overtime?

A. P400

C. P600

B. P500

D. P700

10. If the equation in item 8 represents the amount paid for the labor in repairing computer units for every x number of hours, how much will Mang Kardo earn after 6 hours?

A. P800

C. P1,000

B. P900

D. P1,100

11. Diane is a working student. She works in a restaurant and is paid a minimum of P350 for a 6-hour service rendered plus P50 per additional hour of service. What equation will represent the total amount of payment to Diane?

A. $y = 350x + 50$

C. $y = 50(x + 6) + 350$

B. $y = 50(6x) + 350$

D. $y = 50(x - 6) + 350$

12. A t-shirt company charges P250 per order plus P99 per t-shirt. How much will it cost if you order 5 t-shirts?

A. P499

C. P649

B. P545

D. P745

13. A cell phone repairman charges P150 for a repair service, plus 50 for each hour of work. How much will the repairman charge if he works for 5 hours?

A. P400

C. P550

B. P450

D. P600

14. A multicab passenger is charged P10 for the first 4 km and an additional P2 per succeeding kilometer as fare. What is the cost of a 28-km ride?

A. P46

C. P58

B. P56

D. P66

15. Refer to problem 14, how many succeeding kilometers did the passenger ride after he paid an amount of P34?

A. 10 *km*

B. 11 *km*

C. 12 *km*

D. 13 *km*

Lesson**1****Solving Problems involving
Linear Equation in Two
Variables*****What's In*****Write the Correct Equation!**

Directions: Translate the following verbal statements into mathematical equations.

Write your answer on a separate sheet of paper. Let x represents a number.

- _____ 1. Twice a number is 6.
- _____ 2. Four added a number gives ten.
- _____ 3. If thrice a number is added to seven, the sum is ninety-eight.
- _____ 4. Twenty-five decreased by twice a number is twelve.
- _____ 5. The sum of a number x and 3 yields 25.
- _____ 6. The difference between thrice a number and nine is 100.

Questions:

- 1. What are the common terms used to represent the “=” sign?
- 2. What symbol/s represent the word “sum”,
- 3. What about “difference”?
- 4. Is/are there any difficulty/ies in translating verbal statement into mathematical equations?

***What's New*****Activity: Let's Play!**

Jake loves to play “Word Hunt”. The objective of the game is for the player to earn specific number of stars to progress to the next higher level. Jake has already earned 300 stars and he can earn 100 stars for every level completed.

Guide Questions:

1. What are the given information?
2. What is asked?
3. What linear equation can be formulated to represent the total number of stars earned in a game?
4. How many stars will Jake have earned after playing for 4 levels? 5 levels? 6 levels?



What is It

Applications of Linear Equation in Two Variables

Let us recall that a **solution of an equation in two variables** x and y is any ordered pair (x, y) that makes the equation true. To determine whether an ordered pair (x, y) is a solution of an equation, we will just substitute the values of x and y into the equation. On the other hand, equations in two variables usually have infinitely many solutions.

The processes of solving an equation discussed in the previous modules are very much helpful in solving problems involving linear equations in two variables. Translating verbal sentences into mathematical equations are also useful in this module.

There are many real-life situations that exhibit linear equation in two variables. Below are the steps to solve problems involving linear equations in two variables:

- First, read and understand the problem
- Second, translate the problem into an equation in two variables
- Third, find the solution using the formulated equation
- Fourth, check the solution obtained by substituting the solution/s to the original equations

To model these steps, let us recall Jake's number of stars earned per hour of playing a mobile game.

Step 1. Understand the problem.

Given:

- Jake has 300 stars
- Jake can earn 100 stars for every level completed of the game

Asked: The total number of stars Jake can earn after playing for x level/s

Let x be the number of levels completed in the game

Let y be the total number of stars earned in completing the level

Step 2. Translate the problem into an equation in two variables.

Using the information above, we can construct a table:

| | | | |
|--------------------------------|----------------|----------------|----------------|
| level completed (x) | 1 | 2 | 3 |
| Number of stars earned (y) | $100(1) + 300$ | $300 + 100(2)$ | $300 + 100(3)$ |



| | | | |
|--------------------------------|-----|-----|-----|
| level completed (x) | 1 | 2 | 3 |
| Number of stars earned (y) | 400 | 500 | 600 |

Hence, the situation can be modelled as $y = 100x + 300$

Step 3. Find the solution using the formulated equation.

To determine the number of stars earned after playing the game in 4 levels, use the equation obtained in Step 2 and substitute the value of x :

$$y = 100x + 300$$

$$y = 100(4) + 300 \quad \text{Substitute } x \text{ by } 4$$

$$y = 400 + 300$$

$$y = \mathbf{700}$$

The number of stars earned after completing 5 levels of playing will be:

$$y = 100x + 300$$

$$y = 100(5) + 300 \quad \text{Substitute } x \text{ by } 5$$

$$y = 500 + 300$$

$$y = \mathbf{800}$$

The number of stars earned after completing 6 levels of playing will be:

$$y = 100x + 300$$

$$y = 100(6) + 300 \quad \text{Substitute } x \text{ by } 6$$

$$y = 600 + 300$$

$$y = \mathbf{900}$$

Step 4. Check the solution obtained by substituting the solution/s to the original equations.

| | | |
|----------------------|----------------------|----------------------|
| $x = 4, y = 700$ | $x = 5, y = 800$ | $x = 6, y = 900$ |
| $y = 100x + 300$ | $y = 100x + 300$ | $y = 100x + 300$ |
| $700 = 100(4) + 300$ | $800 = 100(5) + 300$ | $900 = 100(6) + 300$ |
| $700 = 400 + 300$ | $800 = 500 + 300$ | $900 = 600 + 300$ |
| $700 = 700$ | $800 = 800$ | $900 = 900$ |

Hence, the number of stars earned after completing the “Word Hunt” levels 4, 5, and 6 are 700 stars, 800 stars, and 900 stars, respectively.

To have a deeper understanding on solving problems involving systems of linear equations in two variables, let’s try to explore illustrative examples presented below.

Example 1:

A dress maker charges P750.00 for sewing a seat cover with a minimum of 20 pieces, plus P100.00 per seat cover cloth. How much will it cost if you will order 20 seat covers?

Step 1.

Let x = number of seat covers made

Let y = total amount to be paid for seat cover plus the charges

Step 2: $y = 20x + 750$

Step 3. Use the equation obtained in step 2 to solve the problem. Since the number of seat cover to be made is 20,

$$\begin{aligned}
 y &= 100x + 750 && \text{Substitute } x \text{ in the equation by } 20 \\
 y &= 100(20) + 750 \\
 y &= 2,000 + 750 \\
 y &= 2,750
 \end{aligned}$$

Step 4: Check answers directly against the facts of the problems. Substitute the value of x and y to the equation

$$\begin{aligned}
 y &= 100x + 750 \\
 2,750 &= 100(20) + 750 \\
 2,750 &= 2,000 + 750 \\
 2,750 &= 2,750
 \end{aligned}$$

Therefore, the total amount to be paid is P2,750.00

Example 2:

A tricycle passenger is charged P20.00 for the first ten kilometers and an additional of P3.00 per succeeding kilometers. What is the cost of a 25 kilometers ride?

Step 1.

Let x = charge per succeeding kilometers

Let y = total cost

Step 2: In this problem we will use the table of values to find what is ask.

| | | | | |
|----------------|----|----|----|----|
| kilometers (x) | 10 | 11 | 12 | 13 |
| total cost (y) | 20 | 23 | 26 | 29 |

To formulate the equation using the table of values, we can choose any two points in the form (x, y) , from the table to find the slope:

For example, let us choose $(10, 20)$ and $(11, 23)$.

$$\begin{array}{ccc} \downarrow \downarrow & & \downarrow \downarrow \\ & x_1, y_1 & & x_2, y_2 \end{array}$$

Use the slope formula. Substitute $(10, 20)$ for (x_1, y_1) and $(11, 23)$ for (x_2, y_2)

$$\begin{aligned} (\text{Slope}) m &= \frac{y_2 - y_1}{x_2 - x_1} \\ m &= \frac{23 - 20}{11 - 10} \\ m &= \frac{3}{1} \\ \mathbf{m} &= \mathbf{3} \quad \Rightarrow \text{slope} \end{aligned}$$

To find the y -intercept, we can use the slope and any point from the table. Using the slope-intercept form equation of a line: $y = mx + b$

Substitute $m = 3$, and $(x, y) = (10, 20)$

$$\begin{aligned} y &= mx + b \\ 20 &= 3(10) + b \\ 20 &= 30 + b \\ \mathbf{-10} &= \mathbf{b} \quad \Rightarrow \text{y-intercept} \end{aligned}$$

Substitute the slope and the y -intercept obtained to the equation $y = mx + b$. Therefore, using the table above, we come up with the equation

$$\mathbf{y = 3x - 10}$$

Step 3: Use the equation obtained in step 2 to solve the problem. Since you were ask for a total cost of a 25 km ride,

$$\begin{aligned} y &= 3x - 10 && \text{Substitute } x \text{ in the equation by } 25 \\ y &= 3(25) - 10 \\ y &= 75 - 10 \\ y &= 65 \end{aligned}$$

Step 4. Check answers directly against the facts of the problems. Substitute the value of x and y to the equation

$$y = 3x - 10$$

$$65 = 3(25) - 10$$

$$65 = 75 - 10$$

$$65 = 65 \checkmark$$

Therefore, the total cost of a 25 km ride is P65.00

Graphing the solutions of the linear equations in two variables can also model real-life situations. Presented below is an example.

Example 3.

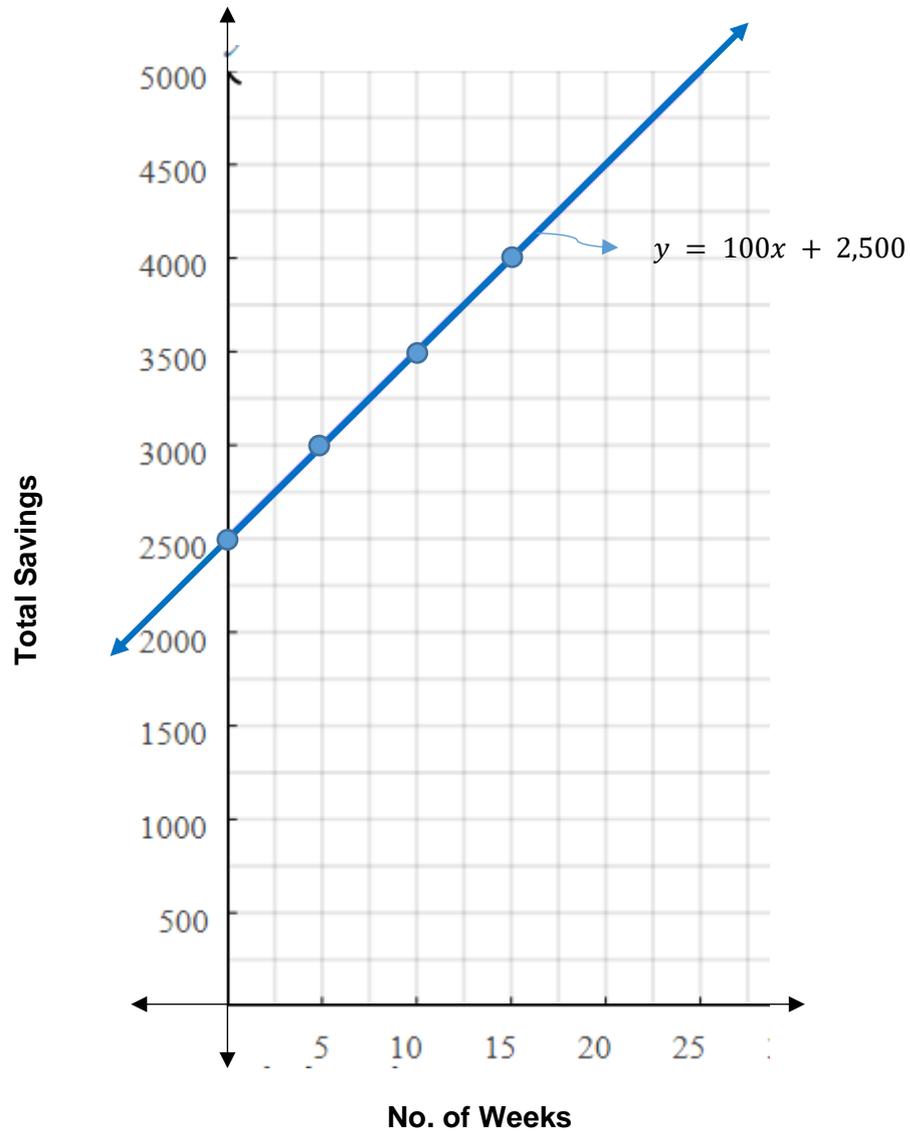
Jianne wants to buy a new android mobile phone. She has already P2,500 in her savings account, but the amount is not enough, so she needs to save more in order to buy the phone. Her total savings can be modelled as $y = 100x + 2,500$ where y is her total savings, and x is the number of weeks to save. Graph this equation and see how much she can save in 15 weeks. If the amount of the mobile phone is P4,450, will Jianne be able to save enough in 20 weeks?

Solution:

First, we need to create a table of values for the equation $y = 100x + 2,500$. We can assign nonnegative values of x to find the corresponding values of y .

| <i>Number of weeks (x)</i> | $y = 100x + 2,500$ | <i>(number of weeks, total savings) (x, y)</i> |
|--------------------------------|---|--|
| 0 | $y = 100(0) + 2,500$ $y = 0 + 2,500$ $y = 2,500$ | (0, 2500) |
| 5 | $y = 100(5) + 2,500$ $y = 500 + 2,500$ $y = 3,000$ | (5, 3000) |
| 10 | $y = 100(10) + 2,500$ $y = 1000 + 2,500$ $y = 3,500$ | (10, 3500) |
| 15 | $y = 100(15) + 2,500$ $y = 1,500 + 2,500$ $y = 4,000$ | (15, 4000) |

Plot the ordered pairs on a Cartesian plane. Draw the line that passes through the points and contains all the solutions of the equation.



The graph above shows that Jianne can save **P4,000** in **15 weeks**. If we are going to determine the corresponding ordered pair from the table, we have (15, 4000). To check whether this ordered pair satisfies the equation, let us substitute it to the equation $y = 100x + 2,500$:

$$\begin{aligned} y &= 100x + 2,500 \\ 4,000 &= 100(15) + 2,500 \\ 4,000 &= 1,500 + 2,500 \\ 4,000 &= 4,000 \checkmark \end{aligned}$$

To answer if Jianne can save enough amount in 20 weeks to buy a mobile phone worth P4,450.00, we can substitute $x = 20$ to $y = 100x + 2,500$,

$$\begin{aligned} y &= 100x + 2,500 \\ y &= 100(20) + 2,500 \\ y &= 2,000 + 2,500 \\ y &= 4,500 \end{aligned}$$

Also notice that in the graph, we have the coordinate (20, 4,500). This means that, in 20 weeks Jianne will be able to save enough amount to buy a mobile phone worth P4,450.



What's More

Activity 1: Watch Your Steps

Directions: Complete the steps in solving word problems involving linear equations in two variables by supplying the required information. Write your answer on a separate sheet of paper.

Reena begins to save for a new pair of shoes that cost P2,375.00. She already has P500.00 and plans to save P75.00 per week. How long will it take her to save the amount for the shoes?

Solution:

Step 1. Understand the Problem.

Given:

Asked:

Let x represents the _____

Let y) represents the _____

Step 2. Translate the problem into an equation in two variables.

Make a table of values.

| | | | | | |
|-----|--|--|--|--|--|
| x | | | | | |
| y | | | | | |

Total amount saved = (savings per week x number of weeks)

+ _____

$y =$ _____

Step 3. Find the solution using the formulated equation.

| | | | |
|-----------------|---|----------------------|----------------------------------|
| y | = | _____ + 500 | Equation |
| 2375 | = | _____ + 500 | By substitution |
| $2375 + (-500)$ | = | _____ + 500 + (-500) | By Addition Property of Equality |
| _____ | = | _____ | By simplification |
| <u>1875</u> | = | _____ x | Division Property of Equality |
| _____ | = | x | By simplification |

Step 4. Check the solution obtained by substituting the solution/s to the original equations.

| | | |
|------|---|-------------------------------|
| y | = | _____ + 500 |
| 2375 | = | $75(\underline{\quad}) + 500$ |
| 2375 | = | _____ + 500 |
| 2375 | = | _____ |

Hence, Reena needs to save for _____ weeks.

Activity 2: How Much Should Be Paid?

Direction: Read the situation and answer the questions that follow.

A tricycle passenger is charged P8.00 for the regular fare for the first 3 kilometers and an additional of P1.50 per succeeding kilometer.

Questions:

1. What equation shall represent the situation?
2. How much will a tricycle passenger pay for a total of 8 kilometers travel?



What I Have Learned

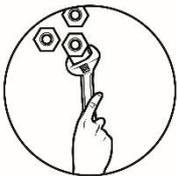
Directions: Enumerate the steps in solving problems involving linear equations in two variables.

First, I have to

Second, I will

Third, I will

Finally, I will identify the solution of the linear equation in two variables by...



What I Can Do

Activity: “Be Fit and Fab!”

You want to achieve a fit and healthy body, so you joined a fitness club in your community and incorporate it with proper diet for you to lose an average of 7 pounds each month. At the end of 3 months, you weighed 130 pounds.

Questions:

- What linear equation would best represent the situation?
- What is your weight in 5 months of exercise?
- If your original weight is 151 pounds, how many pound will you lose in 7 months?



Assessment

Directions: Read each item carefully then choose the letter of the correct answer.
Write it on your paper.

- Which of the following is the correct sequence in solving problems involving linear equation in two variables?
 - Read and understand the problem
 - Translate the problem into an equation in two variables
 - Find the solution using the formulated equation
 - Check the solution obtained by substituting the solution/s to the original equations

A. I, II, III, IV
B. I, III, II, IV
C. I, III, IV, II
D. II, I, III, IV

For item numbers 2 to 4, refer to the situation below.

Suppose a survey is made on the number of people infected by the Corona Virus Disease-2019 (COVID-19) from February 2020 to June 2020. The result was tallied, and it was observed to increase at a constant rate as shown in the table below.

| Month | February | March | April | May | June |
|--|----------|-------|-------|-----|------|
| Number of people infected by the Coronavirus Disease 2019 (COVID-19) | 20 | 28 | 36 | 44 | 52 |

- What is the equation that would represent the situation?

A. $y = -8x + 20$
B. $y = -8x + 12$
C. $y = 8x + 20$
D. $y = 8x + 12$
- If the pattern continues, can you predict the number of infected people by the month of August 2020?

A. Yes, the number of infected people by the month of August 2020 is 68.
B. Yes, the number of infected people by the month of August 2020 is 76.
C. No, because it is not stipulated in the problem.
D. No, because the data is insufficient.
- How many people will be infected by Coronavirus Disease 2019 (COVID-19) in the month of July?

A. 58
B. 60
C. 68
D. 72

For numbers 12 – 14. Refer to the table below:

Trina rents a costume for her school activity. The amount she has to pay per hour is presented in the table below.

| | | | |
|--------------------------|----|----|----|
| <i>No. of hours (x)</i> | 1 | 2 | 3 |
| <i>Cost in Pesos (y)</i> | 30 | 40 | 50 |

12. What is the equation to represent the situation?

A. $y = -10x + 20$

C. $y = 10x + 20$

B. $y = \frac{-1}{10}x + 2$

D. $y = \frac{1}{10}x - 2$

13. How much should Trina pay in 5 hours?

A. P55.00

C. P70.00

B. P60.00

D. P80.00

14. If Trina returned the costume after 24 hours, how much would she have to pay?

A. P200.00

C. P240.00

B. P220.00

D. P260.00

15. A Disc Jockey (DJ) was hired to host a post-wedding party that charges P5,000.00 and an additional of P350.00 per Hour. Would it be possible for the DJ to receive a payment of not less than P6,000.00 after hosting the party for 3 hours?

A. No, because the charge per hour is very low.

B. No, because 3 hours of hosting will not be enough to earn at least P6,000.00

C. Yes, because 3 hours of hosting is equivalent to an additional fee of P1,050.

D. Both A & B



Additional Activities

Let's Create

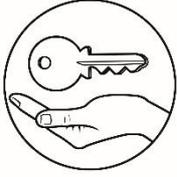
Directions: Create a matrix showing the importance of solving problems involving linear equations in two variables in dealing with real-life situations. Highlight one application for each of the following categories: personal, at home, and in the community and write a brief description of each application. Below is a suggested template.

| Applications | Description |
|----------------------|-------------|
| A. Personal: | |
| | |
| B. At Home: | |
| | |
| C. In the Community: | |
| | |

Each of your cited applications will be rated using the following rubric.

| Criteria | Performance Level | | | |
|---------------------------|--|--|--|---|
| | Not Yet Meeting Expectations (2 points) | Minimally Meeting Expectations (3 points) | Fully Meeting Expectations (4 points) | Exceeding Expectations (5 points) |
| Output Requirements | Output meets some requirements, guidelines, and objectives | Output meets most requirements, guidelines, and objectives | Output meets all requirements, guidelines, and objectives with the capacity to advance | Output exceeds requirements, guidelines and objectives at an advanced level |
| Concepts and Applications | Has trouble figuring out the applications of the topic. Descriptions of the cited applications are minimally sensible. | Has figured the applications of the topic. Descriptions of the cited applications are adequately sensible. | Has clearly cited the applications of the topic. Descriptions of the cited applications are proficiently sensible. | Has clearly cited the applications of the topic. Descriptions of the cited applications are excellently sensible. |
| Critical Thinking | Little abstraction beyond facts | Only modest abstraction beyond facts | Some potential aspects are missed | All key aspects identified, related, and rigorously evaluated |

Perfect Score: 45 Points



Answer Key

What I Know

1. C
2. C
3. D
4. A
5. D
6. D
7. D
8. D
9. D
10. C
11. D
12. D
13. A
14. D
15. C

What's In

1. $2x = 6$
2. $4 + x = 10$
3. $7 + 3x = 98$
4. $25 - 2x = 12$
5. $x + 3 = 25$
6. $3x - 9 = 100$

Assessment

1. A
2. D
3. A
4. B
5. A
6. B
7. A
8. C
9. A
10. C
11. A
12. C
13. C
14. D
15. C

What's More

Activity 1: Watch your Steps

| | | | | | | | | | | | | | | |
|-----------------|--|--|---|--------|----------------|---|--------|--------------|---|--------|-------------|---|-------------|--|
| Step 1. | Understand the Problem | Given: <ul style="list-style-type: none"> • Reena has an initial savings of P 500.00 • She needs to save a total amount of P 2,375.00 • She plans to save P75 per week | | | | | | | | | | | | |
| | Asked: How many weeks will does Reena need to save? | | | | | | | | | | | | | |
| | Let x represents the no. of weeks Reena has to save | | | | | | | | | | | | | |
| | Let y represents the total amount in P of Reena's savings | | | | | | | | | | | | | |
| Step 2. | Translate the problem into an equation in two variables. | | | | | | | | | | | | | |
| | Total amount saved = (savings per week x number of weeks) + Initial amount of savings | | | | | | | | | | | | | |
| | $y = 75x + 500$ | | | | | | | | | | | | | |
| Step 3. | Find the solution using the formulated equation. | | | | | | | | | | | | | |
| | Equation | $y = 75x + 500$ | | | | | | | | | | | | |
| | By substitution | $2375 = 75x + 500$ | | | | | | | | | | | | |
| | By Addition Property of Equality | $2375 + (-500) = 75x + 500 + (-500)$ | | | | | | | | | | | | |
| | By simplification | $1875 = 75x$ | | | | | | | | | | | | |
| | Division Property of Equality | $\frac{1875}{75} = \frac{75x}{75}$ | | | | | | | | | | | | |
| | By simplification | $25 = x$ | | | | | | | | | | | | |
| Step 4. | Check the solution obtained by substituting the solution/s to the original equations. | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>$y = 75x + 500$</td> <td>=</td> <td>2375</td> </tr> <tr> <td>$75(25) + 500$</td> <td>=</td> <td>2375</td> </tr> <tr> <td>$1875 + 500$</td> <td>=</td> <td>2375</td> </tr> <tr> <td>2375</td> <td>=</td> <td>2375</td> </tr> </table> | $y = 75x + 500$ | = | 2375 | $75(25) + 500$ | = | 2375 | $1875 + 500$ | = | 2375 | 2375 | = | 2375 | |
| $y = 75x + 500$ | = | 2375 | | | | | | | | | | | | |
| $75(25) + 500$ | = | 2375 | | | | | | | | | | | | |
| $1875 + 500$ | = | 2375 | | | | | | | | | | | | |
| 2375 | = | 2375 | | | | | | | | | | | | |
| | Hence, Reena needs to save for 25 weeks. | | | | | | | | | | | | | |

Activity 2:

1. $y = -7x + 151$
2. 116 pounds
3. 49 pounds
1. $y = 1.5x + 3.5$
2. P15.50

References

- Acelajado, Maxima J. (2008). Intermediate Algebra. pp. 319-326. Makati City, Philippines. Diwa Learning Systems Inc.
- Abuzo, Emmanuel P., Bryant, Merden L., Cabrella, Jem Boy B., et. al (2013). Mathematics Grade 8 Learner's Module. pp. 192-195 & 202. Philsports Complex, Meralco Avenue, Pasig City, Philippines. Book Media Press, Inc. & Printwell, Inc.
- Basilio, Faith B., Chua, Edna A., Jumawan, Maria T., Mangabat, Lawrence Oliver A., Mendoza, Mario B., Pacho, Elsie M., Tamoria, Ferdinand V., Villena, Eufrosina S., Vizcarra, Florante O., Yambao, Teresa M. (2003). Fundamental Statistics. Philippines. pp. 129 -133. Trinitas Publishing Inc.
- Diaz, Zenaida B., Mojica, Maharlika P. et al (2013). The New Grade 8, Next Century Mathematics. Pp. 281 – 287. Quezon City, Phoenix Publishing House, Inc.
- Garcia, George A. (2003). Fundamental Concepts and Methods in Statistics (Part 1). pp. 4– 9. Manila, Philippines. University of Sto. Tomas Publishing House.
- Garcia, George A. (2004). Fundamental Concepts and Methods in Statistics (Part 2). pp. 8 – 43. Manila, Philippines. University of Sto. Tomas Publishing House.
- Glencoe/McGRAW-HILL. (1986). Mathematics Skills for Daily Living. pp. 397 - 411. United States of America. Laidlaw Brothers, Publishers.
- Price, Jack/ Rath, James N./ Leschensky, William. (1989). Pre- Algebra: A Problem Solving Approach. pp. 420 – 430. Columbus, Ohio. Merrill Publishing Co. 637

For inquiries or feedback, please write or call:

Department of Education – Bureau of Learning Resource
Ground Floor, Bonifacio Building, Deped Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax. Nos.: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph