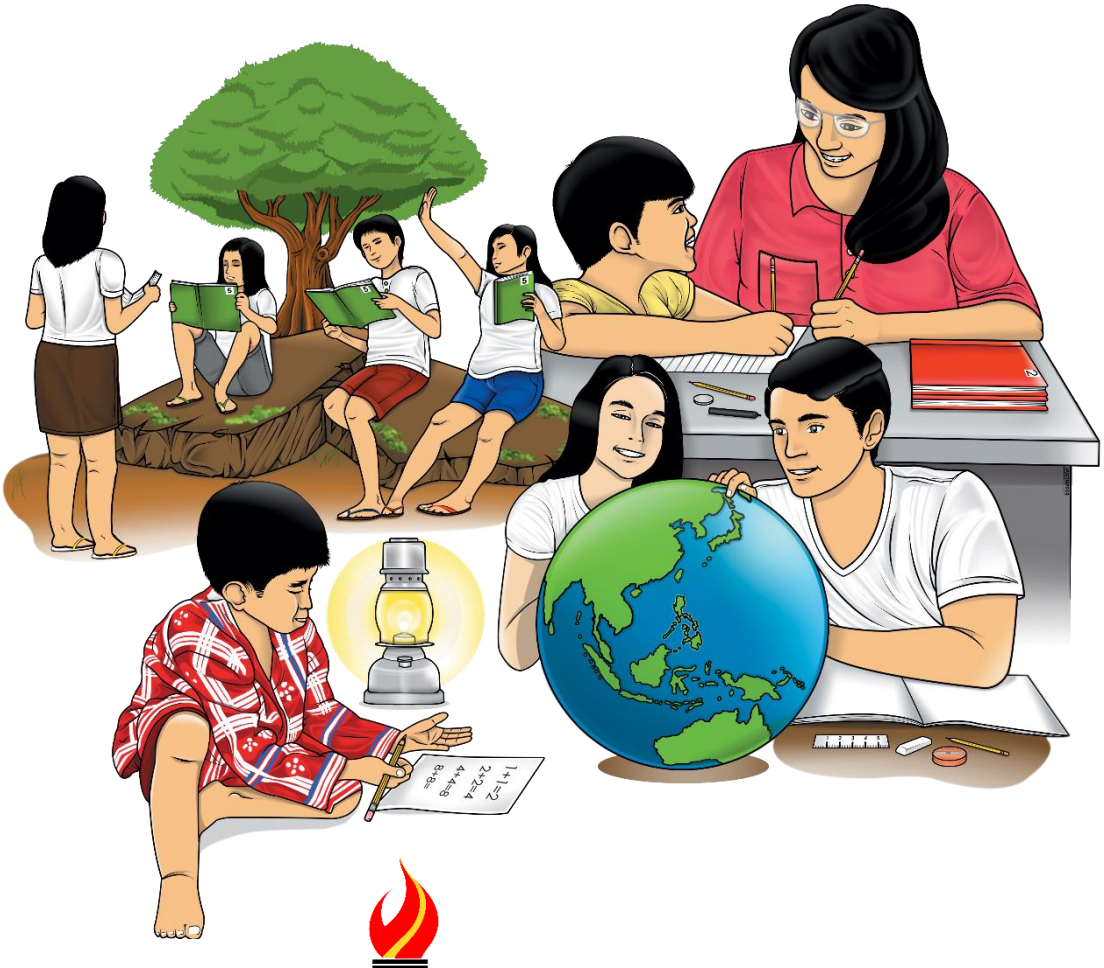
4

DepED
DEPARTMENT OF EDUCATION

Mathematics
Quarter 1 – Module 13: Solving Problems Involving Division



ALTERNATIVE DELIVERY MODE
ADM

GOVERNMENT PROPERTY
NOT FOR SALE

Mathematics – Grade 4
Alternative Delivery Mode
Quarter 1 – Module 13: Solving Problems Involving Division
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 module 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: Marjorie Ann F. Deramas

Editor: Elena D. Hubilla

Reviewers: Annavi M. Maravilla, Antonio M. Herrera, Jr.

Illustrator: Jason C. Borabo

Layout Artist: Teresa Vissia B. Suñga

Management Team: Regional Director: Gilbert T. Sadsad
CLMD Chief: Francisco B. Bulalacao Jr.
Regional EPS In Charge of LRMS: Grace U. Rabelas
Regional EPS In Charge of Math: Loyd H. Botor
Regional ADM Coordinator: Ma. Leilani R. Lorico
CID Chief: Monserat D. Guemo
Division EPS In Charge of LRMS: Florena M. Deuna

Printed in the Philippines by _____

Department of Education - Region V

Office Address: Regional Center Site, Rawis, Legazpi City 4500
Telefax: 0917-178-1288
E-mail Address: region5@deped.gov.ph

4

Mathematics
Quarter 1 – Module 13: Solving Problems Involving Division

DepED
DEPARTMENT OF EDUCATION

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

Problem solving is a very useful skill for every learner like you. With thorough understanding and constant practice, this would challenge you to think logically and eventually find it an enjoyable activity.

This module will help you understand problem solving and assist you to learn more about the division process and how it is used in real-life situations. This will also facilitate you to understand how to solve word problems with more mathematical operations involved.

After going through this module, you are expected to:

- solve routine and non-routine problems involving division of 3- to 4-digit numbers by 1- to 2-digit numbers including money using appropriate problem solving strategies and tools; and
- solve multi-step routine and non-routine problems involving division and any of the other operations of whole numbers including money using appropriate problem-solving strategies and tools.

What I Know

Solve the word problems below. Show your solution.

1. You have 144 pictures and you have decided to put it in a photo album. If 6 pictures are to be placed on each page of a photo album, how many pages of the album will be needed?

2. Mang Rolando has 1 848 chicken eggs to be delivered in the market. If the eggs are to be placed in small trays with 6 eggs each, how many trays will be needed?

3. Kathleen shared her savings to her 4 siblings. If her savings amounted to ₱2 345, how much did each of them receive?

4. A farmer gathered 760 mangoes from his farm. He placed 60 mangoes in each basket and sold them. How many mangoes were left if only the baskets with 60 mangoes each were sold?

5. Miggy, Yza and Justin contributed equal amounts to raise ₱ 9 540 and buy goods for some families affected by the pandemic. How much did each of them share?

6. The average of 6 numbers is 66. If 75 and 89 are added to 6 numbers, what is the new average?

7. Ben has some goats and chickens in his backyard. All in all there are 15 heads and 46 legs. How many goats and chickens are there?

8. In his vegetable garden, Mr. Dela Cruz harvested 1 680 tomatoes. He plans to place 24 tomatoes in each basket. How many baskets will he need?

9. Iya and her mother packed 1 560 kilograms of rice in small plastic bags. How many plastic bags were used if each bag contained 15 kilograms?

10. In Degracia's Farm, 1 430 chickens can consume 22 kilograms of feeds a day. If each chicken consumes equal amounts of feeds, how many chickens can consume one kilogram of feeds a day?

Are you done answering? If yes, time to check.

Please go to page 15 for the ***Answer Key***.

What's In

Before we proceed, let us practice your computational skills first.

Find the correct answer.

1. (13 + 8) ÷ 7 = _____
2. {168 ÷ 3} – 9 = _____
3. [49 – 4] ÷ 5 = _____
4. [32 ÷ 8] + 25 = _____
5. (29 – 4) ÷ 5 = _____

Are you done answering? If yes, time to check.

Please go to page 15 for the ***Answer Key***.

What's New

EXPLORE AND DISCOVER

Problem A

Lolo Kiko's farm produces sweet mango fruits delivered in public markets in Bicol. There are 9 030 mangoes harvested this month. If each basket can be filled with 645 mangoes, how many baskets are needed to pack all the mangoes?

a. How many mangoes did they harvest in all?
b. How will you solve the problem?

Problem B

> Billy has ₱100.00 bill. If he would like to change it to smaller bills and coins such as ₱50.00, ₱20.00, and ₱10.00, how many combinations can he have?

Which of the two problems is routine? Which is non-routine? How can we solve them?

Try answering the given problems.

What is It

READ AND LEARN MORE

There are two types of word problems – the routine word problem and the non-routine word problem. Routine word problems are practical in nature and involve the use of at least one of the four arithmetic operations, while non-routine word problems are complex problems that require some degree of creativity or originality and multiple ways to solve.

Here are some ways how to solve each type of word problem. Problem A is an example of a routine problem, while Problem B is an example of a non-routine problem.

Problem A

Step 1 - Understand

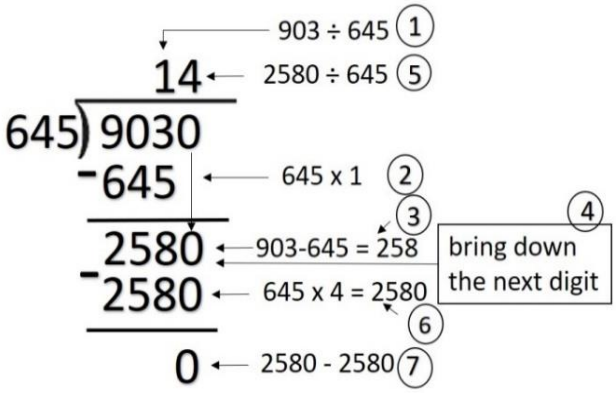
- Know what is asked:
  - The number of baskets needed.
- What are given:
  - 9 030 mangoes harvested
    645 mangoes in a basket

Step 2 - Plan

- Know the operation
  - Division
- Write the number sentence.
  - 9 030 ÷ 645 = N

Step 3 - Solve

- Write the correct unit/label your answer.



Step 4 - Look Back

- Check your answer by performing multiplication which is the inverse operation of division. Multiply the quotient by the divisor and if the product is equal to the dividend then your answer is correct.

$$\begin{array}{r} 645 \\ \times\ 14 \\ \hline 2580 \\ +\ 645 \\ \hline 9030 \end{array}$$

Therefore, Lolo Kiko needs 14 baskets to pack all the mangoes.

MULTI-STEP WORD PROBLEM

In some instances, word problems cannot just be solved using one mathematical operation or step. These are called multi-

step word problems. To answer a multipstep word problem, it is important to find the hidden question and analyze the problem carefully to arrive at the correct answer.

Read the problem below and study how the problem was solved to give you an understanding of how multi-step word problem is solved.

Karen had 450 boxes of pencils with 24 pencils in each box. She gave sixteen boxes of pencils to his brother. How many pencils are left to Karen? If Karen decided to donate the remaining pencils to 6 grade school classes, how many pencils will each class receive?

Solution:

Step 1: Find the total number of pencils and the total number of pencils given to her brother.

450 x 24 = 10 800 pencils in all

16 x 24 = 384 pencils given to her bother

Step 2: Find the number of pencils left to Karen.

10 800 - 384 = 0 416

Step 3: Find the number of pencils that each grade school class will receive.

10 416 ÷ 6 = 1 736

Answer: Each class will receive 1 736 pencils

NON-ROUTINE WORD PROBLEM

Problem B

Solving non-routine problems can also be done by following the four steps: Understand, Plan, Solve and Check.

If you are able to analyze the non-routine problems well, then, you can solve them using any of these different strategies:

- Listing Method
- Making Table
- Illustration/Drawing/Diagram
- Guessing and Checking
- Looking for a pattern
- Working Backwards
- Breaking up a problem into smaller ones

In order to solve problem B, we can use the following strategies:

A. Making a List

To make this strategy more systematic, let us begin from the highest value of money.

50 + 50 = 100

50 + 20 + 20 + 10 = 100

50 + 20 + 10 + 10 + 10 = 100

50 + 10 + 10 + 10 + 10 + 10 = 100

20 + 20 + 20 + 20 + 20 = 100

20 + 20 + 20 + 20 + 10 + 10 = 100

20 + 20 + 20 + 10 + 10 + 10 + 10 = 100

20 + 20 + 10 + 10 + 10 + 10 + 10 + 10 = 100

20 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 100

10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 = 100

So, based on the list, we arrived at ten (10) combinations of ₱50.00, ₱20.00 and ₱10.00 having a total of ₱100.00 for each.

B. Using a Table

Number of Pieces	₱50.00	₱20.00	₱10.00	TOTAL
	2			₱100.00
	1	2	1	₱100.00
	1	1	3	₱100.00
	1		5	₱100.00
		5		₱100.00
		4	2	₱100.00
		3	4	₱100.00
		2	6	₱100.00
		1	8	₱100.00
			10	₱100.00

Using a table, we listed down the number of pieces for each denomination with no duplication, and again we have ten (10) combinations.

C. Drawing/Illustration

1.
2.
3.
4.
5.

6.

7.

8.

9.

10.

As shown in the illustrations, there are ten (10) combinations formed.

So, you can use any or several of the strategies mentioned in solving non-routine word problems. You just need to analyze and understand the problem well so that you can determine which strategy will best suit your solution.

What's More

ACTIVITY 1

Decoding: Find out what animal has the biggest brain. Answer the questions that have a corresponding letter. Write the letter on the blank to form the word.

_____	_____	_____	_____	_____
356	2 200	141	332	1540

H - Last month, Nico and Ben worked in Agustin Farm. They earned a total of ₱5 150 but spent ₱750 for their food. If the remaining amount was divided equally between them, how much did each of them get?

E - Mr. Cruz bought a new TV set worth ₱9 200 in an appliance center and availed of its "zero interest plan" promo. If he paid a down payment of ₱1 500 and plans to pay the balance equally in 5 months, how much will be his monthly amortization?

W - There are 24 *sampaguita* flowers in a garland. How many garlands can be made from 8 544 *sampaguita* flowers?

L - Mrs. De Leon paid ₱6 640 for the books of her 20 pupils. If each book has the same price, how much does each book cost?

A - Mr. Reyes, a farmer from Sorsogon, harvested 890 sacks of *palay*. He donated 185 sacks of *palay* to the typhoon victims and sold the remaining sacks of *palay* to 5 rice dealers. How many sacks did each rice dealer receive?

ACTIVITY 2

Read and understand the problem below then solve.

Mrs. Sanchez baked 120 trays of 35 pandesal each. After cooking, she donated them equally to 12 community pantries. If the organizer of each community pantry divided them equally into 35 bags, how many pandesal are there in each bag?

Are you done answering? If yes, time to check.

Please go to page 15 for the ***Answer Key***.

What I Have Learned

Remember!

To solve one-step or multi-step word problems, consider the following steps and answer the questions after each step:

Step 1 – Understand

- Know what is asked:
- What are given:

Step 2 – Plan

- Know the operation
- Write the number sentence.

Step 3 – Solve

- Write the correct unit/label your answer.

Step 4 – Look Back

Check your answer by performing multiplication which is the inverse operation of division. Multiply the quotient by the divisor and if the product is equal to the dividend then your answer is correct.

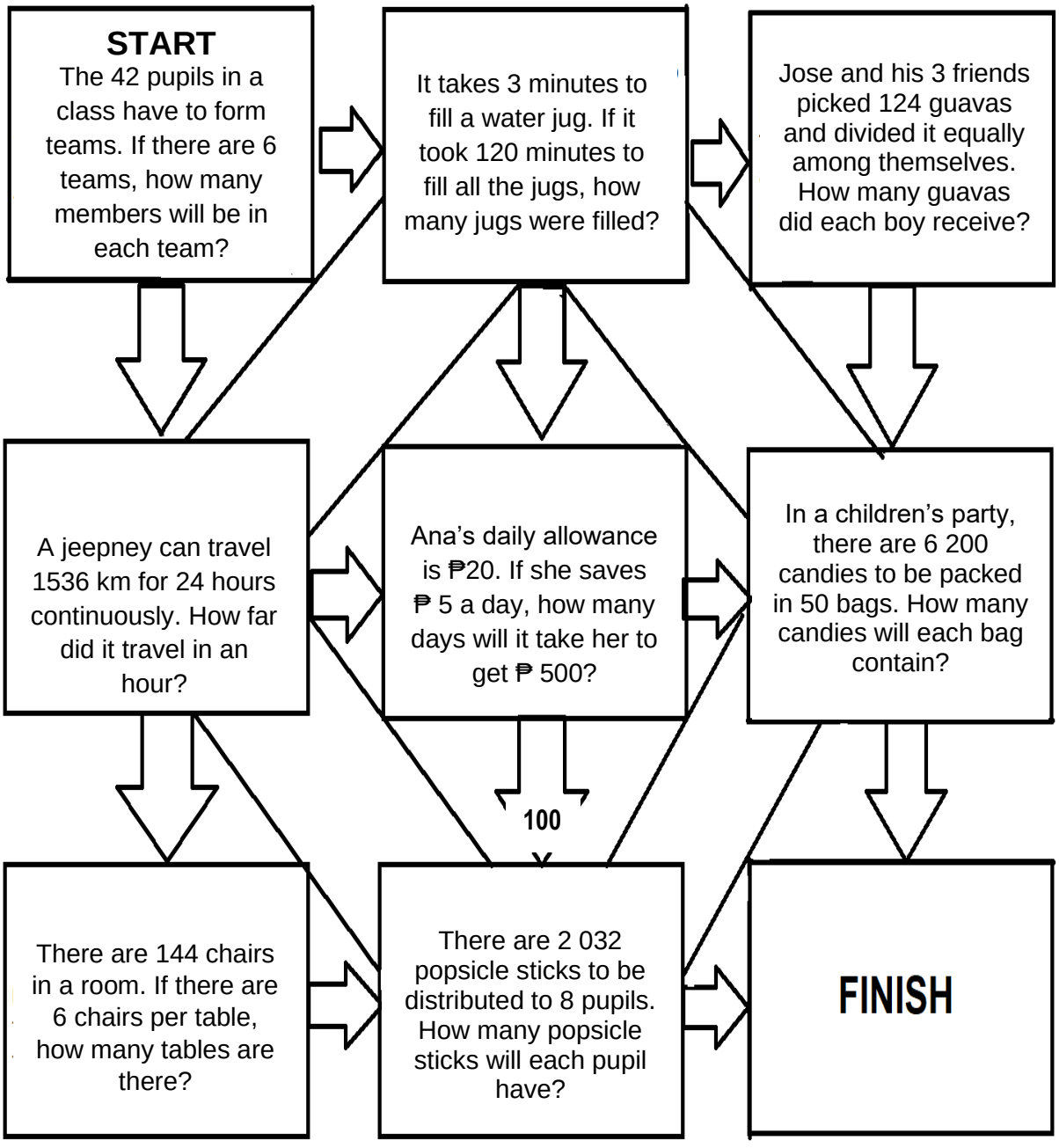
You have already reached this far. Now, let us see if you have really learned from our discussion. Prepare yourself for a fun activity in the next page.

What I Can Do

APPLY YOUR SKILLS

Be Amazed With This Maze.

Solve the word problems below. Every correct answer leads you to another situation in the next box. Continue answering the problems until you reach the last box. Find out which path will lead you to the last box.



Are you done answering? If yes, time to check.

Please go to page 15 for the ***Answer Key***.

Assessment

Solve the following problems. Show your solution and make sure you have followed the rubric below to know how you should be given a point in each number.*(5 points each item)*

1. Joseph bought 23 pineapples and 37 green mangoes. If he combined all the fruits and shared these equally to his 3 brothers, how many fruits did each of them get?

2. There were 130 persons invited in a festival. The venue has rectangular tables that can sit 6 persons each. The longer side can sit two persons while the shorter side can sit one. The host arranges 6 tables in a row placed shorter end to shorter end. How many rows of tables are needed to sit all the invited guests?

RUBRIC TO BE USED IN CHECKING YOUR ANSWER

In giving score to your work, read the description for each number. Whichever description fits your solution, then the corresponding number will be your score**.**

5 – A correct solution and an appropriate strategy are shown or explained and the solution is shown with correct label or description.

4 – A complete strategy is explained but an incorrect solution or no solution given and the answer was not labeled correctly.

3 – Some parts of an appropriate strategy are shown but some key elements are missing.

2 – There are some strategies or explanations other than simply copying the data but work would not lead to a correct solution.

1 – There are one or more incorrect approaches.

0 – No work or answer shown.

Additional Activities

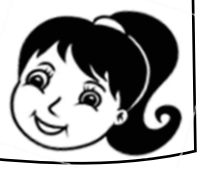
Solve the following problems.

1. The Campus Journalists of Bogña Integrated School put up a food booth to raise money for their school library. They prepared 110 *suman*, 130 *puto* and 160 *kutsinta*. At the end of the activity, the pupils were able to sell 95 bags containing equal number of *kakanins.* Some excess *kakanins* were kept by the pupils. How many *kakanins* did they keep?

2. A grocery store sells eggs by the dozen. If it has 787 eggs, how many dozens of eggs can it sell?

3. A club started a meeting with few members. Each time the club meets, each member brings one new member. If 96 members attended the fifth meeting, how many members were present during the first meeting?

Are you done answering? If yes, time to check.



Please go to page 15 for the ***Answer Key***.

CONGRATULATIONS! You are learning very well.

See you in the next module.

Answer Key

What's In

1) 3
2) 47
3) 9
4) 29
5) 5

What I Know

1) 24
2) 308
3) 586.25 pesos
4) 40
5) 3 180 pesos
6) 70
7) 8 goats, 7 chickens
8) 70
9) 104
10) 65

What's More

Activity 1:

W H A L E

Activity 2:

120 x 35 = 4 200 4 200 ÷ 12 = 350 350 ÷ 35 = 10 pandesal in each bag

What I Can Do

Apply Your Skills

Assessment

1. 15

2. 130 ÷ 26 = 5

Note:
There are 26 chairs in each row of 5 tables placed end to end.

Additional Activity

1) 115
2) 65
3) 6 members

Reference

Tabilang, Alma R. et al. 2015.Mathematics 4 Learner's Material pp. 82-84, Department of Education.

For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

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

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