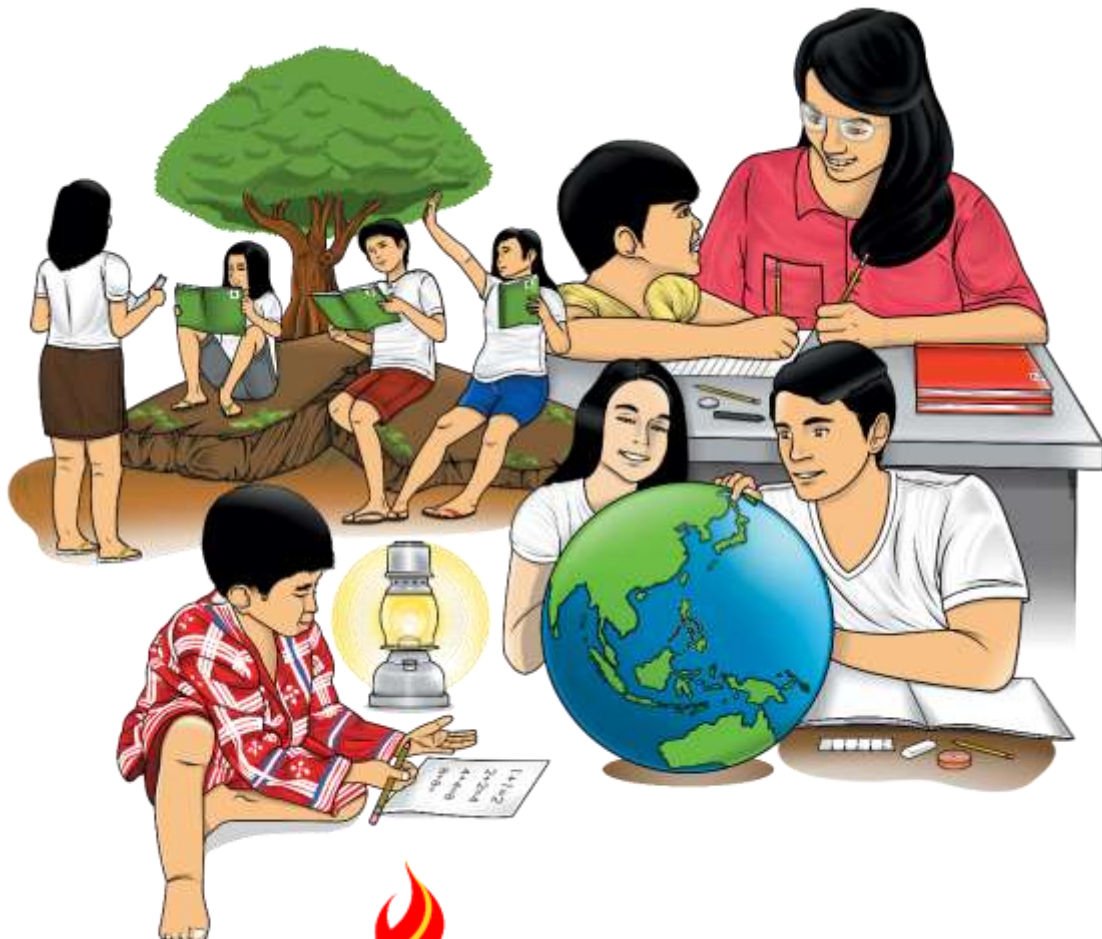# Mathematics

Quarter 1 – Module 7: Solving Real-Life Problems Involving GCF and LCM

ALTERNATIVE DELIVERY MODE

ADM

5

Mathematics

Quarter 1 – Module 7:
Solving Real-Life Problems
Involving GCF and LCM

DepED
DEPARTMENT OF EDUCATION

Introductory Message

For the Facilitator:

Welcome to the Mathematics Grade 5 Alternative Delivery Mode (ADM) Module 7 on Solving Real-Life Problems Involving GCF and LCM!

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners to meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

> ### *Notes to the Teacher*
> This contains helpful tips or strategies that will help you in guiding the learners.

As a Facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the Learner:

Welcome to the Mathematics Grade 5 Alternative Delivery Mode (ADM) Module 7 on Solving Real-Life Problems Involving GCF and LCM!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:

	What I Need to Know	This will give you an idea of the skills or competencies you are expected to learn in the module.
	What I Know	This part is composed of a 10-item activity to check what you already know about the lesson to take. If you get all the answers correct (100%) you may decide to skip this module.
	What's In	This is a brief drill or review to help you link the current lesson with the previous one.
	What's New	In this portion, the new lesson will be introduced to you in various ways: a story, a song, a poem, a problem opener, an activity, or a situation.
	What is It	This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.
	What's More	This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.
	What I Have Learned	This includes questions or fill in the blank sentence/paragraph to process what you have learned from the lesson.
	What I Can Do	This section provides an activity that will help you transfer your new knowledge or skill in real-life situations or concerns.
	Assessment	This is a 2-item (10-point) task that aims to evaluate your level of mastery in achieving the learning competency.

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	Additional Activities	In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned.
	Answer Key	This contains answers to all activities in the module.

At the end of this module, you will also find:

	References:	This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary marks on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instructions carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and in checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain a deep understanding of the relevant competencies. You can do it!

What I Need to Know

This module was designed to help the Grade 5 learners gain knowledge in solving real-life problems involving greatest common factor and least common multiples of 2-3 given numbers. The activities are arranged to follow the standard sequence of the lesson.

After going through this module, you are expected to:

1. identify real-life problems involving GCF and LCM of 2-3 given numbers; and
2. use a 4-step plan in solving real-life problems involving GCF and LCM of two or more given numbers.

What I Know

Recall what you have learned in the previous lessons and answer the test below.

Directions: Read and understand each given problem. Write the letter of the correct answer on your worksheet.

1) What is the least number of atis that can be divided equally among three families having 9, 8, and 12 members?
      A. 70   B. 71   C. 72   D. 73

2) Rico waters his orchids every 4 days and his gumamela every 7 days. Not counting the first day, when is the first time both plants are watered on the same day? When is the next time that both plants will be watered again on the same day?
      A. on the 27th day and 56th day
      B. on the 28th day and 48th day
      C. on the 28th day and 54th day
      D. on the 28th day and 56th day

3) The GCF of two numbers is 6 and their LCM is 36. If one of the numbers is 12, what is the other number?
      A. 15   B. 18   C. 24   D. 30

4) Some pupils in Grade 5 can pose for their snapshots in the photo booth in rows of 9 or 8 during the Science Camp. What is the least number of students that can exactly be accommodated in both arrangements?
      A. 70   B. 71   C. 72   D. 73

5) Luisa is pasting pieces of wallpapers of equal sizes onto her bedroom wall measuring 72 cm by 90 cm. If only whole square pieces are used, and the wall is to be completely covered, what is the largest possible length of each piece?

    A. 17 cm   B. 18 cm   C. 19 cm   D. 20 cm

6) The School Canteen serves chicken and barbecue every 5 days and vegetable lumpia every 4 days. On which days are both dishes served?

    A. every 16th day   C. every 25th day
    B. every 20th day   D. every 40th day

7) A company paints every sixth car it manufactures in red color. Mag wheels are installed every eighth car. Which car will be red in color and have mag wheels replaced at the same time?

    A. 12th   B. 16th   C. 24th   D. 30th

8) Alicia bought some notebooks and paid Php24.00. Susan bought the same kind of notebook and paid Php16.00. What is the greatest amount each notebook can possibly cost?

    A. Php8.00   B. Php12.00   C. Php15.00   D. Php20.00

9) Jim and Julius practice basketball regularly. Jim plays every 2 days while Julius plays every 4 days. Every how many days do they play on the same day?

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

10) Mr. Romero organized the Mathematics Club of 16 girls and 36 boys. What is the biggest number of members each group can have which would have an equal number of girls and boys?

    A. 2   B. 4   C. 6   D. 8

What's In

The table below shows how to find the Greatest Common Factor (GCF) and Least Common Multiple (LCM) of a given set of numbers using continuous division.

You were taught about this in the previous lesson. Let's recall how it is done.

Solution

Step 1	$\lfloor$ 8 16 24	Arrange the given numbers horizontally.
Step 2	2⌊8⌊16⌊24 2⌊4⌊8⌊12 2⌊2⌊4⌊6 1 2 3	Write the common prime divisor at the left side and the quotients below the numbers. Repeat the process until there is no common divisor left.
Step 3	Find the GCF by multiplying all the common prime divisors. (2 x 2 x 2 = 8)	
Step 4	Find the LCM by multiplying all the common prime divisors by all the quotients. (2 x 2 x 2 x 1 x 2 x 3 = 48)	

Therefore, the **LCM** of 8, 16, and 24 is 48, and the **GCF** is 8.

Now, let us check if you got it right. Do the activity that follows.

Activity 1.
Directions: Copy the table in your notebook. Then complete the table by supplying the GCF and the LCM of the given sets of numbers.

Note: Number 1 is done for you!

	NUMBERS	GCF	LCM
1)	2, 8, 40	2	40
2)	8, 16, 32		
3)	18, 36, 72		
4)	9, 12, 18		
5)	30,60, 80		
6)	2, 10, 20		

What's New

Now, get moving!

In the previous module, you were taught how to find GCF and LCM. This module will teach you how to solve real-life problems involving GCF and LCM.

Activity 2.
Directions: Read the problem carefully.

> A buzzer sounds every 15 minutes. Another buzzer sounds every 45 minutes. If both buzzers will sound together at noon, what time they will buzz again together?

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5 |  15      45
3 |   3       9
      1       3
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LCM: 5 x 3 x 3 = 45

Therefore, the least number of minutes that the two buzzers buzz together again is in 45 minutes. So, if the buzzers buzz together at noon, they will buzz again at exactly 12:45 noon.

What Is It

The table below will help you understand how to solve real-life word problems involving GCF and LCM of given numbers.

> Danilo, a school varsity player, has 32 pairs of socks and 16 pairs of shoes. He wants to sell a package of shoes and socks. What is the greatest number of packages that he can sell with no remaining pair of shoes and socks?

Here are the steps that will guide you to solve the problem. Analyze and study carefully.

Step1 **UNDERSTAND** (Preparation)	What is **A**sked? The greatest number of packages that Danilo can sell What are the **G**iven facts? 　32 pairs of socks 　16 pairs of shoes
Step 2 **PLAN** (Thinking Time)	How will you solve the problem? Find the greatest common factor using continuous division.
Step 3 **SOLVE** (Carry out the plan)	2 | 32　　16 2 | 16　　8 2 | 8　　4 2 | 4　　2 　　2　　1 Write the common prime divisor at the left side and the quotients below the numbers. Repeat the process until there is no common divisor left. **S**olution Find the GCF by multiplying all the common divisors. (2 x 2 x 2 x 2 = 16) Answer The greatest number of packages that Danilo can sell with no remaining pair of shoes and socks is 16.
CHECK (Verification)	To check if the answer is correct, you can use listing method and prime factorization.

Do the task below!

Directions: Read the problems carefully. Write your solutions on a separate answer sheet.

1) Yellow daisy flowers come in a bouquet of 8 and red daisies in a bouquet of 6. What is the smallest number of bouquets of each kind you will need to buy if you want to have the same number of each kind of daisies?

    Understand:
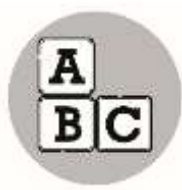   Plan:
    Solve:
    Check:

2) There are 16 cows and 24 goats in a ranch. If they will be grouped separately in the same number, what is the biggest number of animals in a group?

    Understand:
    Plan:
    Solve:
    Check:

What's More

Let's practice!

Directions: Read the problem inside the box carefully. Find the GCF and the LCM. Write your solutions on a separate answer sheet.

> Every night, Mang Jonas sells yummy 'balut' in the corner of Nijaga St. His bestsellers are those that were incubated for 16 and 18 days. To easily choose between the two varieties, he is going to separate them in 18 and 24 pieces for each basket. What is the least number of 'balut' he needs to place in baskets such that none will be left over?

Let's see how good you are now in solving word problems on your own.

Good luck!

What I Have Learned

We use a 4-step plan in solving problems involving GCF and LCM of two given numbers: **Understand**, **Plan**, **Solve**, **Check** and **Look back**.

Directions: Match the terms in Column A with the definitions in Column B.

Column A	Column B
1. Understand	A. Tells you to make sure if you answered what is asked in the problem.
2. Plan	B. Allows you to prepare to learn what is being asked and what type of problem you are dealing with.
3. Solve	C. Tells you to carry out your plan and keep trying something until you find the right answer.
4. Check and Look back	D. Allows you to think how are you going to attack the problem.

What I Can Do

Directions: Read and analyze each problem very carefully. Then solve. Show your solutions on your answer sheet.

1) A farmer from Baguio supplies two types of carrots, the *Imperator* (long roots) and the *Nantes* (medium length roots). He wants to place his newly-harvested carrots in baskets of 75 and 100 pieces. What is the smallest number of carrots that he can equally place inside the baskets?
   Understand:
   Plan:
   Solve:
   Check:

2) There are 80 sitaw and 120 pechay seedlings that need to be planted in a farm. What is the largest number of seedlings that can be planted equally for each kind in rectangular plots?
   Understand:
   Plan:
   Solve:
   Check:

Assessment

Directions: Read, analyze and solve each problem. Use a separate sheet of paper for your solutions.

1) Rey collected three glasses of colored marbles. The first glass has 27 red marbles, the second has 36 green marbles, and the third has 54 blue marbles. He placed the marbles into a set of boxes of each kind. What is the greatest number of marbles that he can put equally inside each box?

     Understand:
     Plan:
     Solve:
     Check:

2) A reseller has two packs of crayons, one with 24 pieces and another with 12 pieces. If the crayons are to be repacked equally in boxes, what is the greatest possible number of crayons inside the boxes?

     Understand:
     Plan:
     Solve:
     Check:

Additional Activities

Directions: Read and solve the problem. Have your solution on a piece of paper.

1) A number and 42 has a GCF of 6 and LCM of 210.

What is the number?
How many times will you multiply the GCF to get this number?

2) Anna baked two trays of bite-sized chocolate chip cookies, one has 63 pieces (with banana extract) and another has 42 pieces (with oats) which are packed of equal numbers in plastic packaging. Find the greatest number of chocolate chip cookies inside each pack.

Answer Key

What I know

1.C 2.D 3.B 4.C 5.B
6.B 7.A 8.B 9.B 10.D

What's In

Number	GCF	LCM
Ex. 2, 8, 40	2	40
1. 8, 16, 32	8	32
2. 18, 36, 72	18	72
3. 9, 12, 18	3	36
4. 30, 60, 80	10	240
5. 2, 10, 20	2	20
6.		

What Is It

1. A: the smallest number of bouquets of each kind of daisy that can be bought

G: bouquet of 8 yellow daisies/bouquet of 6 red daisies

O: continuous division

N: 2   8   6

S: LCM: 24

2. There are 16 cows and 24 goats in a ranch. If they will be grouped separately with the same number. What is the biggest number of animals in a group?

A: The biggest number of animals in a group.

G: 16 cows and 24 goats

O: continuous division

N: 2   16   24

S: GCF: 8

What's More

Mang Jonas is going to put baluts in 18 and 24 pieces each tray. What is the least number of baluts he needs to place in trays such that none of it will be leftover?

A: The least number of baluts that Mang Jonas needed to place in trays
G: baluts of 18 and 24 per tray
O: continuous division
N: 2   18   24
S: LCM: 72

What I Can Do

1. A farmer from Baguio wants to place carrots in a basket with 75 and 100 pieces. What is the smallest number of carrots can be placed equally inside the baskets?

A: The smallest number of carrots that he can equally place inside the baskets
G: basket with 75 and 100 pieces of carrots
O: continuous division
N: 5   75   100
S: 300

2. There are 80 sitaw and 120 pechay seedlings that need to be planted in a farm. What is the largest number of each kind can be planted equally in rectangular plots with only one type of plant per plot?

A: largest number of sitaw and pechay that can be planted in rectangular plots
G: 80 sitaw and 120 pechay plants
O: continuous division
N: 2   80   120
S: GCF: 20

What I Have Learned

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

Assessment

1. Rey collected three glasses of colored marbles. The first glass has 27 red marbles, the second has 36 green marbles, and the third has 54 blue marbles. He put the marbles into a set of boxes of each kind. What is the greatest number of marbles can be put equally inside each box?
A: The greatest number of marbles can be put equally inside each box
G: 27 red marbles, 36 green marbles, and 54 blue marbles
O: continuous division
N: 3   27   36   54
S: GCF: 9

2. A reseller has two packs of crayons, one with 24 pieces and another with 12 pieces. If the crayons are to be repacked equally in boxes, what is the greatest possible number of crayons inside the boxes?
A: The largest number of crayons that can be packed equally inside the boxes
G: crayons in boxes of 12 and 24 pieces
O: continuous division
N: 2   12   24
S: GCF: 12

Additional Activity #1

A number and 42 has a GCF of 6 and LCM of 210. What is the number? How many times will you multiply the GCF to get this number?

Solution:

$$\begin{array}{r|cc} 2 & 42 & 30 \\ 3 & 21 & 15 \\ & 7 & 5 \end{array}$$

GCF = 2 x 3 = 6
LCM = 2 x 3 x 7 x n = 210
42 x n = 210
n = 210/42
n = 5

Therefore, the missing number is 30. You will have to multiply the GCF 6 by 5 to get 30.

Anna baked two trays of bite-sized chocolate chip cookies, one has 63 pieces (with banana extract) and another has 42 pieces (with oats) which are packed of equal numbers in plastic packaging. Find the greatest number of chocolate chip cookies inside each pack.

Solution:

7	42	63
3	6	9
	2	3

GCF = 7 x 3 = 21

Therefore, the greatest number of chocolate chip cookies inside each pack is 21.

References

Coronel, C. and N. Bamba. 2010. *Mathematics for a Better Life.* SD Publication.

Ursua, A.C. and A.P. Lumbre. 2016. *21st Century Mathletes Textbook.* Quezon City: Vibal Group Inc.