

4

Mathematics

Quarter 1 – Module 8: Solving Routine and Non-routine Problems Involving Multiplication of Whole Numbers



Mathematics - Grade 4
Alternative Delivery Mode
Quarter 1 - Module 8: Solving Routine and Non-routine Problems
Involving Multiplication of Whole Numbers
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Mathematics

**Quarter 1 - Module 8:
Solving Routine and Non-routine
Problems Involving Multiplication
of Whole Numbers**

Introductory Message

For the facilitator:

Welcome to Mathematics Grade 4 Alternative Delivery Mode (ADM) Module on Solving Routine and Non-routine Problems Involving Whole Numbers!

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 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 4 Alternative Delivery Mode (ADM) Module on Solving Routine and Non-routine Problems Involving Whole Numbers!

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 includes an activity that aims 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 blank sentence/paragraph to be filled in to process what you learned from the lesson.



What I Can Do

This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.



Assessment

This is a task which aims to evaluate your level of mastery in achieving the learning competency.



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 mark/s 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 instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and 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 deep understanding of the relevant competencies. You can do it!



What I Need to Know

Good day learner! You have learned from the previous module how to multiply numbers up to 3 digits by up to 2-digit numbers without or with regrouping. In this module, you will encounter different problems involving multiplication of whole numbers including money. You will solve these problems using appropriate problem solving strategies and tools. Always put yourself in each problem so that you can easily solve it. Enjoy and have fun solving.

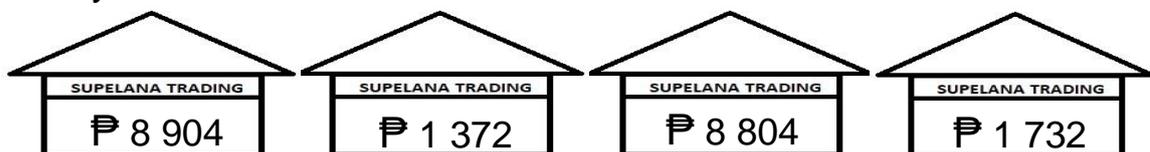
At the end of this module, you will be able to solve routine and non-routine problems involving multiplication of whole numbers including money using appropriate problem solving strategies and tools.



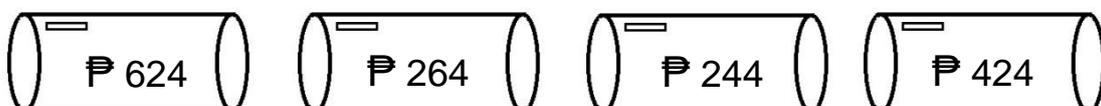
What I Know

A. Solve each problem and choose the correct answer.

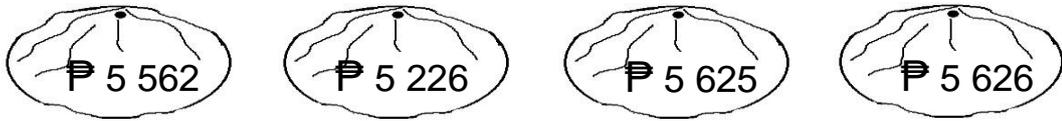
1. Supelana Trading can sell 212 kilograms of rice a day. If a kilogram of rice costs ₱42, how much is the sales of Supelana Trading in a day?



2. Analyn saves ₱12 from her daily allowance. How much did she save in 22 days?



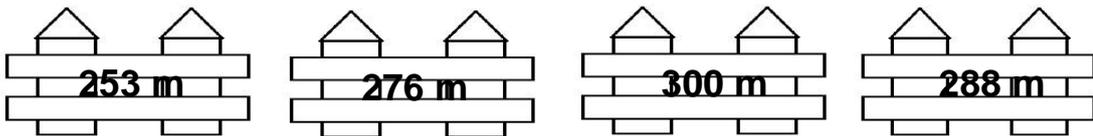
3. Mrs. Rosario cooks siopao and sells it online for an extra income. If she was able to sell 25 boxes to customers at ₱225 per box, how much sales did she have?



4. The canteen of San Roque Elementary School has an average daily sale of ₱ 842. What is the monthly sale if there are 21 school days in a month?



5. The electric posts along a straight road are 23 m apart. If there are 12 electric posts, what is the distance from the first post to the last post?



B. Solve the following problems.

6. The Department of Health distributed 1 255 medicine kits to every town in a certain region. How many medicine kits will be distributed if there are 16 towns in that region?
7. A sari-sari store can sell 1 525 bottles of mineral water in a month. If a bottle costs ₱15, how much is the sale of the sari-sari store in a month?
8. T-shirts are sold on a “Buy 1-Take 1” basis for ₱320. How much will you pay for 10 T-shirts?
9. In a Fun Run Activity, the registration fee is ₱20. If there are 340 participants who registered, how much is the total collection for registration?
10. Two workers can make 210 hollow blocks in an hour. How many hollow blocks can they make in 4 hours?

Are you done answering?
If yes, time to check. Please go to page 12 for the **Answer Key**.



What's In

YOU MUST HAVE IT!

Direction. Find the product. Then, write the corresponding letter of each product to solve the puzzle.

$$\begin{array}{r} 1. \quad 121 \\ \times \quad 8 \\ \hline \end{array} \quad \begin{array}{r} 2. \quad 342 \\ \times \quad 6 \\ \hline \end{array} \quad \begin{array}{r} 3. \quad 453 \\ \times \quad 11 \\ \hline \end{array} \quad \begin{array}{r} 4. \quad 312 \\ \times \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 112 \\ \times \quad 8 \\ \hline \end{array} \quad \begin{array}{r} 6. \quad 244 \\ \times \quad 5 \\ \hline \end{array} \quad \begin{array}{r} 7. \quad 242 \\ \times \quad 4 \\ \hline \end{array}$$

A - 2 052

N - 896

V - 4 983

G - 1 220

I - 936

S - 968

"What is the amount of money that is not spent or used?"

ANSWER:

1.	2.	3.	4.	5.	6.	7.
----	----	----	----	----	----	----

Are you done answering?
If yes, time to check. Please go to page 12 for the **Answer Key**.



What's New

How much money does your mother give you every day for your allowance? Do you spend all or you save some amount? Why do you need to save?

Read the problem.

Ruby receives from her mother the amount of ₱30 as her daily allowance in school. She saves ₱5 for future expenses. How much does she save in a month if there are 21 school days?



This is an example of a routine problem. Routine problems are problems that have solutions which can be immediately identified.

Try answering the given problem.



What is It

Let us see if we have the same answer.

To analyze and solve the problem, you can use these steps:

A. UNDERSTAND

1. Read and understand the problem.
2. Know **what is asked** in the problem.
Ruby's savings in a month if there are 21 school days.
3. Find the necessary information.

The **given facts**: ₱5 – daily savings
 21 – school days in a month

₱30 is not a necessary given fact because the focus is savings not monthly allowance.

B. PLAN

1. Determine the **operation** to be used. **MULTIPLICATION**
2. Write the **number sentence**. $21 \times ₱ 5 = \square$

C. SOLVE

Solve using the operation.

21	
<u> </u>	x 5
₱105	

D. CHECK AND LOOK BACK

See if your answer makes sense.
State the complete answer.

You can also use a calculator to check.

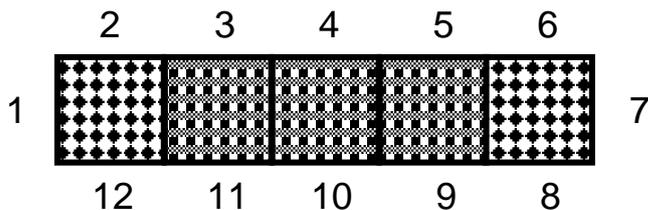
Ruby saves ₱105 in a month.

This is how to solve routine problems. How about solving non-routine problems? Go on with the next example. Study the example and ask questions as necessary.

Study this problem.

In a school canteen, 4 students can sit in a square table. How many students can sit in five square tables placed end to end?

You can solve by drawing a picture.



Solving non-routine problems develops your reasoning power. You can use the following strategies in solving non-routine problems: Listing, Making a Table, Guess and Check, Drawing/Diagram, Using patterns, etc.

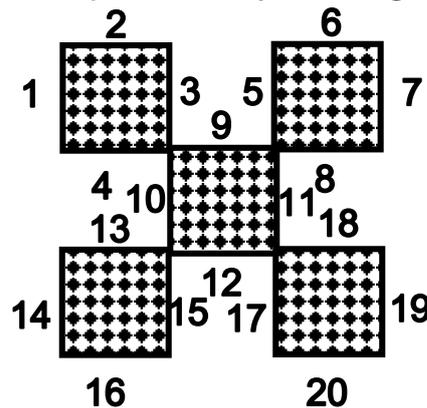
Two end tables: $3 \times 2 = 6$ (3 students can sit)

Three inside tables: $2 \times 3 = 6$ (2 students can sit)

So, 12 students can sit in five square tables placed end to end.

What do you think is the best arrangement of the square tables such that more students may be seated and the square tables are still connected to each other?

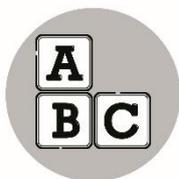
You can solve this problem by making an illustration.



You can arrange the tables by connecting a corner of a table (the vertex) to another corner having a way that a table can still sit 4 students.

Therefore, the best arrangement of the square tables is corner to corner wherein 4 students can still sit.

Now, you learn solving non-routine problems. This time you are now ready for the activities. LET'S GO!



What's More

Activity 1

Solve the following problems. Show your solutions.

1. During weekends, Cedrick and his friends collect plastic bottles and sell them to a junkshop. They collected 36 kilograms of plastic bottles. How much will they receive if each kilogram costs ₱12?

- The electric posts are 25 meters apart. If there are 10 electric posts, what is the distance from the first electric post to the last electric post?

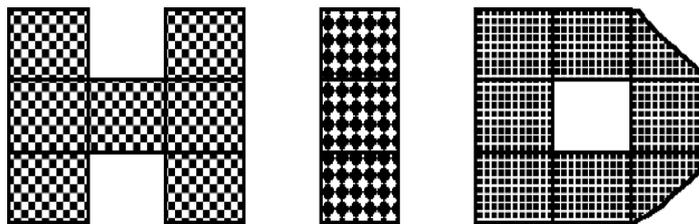
Are you done answering?

If yes, time to check. Please go to page 12 for the **Answer Key**.

Assessment 1

Solve the following problems.

- A group of workers can make 830 pieces of siomai an hour. How many pieces of siomai can they make in 36 hours?
- T-shirts are sold on a “Buy 1 - Take 1” basis. If one shirt costs ₱ 120, how much will you pay for 10 T-shirts?
- The 13 divisions of DepEd Bicol conducted a simultaneous earthquake drill. How many participants are there if each division has 920 participants each?
- A square tile costs ₱45 each. Find the cost to tile the word.



- A raffle ticket costs ₱25. How much is the cost of 680 raffle tickets?

Are you done answering?

If yes, time to check. Please go to page 12 for the **Answer Key**.



What I Have Learned

How do you solve routine and non-routine word problems involving multiplication of whole numbers including money using appropriate strategies and tools?

To solve routine problems involving multiplication of whole numbers including money using appropriate strategies and tools, follow these steps:

UNDERSTAND

- Know what is asked.
- Know the given facts.

PLAN

- Determine the operation to be used.
- Write the number sentence.

SOLVE

- Use the operation to solve.

CHECK AND LOOK BACK

- Write the correct answer.

Non-routine problems can be solved by drawing a picture, using a number line, making a table, and others.



What I Can Do

A. Use the Neo's Canteen menu to answer the following questions.

1. How much will two orders of spaghetti cost?
2. How much will eight orders of egg sandwich cost?
3. How much will Ruby pay for four orders of banana cue?
4. How much will the Mercado Family pay for 4 pieces of puto,

NEO'S CANTEEN MENU

Spaghetti	:	₱25
Pancit	:	₱20
Banana Cue	:	₱15
Puto	:	₱6
Egg Sandwich	:	₱24
Calamansi Juice	:	₱10
Buko Juice	:	₱12

4 orders of pancit, and 4 orders of calamansi juice?

B. Read, analyze, then solve.

5. The distance between each bulb of a Christmas light is 6 cm. What is the distance from the first bulb to the last bulb if there are 100 bulbs?
6. A sari-sari store sells 215 bottles of pineapple juice in a month. What is the total sales of the sari-sari store in a month if each bottle costs ₱15?

Are you done answering?
If yes, time to check. Please go to page 12 for the **Answer Key**.



Assessment

Read, analyze, then solve each problem.

1. Mang Gusting earns ₱1 355 from his tricycle every week. How much will he earn in 10 weeks if the tricycle will be in good condition for the period given?
2. The Diaz family conserves electricity everyday by turning off unused lights and appliances. Compared to their previous bill, they have saved ₱125. How much will they save if they continue conserving for 12 months?

3. A box of corned beef containing 36 cans is sold with 3 cans free. Aling Belen bought 3 boxes for her sari-sari store. How many cans of corned beef will she have?
4. A box of pencils costs ₱108. How much will you pay if you buy 12 boxes?
5. Connecting four dots makes a square. If you add two more dots and connect them, you can make two squares. Given the condition, how many dots compose 10 such squares?
6. A barber shop haircut service costs ₱50. If there were 113 haircut services in that day, how much did the barber shop earn?
7. Kiko sells *sampaguita* garlands during weekends. Each *sampaguita* garland costs ₱8. How much will he have if he sold 150 pieces?
8. Roses are planted 3 meters apart. If there are 25 roses, what is the distance from the first rose to the last rose?
9. Strawberries from Baguio are sold for ₱350 a kilo. How much will a tourist pay for 15 kilos?
10. A printer can print 20 copies in a minute. How many copies can it print in 3 hours?

Are you done answering?
If yes, time to check. Please go to page 12 for the **Answer Key**.



Additional Activities

Solve the following problems.

1. On the first two days of the Palarong Pambansa, a vendor sold 310 T-shirts at ₱175. How much was the vendor's sale for the first two days?
2. A rectangle is composed of 15 squares. The three middle squares of the rectangle are painted. How many non-painted squares are there if there are 20 rectangles?
3. Lance is a thrifty student. He opened a student savings account in a bank. Every week he deposits ₱110. How much money will he have in the bank after 48 weeks?
4. Six is a product of the two pairs of factors: (6x1 or 1x6) and (2x3 or 3x2). How many pairs of factors are there that have a product of 36?
5. In a mobile game, every level passed is rewarded with 50 coins. The game finishes at Level 50 with a reward of a winner's trophy instead of 50 coins. If you reached the last level and won the game, how many coins did you earn in all?

Are you done answering?

If yes, time to check. Please go to page 12 for the ***Answer Key***.

**CONGRATULATIONS! You are doing very well.
See you in the next module.**



Answer Key

ADDITIONAL ACTIVITIES (page 11)

1. The vendor's sale for two days is ₱ 54 250. There are 240 squares without paint.
2. He deposited ₱ 5 280.
3. There are 5 pairs of factors with a product of 36.
4. You earned 2 450 coins in all.

ASSESSMENT (page 9-10)

1. He will earn ₱ 13 550 in 10 weeks.
2. He will save ₱ 1 500.
3. Alling Belen took home 117 cans of corned beef for her sari- sari store.
4. ₱ 1 296
5. 22 dots
6. ₱ 5 650
7. ₱ 1 200
8. 72 meters
9. ₱ 5 250
10. 3 600 copies

WHAT'S MORE (page 6-7)

Activity 1

1. Solution: 36

$$\begin{array}{r} 36 \\ \times 12 \\ \hline 72 \\ 36 \\ \hline 432 \end{array}$$

Answer: They will receive ₱ 432

2. Solutions:

Answer: The distance from the first electric post and the last electric post is 225 m.

Assessment 1

1. They can make 29 880 stomal pieces in 36 hours.
2. ₱ 600
3. There are 11 960 participants.
4. The cost to tile the word is ₱ 765.
5. The cost of 680 raffle tickets is ₱ 17 000.

WHAT I CAN DO (page 8-9)

1. ₱ 50
2. ₱ 192
3. ₱ 60
4. ₱ 144
5. The distance from the first bulb to the last bulb is 594 cm.
6. The total sale of the sari-sari store is ₱ 3 225

WHAT'S IN (page 3)

Answer: SAVINGS

1. 968
2. 2 052
3. 4 983
4. 936
5. 896
6. 1 220
7. 968

WHAT I KNOW (page 1-2)

A

1. ₱ 8 904
2. ₱ 264
3. ₱ 5 625
4. ₱ 17 682
5. 253 m

B

6. 20 080 medicine kits
7. ₱ 22 875
8. ₱ 1 600
9. ₱ 6 800
10. 840 hollow blocks

Score update: Additional Activities

- 3 WOW! GREAT JOB!
- 2 NICE!
- 0-1 Don't worry. Your teacher will be happy to help you.
Do not be shy to ask questions. Have fun!

Score update: What I Know and Assessment

- 10 WOW! GREAT JOB!
- 7-9 VERY NICE!
- 5-6 NICE!
- 3-4 OOOPPPS! Let us review and go over with the test again.
- 0-2 Don't worry. Take time to go over the lesson again. Do
not be shy to ask help from your teacher or facilitator.

Have fun!

Score update: What's In

- 7 WOW! GREAT JOB!
- 6 VERY NICE!
- 5 NICE!
- 0-4 OOOPPPS! Don't worry. Take time to study this module.
Do not be shy to ask help from your teacher or facilitator.
Have fun!

Score update: What's More- Activity 1

- 2 WOW! GREAT JOB!
- 1 NICE!
- 0 Don't worry. Your teacher will be happy to help you.
Do not be shy to ask questions. Have fun!

Score update: What I Can Do

- 6 WOW! GREAT JOB!
- 4-5 NICE!
- 0-3 Don't worry. Your teacher will be happy to help you.
Do not be shy to ask questions. Have fun!

Score update: What's More – Assessment 1

- 5 WOW! GREAT JOB!
- 3-4 NICE!
- 0-2 Don't worry. Your teacher will be happy to help you.
Do not be shy to ask questions. Have fun!

References

K to 12 Mathematics Curriculum Guide, August 2016.

Tabilang, A. et. al. (2015). *Mathematics: Learner's Material*, Pasig City: Lexicon Press.

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