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# Lesson Exemplar for Mathematics 5



Lesson Exemplar for Mathematics Grade 5 Quarter 1: Lesson 5 Week 5 SY 2024-2025

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## MATHEMATICS/QUARTER 1/ GRADE 5

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES				
A. Content Standards	Multiplying Fractions			
B. Performance Standards	By the end of the quarter, the learners are able to multiply fractions.			
C. Learning Competencies and Objectives	Learning Competency  Solve multi-step problems involving multiplication of fractions that may or may not also involve addition or subtraction of fractions			
C. Content	Multiplication of Fractions 1. Recall steps in problem solving 2. Solve multi-step problems involving multiplication of fractions that may or may not also involve addition or subtraction of fractions			
D. Integration	Value of sharing			

## II. LEARNING RESOURCES

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Camarista, G. G. (2020). Teaching Mathematics in the Intermediate Grades. Lorimar Publishing Inc.

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https://www.khanacademy.org/math/cc-fifth-grade-math/5th-multiply-fractions/imp-multiplying-fractions/v/visualizing-fraction-products

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https://study.com/skill/learn/solving-multistep-word-problems-involving-fractions-explanation.html

## III. TEACHING AND LEARNING PROCEDURE **NOTES TO TEACHERS** A. Activating Prior Day 1 - 2 Knowledge 1. Short Review The review may be given as a motivational activity to set a Multiply the following fractions: good start of the discussion. $\frac{1}{4}x\frac{4}{5} =$ 2. $\frac{3}{15}x\frac{3}{7} =$ Since the topic is about solving word problems, students maybe grouped in 3's or more depending on the size of the $5. \frac{8}{9} x \frac{1}{2} =$ class for the group task. 3. After the review, inform the learners that in today's session, they will work with a team in $\frac{5}{6} \times \frac{2}{3} =$ doing word problems.

# B. Establishing Lesson Purpose

# 1. Lesson Purpose Explicitation

# Present a word problem to the students: (The problem should be posted on the board)

Rita works for a call center and earns P18,000.00 a month. She spends  $\frac{1}{6}$  of her earnings on house rent and  $\frac{1}{3}$  on food. How much does she spend on other expenses?

- 1. What is being asked in the problem?
- 2. How will you solve the problem?

## 2. Unlocking Content Area Vocabulary

The following are the steps in solving worded problems:

**Step 1**: Understand the problem

- $\ \square$  Read the problem carefully to understand what it is ask
- ☐ Use pictures or diagram to illustrate the problem

Step 2: Plan what to do (Devise a Plan)

- $\Box$  Identify what is being asked in the problem, list the given, and come up with an equation
- ☐ Think about different strategies or methods that could be used to solve the problem

**Step 3:** Solve the problem (Carry out the Plan)

□ Perform calculations, manipulate equations, or apply techniques according to your chosen strategy.

Step 4: Look back and check your answer. (Review and reflect)

 $\ \square$  "Looking back" at a completed solution, by reconsidering and re-examining the result and the path that led to it

Present the word problem and use it to lead the discussion to recalling steps of solving word problems.

May ask the learners to read the problem and ask the following questions:

- 1. What is being asked in the problem?
- 2. How will you solve the problem?

It is expected that learners may not be able to give you the answer, if it's the case, then tell the learners that answers to the questions will be the lesson for the day.

## C. Developing and Deepening Understanding

# Solve Multi-step Problems involving Multiplication of Fractions that may or may not also involve Addition or Subtraction of Fractions

Begin by presenting the step in solving word problem found in unlocking content area vocabulary. Ask learners to read the step, then explain briefly. Then proceed to the discussion of worked examples.

### **WORKED EXAMPLES**

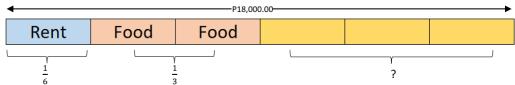
**Example 1:** Rita works for a call center and earns P18,000.00 a month. She spends  $\frac{1}{6}$  of her earnings on house rent and  $\frac{1}{3}$  on food. How much does she spend on other expenses?

Let us Discover:

The problem involves more than one operation.

## Step 1: Understand the problem.

Draw a picture to represent the problem.



## Step 2. Plan what to do.

- What is asked?
  Amount spent on other expenses
- What are the given P18,000 monthly earnings,  $\frac{1}{6}$  of the money spent on rent,  $\frac{1}{3}$  of the money spent on food
- The problem can be solved using the equation below:

P18,000 – [  $(\frac{1}{6} \times P18,000) + (\frac{1}{3} \times P18,000)$  ] = amount spent on other expenses

The steps in solving word problems must be written on the board, or presented using PowerPoint presentation, or may be written on a Manila paper. Let it be visible throughout the session so that the learners will become familiar with the steps.

Engage your learners in the discussion of the worked examples by asking scaffolding questions.

Each example must be posted on the board, or be written on manila paper, or if possible, use PowerPoint presentation.

Another option is to give each group a copy of all the problems included in Day 1 class.

- This part is crucial, help learners understand this equation, rephrasing the equation according to learners' level of comprehension is highly recommended.

Then proceed to solving the left-hand side of the equation applying their knowledge of GMDAS.

• What is 
$$\frac{1}{6}$$
 of 18,000?  $\frac{1}{6}$  x P18,000 =

 $6 \times 18,000 =$ • What is  $\frac{1}{3}$  of 18,000?

Guide learners on this by ask probing questions.

## Step 3. Solve the problem.

Show your solution.

$$\frac{1}{6} \times P18,000 = \frac{1}{6} \times \frac{P18,000}{1} = P3,000$$

$$\frac{1}{3} \times P18,000 = \frac{1}{6} \times \frac{P18,000}{1} = P6,000$$

Total expenses for food and rent.

Rita used P9,000.00 on other expenses.

## Step 4. Look back. Check your answer.

Rita spent 9,000 on other expenses. The total expenses for food and rent is also P9,000. Adding these together is P18,000, which is Rita's salary.

## **Example 2:** Fernando opened a pizza box. Inside there was $\frac{3}{4}$ of a pizza.

Fernando ate  $\frac{1}{2}$  of what was remaining. How much of a pizza did Fernando eat?

Step 1. Understand the problem.



In understanding the problem, rephrasing the problem to its simpler version is the key. The problem seeks to answer, what is  $\frac{1}{2}$  of  $\frac{3}{4}$ ?

Step 2. Plan what to do.

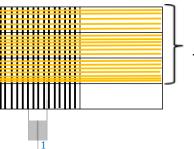
- What is asked?
  - -How much of a pizza did Fernando eat?
- What are the given information from the problem?
  - there was  $\frac{3}{4}$  of a pizza
  - Fernando ate  $\frac{1}{2}$  of that pizza
- What is the equation of the given problem?
  - To solve what is  $\frac{1}{2}$  of  $\frac{3}{4}$ ?, you will solve for  $\frac{1}{2}x\frac{3}{4} =$

Step 3. Solve the problem.

- $\bullet$   $\frac{1}{2}x\frac{3}{4} = \frac{1 \times 3}{2 \times 4} = \frac{3}{8}$
- Fernando ate  $\frac{3}{8}$  of the pizza

Step 4. Check your answer.

In checking the answer, the use of illustration/model is advisable. That is,



Count the number of overlapped parts over the total number of equal parts, that is 3/8.

**Example 3.** John's mother ordered 2 trays of burger from a fast-food chain. Each tray had 24 burgers. When the party was over, ¼ of the total burgers were left. How many burgers were consumed?

**Step 1.** Understand the problem.

The problem seeks to answer how many burgers were consumed during the party.

**Step 2.** Plan what to do.

- What is asked?
  - -How many burgers were consumed?
- What are the given information from the problem?
  - there were 2 trays of burger, each had 24 burgers
  - 1/4 of the burgers were left
- What is the equation of the given problem?

Total number of burgers = 2 trays x 24 = 48 burgers

To solve what is  $\frac{1}{4}$  of 48?, you will solve for  $\frac{1}{4}x$  48 = \_\_\_\_

Then, subtract the answer from the total number of burgers to solve for the number of burgers consumed.

**Step 3.** Solve the problem.

- $\frac{1}{4}x48 = 12$  -burgers were left
- To solve for the total number of burgers consumed, 48 12 = 36

• There were 36 burgers consumed during the party.

Step 4. Check your answer.

• 12 burgers left + 36 burgers consumed = 48 burgers

## **Lesson Activity 1**

## Solve the following problems using the Four Steps.

**1.** Melanie had 18 mangoes, 24 bananas, and 30 apples. She gave her sister  $\frac{1}{3}$  of each kind of fruit. How many fruits did her sister get in all?

**Step 1.** Understand the problem.

• The problem seeks to answer how many total fruits did the sister receive.

Step 2. Plan what to do.

• What is asked?

How many fruits did her sister get in all?

• What are the given information from the problem? There are 18 mangoes, 24 bananas, 30 apples

The sister gave  $\frac{1}{3}$  of each kind of fruit

• What is the equation that describes the given problem?

Total fruits received by the sister =  $\left(\frac{1}{3}x18\right) + \left(\frac{1}{3}x24\right) + \left(\frac{1}{3}x30\right)$ 

**Step 3.** Solve the problem.

Total fruits received by the sister = 
$$\left(\frac{1}{3}x18\right) + \left(\frac{1}{3}x24\right) + \left(\frac{1}{3}x30\right)$$
  
=  $(6) + (8) + (10)$   
=  $24$ 

There were 24 fruits received by the sister.

Step 4. Check your answer.

Mangoes 18, Bananas 24, Apples 30

Total fruits: 72

Mangoes 18 - 6 = 12; Bananas 24-8 = 16; Apples 30-10 = 20 Total fruits left: 48

## Lesson Activity 1 is a GROUP TASK.

Let the learners brainstorm/discuss with their groupmates in answering the questions.

Your role here is very important, make sure that each learner is engage by monitoring their interactions within the group.

Required: Set start and end time for answering the problem. Then gather the students ask for volunteer to present their solution.

Again, your role here is very important. If learners are not getting the correct answer, ask scaffolding questions or guide questions.

Thus, 
$$48 + 24 = 72$$

**2.** In a survey,  $\frac{3}{5}$  of the respondents said that they use a Happy dishwashing paste. One-fourth answered that they do not use that brand, while the remaining respondents did not give an answer. If there were 500 respondents in all, how many respondents did not give an answer? How many respondents gave an answer?

## Step 1: Understand the problem.

Among the 500 respondents in the survey, 3/5 use Happy Dishwashing, ½ do not use the brand, the rest did not respond to the survey

Step 2: Plan what to do.

• What is asked?

How many respondents use Happy dishwashing?

To answer, Get 
$$\frac{3}{5}$$
 of 500

How many respondents did not use Happy dishwashing?

To answer, Get 
$$\frac{1}{4}$$
 of 500

How many respondents did not give an answer?

To answer, subtract from 500 the total number of people who responded to the survey

What is the equation of the given problem?

Number of respondents did not give an answer =  $500 - \left[ \left( \frac{3}{5} x 500 \right) + \left( \frac{1}{4} x 500 \right) \right]$ 

**Step 3.** Solve the problem.

- Used Happy dishwashing paste:  $\frac{3}{5}x 500 = 300$
- Do not use Happy dishwashing paste:  $\frac{1}{4} \times 500 = 125$
- Number of respondents responded to the survey: 300 + 125 = **425**
- Number of respondents did not give an answer = 500 425 = 75

Step 4. Check your answer.

Solutions to all problems are provided in this lesson plan.

Number of respondents gave an answer + Number of respondents did not give an answer = **425 + 75 = 500** 

**3.** There was  $\frac{5}{8}$  of a pie left in the fridge. Daniel ate  $\frac{1}{4}$  of the leftover pie. How much of a pie did he have?

**Step 1:** Understand the problem.

• The problem seeks to answer how much pie did Daniel have?

Step 2: Plan what to do.

• What is asked?

How much of a pie did Daniel have?

What are the given information from the problem?

 $\frac{5}{8}$  of a pie left in the fridge

Daniel ate  $\frac{1}{4}$  of the leftover pie

• What is the equation of the given problem?

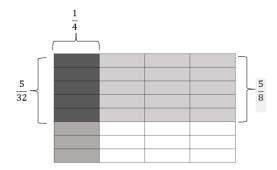
To solve what is  $\frac{1}{4}$  of  $\frac{5}{8}$ ?, you will solve for  $\frac{1}{4}x\frac{5}{8}$  = ?

**Step 3.** Solve the problem.

•  $\frac{1}{4}x \frac{5}{8} = \frac{5}{32}$  of the pie Daniel have

Step 4. Check your answer.

In checking the answer, the use of illustration/model is advisable.



- **4.** There are  $\frac{7}{8}$  kilograms of salt in the kitchen. Mrs. Jackson used  $\frac{2}{15}$  of the salt when she was preparing dinner. How much salt did she use?
- **Step 1:** Understand the problem.
  - The problem seeks to answer how much salt did Mrs. Jackson use.

Step 2: Plan what to do.

• What is asked?

How much salt did Mrs. Jackson use?

• What are the given information from the problem?

There were  $\frac{7}{8}$  kilograms of salt in the kitchen

Mrs. Jackson used  $\frac{2}{15}$  of the salt

• What is the equation of the given problem?

To solve what is  $\frac{2}{15}$  of  $\frac{7}{8}$ ?, you will solve for  $\frac{2}{15}x\frac{7}{8} =$ 

**Step 3.** Solve the problem.

•  $\frac{2}{15}x\frac{7}{8} = \frac{14}{120} = \frac{7}{60}$  of the salt used by Mrs. Jackson

Step 4. Check your answer.

In checking the answer, the use of illustration/model is advisable.

**5.** A bottle contains  $\frac{6}{10}$  liters of cooking oil.  $\frac{2}{4}$  of the oil was used for frying fish. Find the amount of oil used.

Step 1: Understand the problem.

• Find the amount of oil used.

Step 2: Plan what to do.

• What is asked?

How much oil was used?

• What are the given information from the problem?

 $\frac{6}{10}$  liters of cooking oil

 $\frac{2}{4}$  of the oil was used for frying fish

• What is the equation of the given problem?

To solve what is  $\frac{2}{4}$  of  $\frac{6}{10}$  ?, you will solve for  $\frac{2}{4}x \frac{6}{10} =$ 

**Step 3.** Solve the problem.

$$\frac{2}{4}x\frac{6}{10} = \frac{12}{40} = \frac{3}{10}$$

**Step 4.** Check your answer.

In checking the answer, the use of illustration/model is advisable.

## Day 3 - 4

Solve Multi-step Problems involving Multiplication of Fractions that may or may not also involve Addition or Subtraction of Fractions Explicitation

Begin by asking learners about their experience in the past discussion of solving word problems.

Then tell the learners the lesson for the day will present more exciting experience as they work with their groupmates in answering another set of word problems.

## **WORKED EXAMPLES**

**Example 1.** Sarah is baking cookies. She needs to make a batch of chocolate chip cookies. The recipe calls for 3/4 cup of chocolate chips for every 1/2 cup of flour. If Sarah has 2 cups of flour, how many cups of chocolate chips does she need?

Recognize the relationship between the amount of flour and the amount of chocolate chips required.

From the problem, we know that for every 1/2 cup of flour, 3/4 cup of chocolate chips is needed.

So, if Sarah has 2 cups of flour, we can find out how many cups of chocolate chips she needs by noticing the pattern:

For 1/2 cup of flour, 3/4 cup of chocolate chips is needed.

For the **WORKED EXAMPLES**, follow the same strategy used in DAY 1-2.

For 1 cup of flour,  $2 \times 3/4 = 6/4 = 3/2$  cups of chocolate chips are needed.

For 2 cups of flour,  $2 \times 3/2 = 6/2 = 3$  cups of chocolate chips are needed.

So, Sarah needs 3 cups of chocolate chips.

**Example 2.** A recipe for lemonade calls for mixing 1/3 cup of lemon juice with 2/3 cup of water for each serving. If Sarah wants to make 5 servings of lemonade, how much lemon juice does she need?

To solve this problem, recognize the relationship between the number of servings and the amount of lemon juice needed per serving:

- For 1 serving, 1/3 cup of lemon juice is needed.
- For 2 servings, 2(1/3) = 2/3 cup of lemon juice is needed.
- For 3 servings, 3(1/3) = 3/3 or 1 cup of lemon juice is needed.
- For 4 servings, 4(1/3) = 4/3 cups of lemon juice is needed.
- For 5 servings, 5(1/3) = 5/3 cups of lemon juice is needed.

So, Sarah needs 5/3 cups of lemon juice to make 5 servings of lemonade.

## **Draw a Picture**

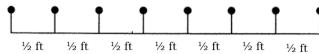
Many times, a problem can be solved using a picture, figure, or diagram. Also, drawing a picture can help you to determine which other strategy can be used to solve a problem.

**Example 3.** Eight clothespins are placed on a clothesline at  $\frac{1}{2}$  foot intervals. How far is it from the first one to the last one?

Solution:

GOAL: You are being asked to find the distance from the first clothespin to the last one.

STRATEGY: Draw a figure and count the intervals between them; then multiply by 1/2.



Since there are seven intervals, the distance between the first and last one is

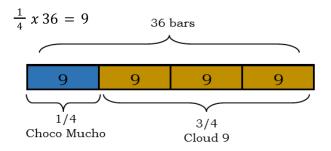
$$7 \times \frac{1}{2} = \frac{7}{2}$$
 or  $3\frac{1}{2}$  ft.

**Example 4.** Micah Mae bought a case of chocolate with 36 bars.  $\frac{1}{4}$  of the case is Choco Mucho, and  $\frac{3}{4}$  of the case is Cloud 9. How many Cloud 9 bars did she buy?

## Solution:

GOAL: You are being asked to find how many Cloud 9 bars did Micah Mae buy.

STRATEGY: Draw the figure.



Therefore, from the above figure, Micah Mae bought 27 bars of Cloud 9.

## **Lesson Activity 2**

## Solve the following problems using the indicated strategy.

**1.** A company produces mobile gadgets. For each batch of gadgets, they use 2/5 of the raw material in the first step of production and 3/5 in the second step. If

The teacher may emphasize that there are some worded problems that can be solved using drawing or diagram.

It is suggested that teacher may also give additional problems.

they have 500 kilograms of raw material, how much do they use in each step? (Pattern Recognition)

#### Solution:

To solve this problem, we can recognize a pattern in the relationship between the fractions of raw material used in each step:

- In the first step, 2/5 of the raw material is used.
- In the second step, 3/5 of the remaining raw material is used.

We can see that in the second step, 3/5 of the remaining raw material is used, which means 3/5 of 3/5 of the total raw material is used in the second step. So, to find out how much raw material is used in each step, we can calculate:

- In the first step:  $2/5 \times 500$  kilograms = 200
- In the second step:  $3/5 \times (3/5 \times 500)$  kilograms =  $3/5 \times 300 = 180$  kilograms

Thus, they use 200 kilograms of raw material in the first step and 180 kilograms in the second step.

**2.** Mary has ½ of a cake. She gives half of the cake to her sister. What fraction of the cake does her sister receive? (Draw a picture)

Goal: Find the fraction of the cake her sister received

Strategy: Draw the Figure.

1/4

Thus,  $\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$ 

Her sister receives 1/8 of the cake.

3. Royce bought 20 t-shirts. 1/5 of these t-shirts are small size, 1/5 are medium size, and 3/5 are large size. How many large size t-shirts did he bought? (Draw a picture)

Goal: Find how many large size t-shirts did Royce buy.

Strategy: Draw the figure.

# Lesson Activity 2 is a GROUP TASK.

Let the learners brainstorm/discuss with their groupmates in answering the questions.

Your role here is very important, make sure that each learner is engage by monitoring their interactions within the group.

Required: Set start and end time for answering the problem. Then gather the students ask for volunteer to present their solution.

Again, your role here is very important. If learners are not getting the correct answer, ask scaffolding questions or guide questions.

Solutions to all problems are provided in this lesson plan.

20 t-shirts

Thus, there were 12 large t-shirts bought by Royce.

4. Mrs. Perez decided to motivate her daughter to help clean the house and backyard every day by providing the following incentives: she will give 1/3 of P150.00 on the first day's work, 2/3 of P300 on the 2<sup>nd</sup> day's work, 4/3 of P600 for the third day's work. How much did her daughter earn for the 4<sup>th</sup> day's work? (Pattern Recognition)

Solution using Pattern Recognition:

To solve this problem, we can recognize a pattern in the relationship between the fractions and the given amount of money

- Day 1,  $1/3 \times P150 = P50$
- Day 2,  $2/3 \times P300 = P200$
- Day 3,  $4/3 \times P600 = P800$
- Day 4, 8/3 x P1,200 = P3,200

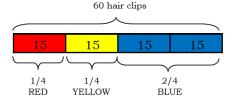
(Notice that the fraction and amount were doubled every day) Therefore, the daughter received P3,200 on the 4<sup>th</sup> day of work.

5. Analiza has 60 pcs of hair clips. ¼ of which are red, ¼ are yellow, the remaining color is blue. How many are the blue clips? (Draw a picture)

Goal: Find the number of blue clips.

Strategy: Draw the figure.

Therefore,  $\frac{1}{4} \times 60 = 15$ , thus, were 30 blue clips.



## D. Making Generalizations

## 1. Learners' Takeaways

What I've learned about Multi-step Problems involving Multiplication of Fractions that may or may not also involve Addition or Subtraction of Fractions

Four steps in problem solving: Step 1. \_\_\_\_\_the problem.

Step 2. \_\_\_\_\_ what to do.

There are other Strategies in solving problems such as \_\_\_\_\_ and

The teacher will guide the learners in generalizing what they have learned by answering the guide questions and completing the sentences given.

	Step 3 the problem. Step 4. Look back your answer.	
2.	<ul> <li>Reflection on Learning</li> <li>How can we connect this lesson to our everyday lives?</li> <li>Cite instances where knowledge of solving worded problems involving multiplication of fractions.</li> </ul>	

V. EVALUATING LEA	NOTES TO TEACHERS			
A. Evaluating Learning	Day 5 1. Formative Assessment Activity 3 Refer to the Worksheets for Answers for Activity 3: 1. 720 of the time  = 2125 x 512=720 2. 12 play trumpets = 34 x 40=30 = 25 x 30=12 3. The girls still need 1/of flour. (2 x <sup>3</sup> / <sub>4</sub> ) + (9 x <sup>1</sup> / <sub>4</sub> ) = 1 4 or 16/4 - 15/4 = 1	4. Blue bal Green ball 5. Pattern 3/6, 2/6, Thursday 4 of a cup	lloons: 8/12 = 2/3 oons: 4/12 = 1/3  • • • • • • • • on the fraction: 5/6, 4/6,	
<i>B</i> . Teacher's Remarks	Note observations on any of the following areas:	Effective Practices	Problems Encountered	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

	strategies explored materials used	other related stuff.  Teachers may also suggest ways to improve the different activities explored/lesson exemplar.
	learner engagement/ interaction  others	
C. Teacher's Reflection	Reflection guide or prompt can be on:  • principles behind the teaching What principles and beliefs informed my lesson? Why did I teach the lesson the way I did?  • students What roles did my students play in my lesson? What did my students learn? How did they learn?  • ways forward What could I have done differently? What can I explore in the next lesson?	Teachers'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.