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Lesson Exemplar for Mathematics

Quarter 1

Lesson

5

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Lesson Exemplar for Mathematics Grade 7
Quarter 1: Lesson 5 (Week 5)
SY 2024-2025

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MATHEMATICS/QUARTER 1/ GRADE 7

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners demonstrate knowledge and understanding of application of percentages.
B. Performance Standards	By the end of the quarter, the learners are able to use percentages in different contexts.
C. Learning Competencies and Objectives	Learning Competencies: 1. Solve money problems involving percentage; and 2. Create a financial plan. Learning Objectives: 1. Define discounts, sale price, commission, sales tax, and simple interest; 2. Solve money problems involving percentages on discounts, sale price, commission, sales tax, and simple interest; 3. Create a 1-day financial/budget plan; and 4. Create a formula for a daily personal financial plan.
D. Content	Solving Money Problems involving Percentages
E. Integration	Finance and Economics

II. LEARNING RESOURCES
EffortlessMath.com. (n.d.). Math worksheets. Retrieved from https://www.effortlessmath.com MathWorksheets4Kids.com. (n.d.). Printable worksheets. Retrieved from https://www.mathworksheets4kids.com

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	DAY 1 1. Short Review Activity 1: Increase or Decrease In the previous lesson, the students have learned about solving problems involving percentage increase, and percentage decrease. To assess their understanding of these concepts, there is a prepared table in Activity 1. Their	Note: You can use online educational platforms like Quizziz, Kahoot, etc. to make the review of previous topics interactive. If internet connection and devices

task is to determine whether each situation involves percentage increase or percentage decrease. Then ask the guide questions.

Guide Questions:

1. How were you able to determine if the problem involves percentage increase or decrease?
2. Can you identify which among these items involves money?
3. Can you explain the importance of this activity in relation to money matters?

DAY 2

Activity 3: Leaderboard and Team Badges (Team Activity)

Divide the class into 4 or 5 groups. Groups that answered correctly will earn badges. Complete the table by finding the missing value of the discount, sale price, or the original price of the given items. (Round your answer to the nearest hundredths, if necessary.)

Items	Original Price	Discount Rate	Discount	Sale Price
Birthday Cake	₱800	18%	_____	_____
Medicine Kit with Complete Set	_____	20%	_____	₱799.20
Wrist Watch	₱3,600	_____	₱250	_____
Laptop	_____	34%	_____	₱25,990
Study Table	₱2,250	_____	₱500	_____

DAY 3

To review the previous discussion, get a partner to complete these word problems with values. One will be working on a commission problem and your classmate on a sales tax problem. Then you will exchange paper with each other and solve the word problem both of you have formulated.

Commission Problem:

What is the commission rate of sales agent who received an amount of ₱_____ after selling an electronic gadget for a total amount of ₱_____?

are pressing challenges, revert to group competitions. Provide “Show-Me Boards” for group answers.

Note:

Ask the learners to be realistic in filling in the blanks for the values being asked to complete the word problems.

	Sales Tax Problem: Ramon bought a laptop for his online class. The price is posted to be ₱_____ plus the VAT of ____%. How much is the sales tax he needs to pay for the laptop? 2. Feedback (Optional)	
B. Establishing Lesson Purpose	1. Lesson Purpose DAY 1 Present to the learners the lesson objectives. Emphasize that one of the applications of the concepts of percentages is the discount and the sale. Ask the learners where they find this concept in real life. Show these logos/images and ask them if they are familiar with these:    Give emphasis that through the advancement of technology, people are captivated with online buying through different platforms like Shopee, Lazada, Tiktok Shop and many more. Ask them the following questions: 1. What do you feel when you see ads about discounts/sales? 2. Do you consider this discounts when buying an item from a certain store? 3. Can you immediately compute how much discount can you get when you buy an item under discount/sale? 4. How do you do it? DAY 2 Ask the learners to imagine a situation wherein they have a friend asking them for help to sell their motorcycle. Would you be happy if they promised you to have a 5% commission if you were able to look for a buyer? How much do you think will you receive if you have sold the motorcycle for ₱30,000? Do you think this is a fair amount for you as a seller?	

Emphasize that in this discussion, it will be interesting since it will be about solving word problems involving commission and sales tax. Present to the learners the lesson objective for today.

DAY 3

Encourage the learners to list down their allowance in a day and all their expenses. Ask them these questions:

1. How much money can you save in one day?
2. If you invest this money, how much interest do you think it will earn in a year? 2 years? 5 years?
3. Do you know the formula which can help you solve for the interest you can earn if you invest money given the rate for a specific period of time?

2. Unlocking Content Area Vocabulary

DAY 1

Present the following words to the learners:

DISCOUNT

SELLING PRICE

SALE PRICE

Then display the definitions and let them match it to the words presented.

Definition 1: It is the reduction in the original price of a commodity (product or service). (*Discount*)

Definition 2: It is the final price at which a product or item is sold to a customer after discounts have been applied. (*Sale price*)

Definition 3: The amount of money that a company charges for its product. It is the price that the customers pay for buying a product without a discount. This is also known as the original price. (*Selling price*)

DAY 2

For this discussion it is important for the learners to understand the following terms:

- **Commission** – it refers to the amount of money earned by a person from selling something.
- **Commission Rate** – percent taken off from the selling price of the item sold.
- **Sales tax** – commonly known as Value Added Tax (VAT)

	DAY 3 Guide the learners in unlocking the math vocabularies which will be helpful for today's discussion. • Interest – the amount earned from investing or borrowing money • Interest rate – the percent of interest • Principal – the amount of money invested or borrowed • Time – the length of time the money was invested or the length of time the borrowed money will be paid (in years)	
C. Developing and Deepening Understanding	DAY 1 SUB-TOPIC 1: Finding the Discount and Sale Price of an Item using Percentage 1. Explication Guide the learners in finding the discount and sale price of an item using percentage. Point out to them the formulas to find the discount and sale price, that is, $\text{Discount} = \text{Original Price} \times \text{Rate of Discount}$ while $\text{Sale Price} = \text{Original Price} - \text{Discount}$ 2. Worked Example Example 1. Find the discount and the sale price of a t-shirt that has an original price of ₱300 if the discount rate is 25%. Solution: To find the discount: $\begin{aligned}\text{Discount} &= \text{Original Price} \times \text{Rate of Discount} \\ \text{Discount} &= 300 \times 0.25 \\ \text{Discount} &= \text{₱75}\end{aligned}$ Therefore, the discount is ₱75. To find the sale price: $\begin{aligned}\text{Sale Price} &= \text{Original Price} - \text{Discount} \\ \text{Sale Price} &= 300 - 75 \\ \text{Sale Price} &= \text{₱225}\end{aligned}$ Answer: Thus, the new price of the t-shirt or its sale price is ₱225.	After the teacher had explicitly listed all “tentative” procedures the learners were able to extract from Activity 1, they can now introduce the relation of percentage, rate, and base. Note: Ask the learners what if they know the sale price and the rate of the discount, but the original price is unknown, how are they going to solve it?

Example 2. The first ten persons who will purchase a refrigerator that originally costs ₱18,999 can avail a discount of 38%. Mon Carlo was lucky to avail the item at its sale price. Find how much he was able to save through the discount and how much he was able to avail the refrigerator.

Solution:

To find the discount:

$$\text{Discount} = \text{Original Price} \times \text{Rate of Discount}$$

$$\text{Discount} = 18,999 \times 0.38$$

$$\text{Discount} = \text{₱}7,219.62$$

Therefore, the discount is ₱7,219.62. (Mon Carlo saved this amount)

To find the sale price:

$$\text{Sale Price} = \text{Original Price} - \text{Discount}$$

$$\text{Sale Price} = 18,999 - 7,219.62$$

$$\text{Sale Price} = \text{₱}11,778.38$$

Answer: Thus, the sale price of the refrigerator is ₱11,778.38.

Example 3. A post says that a mathematics book is on sale which costs ₱440 after a discount rate of 12% was deducted. What is its original price?

$$\text{Original Price} = \frac{\text{Sale Price}}{1 - \text{Discount Rate}}$$

Solution:

To find the original price:

$$\text{Original Price} = \frac{\text{Sale Price}}{1 - \text{Discount Rate}}$$

$$\text{Original Price} = \frac{440}{1 - 0.12} = \frac{440}{0.88}$$

$$\text{Original Price} = \text{₱}500$$

Answer: Therefore, the original price of the math book is ₱500.

Example 4. During the pandemic, many Filipinos became plantito/plantita. Reynalyn is one of them. She bought a plant on its sale price of ₱328. She was given a discount rate of 27%. How much was the discount given for her?

Solution:

To solve for the discount, the original price must be computed first. That is,

For Example 3:

Help the learners understand the formula. Tell them that, if there's no discount, the customer has to pay 100% of the price of the book.

Since a 12% rate of discount is given, $100\% - 12\% = 88\%$, the customer is actually paying 88% only of the original price. So, ₱440 is 88% of the original price. So, you are actually answering the question, **₱440 is 88% of what number?** This idea is presented in the solution.

For Example 4:

refer to example 3 on how you can help the learners

	$\text{Original Price} = \frac{\text{Sale Price}}{1 - \text{Discount Rate}}$ $\text{Original Price} = \frac{328}{1 - 0.27}$ $\text{Original Price} = \text{₱}449.32$ To solve for the discount, subtract the sale price from the original price. That is, $\text{Discount} = \text{Original Price} - \text{Sale Price}$ $\text{Discount} = 449.32 - 328$ $\text{Discount} = \text{₱}121.32$ Answer: Thus, the discount is ₱121.32. 3. Lesson Activity See Worksheet No. 2 and 3 (Activity 2.1 and 2.2) DAY 2 SUB-TOPIC 2: Solving for the Commission and the Sales Tax using Percentage 1. Explication Present to the learners the formula that they will use if the money problem involves commission and sales tax. $\text{Commission} = \text{Total Sales} \times \text{Commission Rate}$ $\text{Commission Rate} = \frac{\text{Commission}}{\text{Total Sales}} \times 100\%$ $\text{Sales Tax} = \text{Total Amount of Product} \times \text{Rate of Sales Tax}$ 2. Worked Example Example 1. If your friend asked for your help to sell their motorcycle and promised you to have a 5% commission if you were able to look for a buyer. How much will you receive if you have sold the motorcycle for ₱30,000? Solution: $\text{Commission} = \text{Total Sales} \times \text{Commission Rate}$ $\text{Commission} = 30,000 \times 0.05$ $\text{Commission} = \text{₱}1,500$ Answer: Thus, the commission that you will receive is ₱1,500.	understand the solution for getting Php 449.32 Note: Feel free to modify or remove some items if the time is limited. Please provide immediate feedback on the students.
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Example 2. Mrs. Santos worked hard to earn 12% commission from selling furniture. Find his commission if his total sales for the month of September is ₱45,000.

Solution:

$$\text{Commission} = \text{Total Sales} \times \text{Commission Rate}$$

$$\text{Commission} = 45,000 \times 0.12$$

$$\text{Commission} = \text{₱}5,400$$

Answer: Thus, the commission that you will receive is ₱5,400.

Example 3. What is the commission rate of Mr. Esguerra if he received ₱8,995 from selling an appliance that costs ₱29,999?

Solution:

$$\text{Commission Rate} = \frac{\text{Commission}}{\text{Total Sales}} \times 100\%$$

$$\text{Commission Rate} = \frac{8995}{29,999} \times 100\%$$

$$\text{Commission Rate} = 29.98\%$$

Answer: Thus, the commission rate is 29.98% .

Example 4. A group of teachers decided to eat in a restaurant. The meal costs ₱4550 plus a 12% VAT. How much is the total amount they paid in the cashier?

Solution:

In this problem, it is important to compute the sales tax first. That is,

$$\text{Sales Tax} = \text{Total Amount of Product} \times \text{Rate of Sales Tax}$$

$$\text{Sales Tax} = 4550 \times 0.12$$

$$\text{Sales Tax} = \text{₱}546$$

Emphasize that this is not yet a final answer since they are asked to find the total amount that the group of teachers paid in the cashier. To do that,

$$\text{Total Amount Paid in the Cashier} = \text{Total Amount of Product} + \text{Sales Tax}$$

$$\text{Total Amount Paid in the Cashier} = 4550 + 546$$

$$\text{Total Amount Paid in the Cashier} = \text{₱}5,096$$

Answer: Thus, the total amount paid in the cashier is ₱5,096.

Example 5. John is checking out toys for his kids on an online selling platform. He is asked to pay ₱2350 plus sales tax of 8%. How much will he pay to check out the item?

Solution:

$$\text{Sales Tax} = \text{Total Amount of Product} \times \text{Rate of Sales Tax}$$

$$\text{Sales Tax} = 2350 \times 0.08$$

$$\text{Sales Tax} = \text{₱}188$$

$$\text{Total Amount Paid for Checkout} = \text{Total Amount of Product} + \text{Sales Tax}$$

$$\text{Total Amount Paid for Checkout} = 2,350 + 188$$

$$\text{Total Amount Paid for Checkout} = \text{₱}2,538$$

3. Lesson Activity

See Worksheet No. 5 and 6 (Activity 4.1 and 4.2)

DAY 3

SUB-TOPIC 3: Solving for Simple Interest Rate

1. Explicitation

Have the learners be familiarized with the formula for the simple interest rate (I). That is;

$$I = Prt$$

where,

I – interest

P – Principal Amount

r – rate of interest

t – time (in terms of year)

By manipulating this formula, you will have:

$$P = \frac{I}{rt} - \text{to find the Principal Amount}$$

$$r = \frac{I}{Pt} - \text{to find the rate of interest}$$

$$t = \frac{I}{Pr} - \text{to find the time}$$

2. Worked Example

Example 1. Manny decided to invest in a bank. How much will he earn if he invested ₱10,000 for an interest of 2% in one year?

Solution:

$$I = Prt$$

$$I = (10,000)(0.02)(1)$$

$$I = ₱200$$

Answer: Thus, the interest earned in ₱200.

Example 2. Nanay Aning borrowed money from a cooperative to start a sari-sari store business. If the loan from the cooperative is based on simple interest rate, find the interest of her loan if she borrowed ₱35,500 with an interest rate of 7% and will pay it within 3 years.

Solution:

$$I = Prt$$

$$I = (35,500)(0.07)(3)$$

$$I = ₱7,455$$

Answer: Thus, the interest earned in ₱7,455.

Example 3. How much principal must be invested to earn ₱5,000 in 6 years at an interest rate of 5%?

Solution:

$$P = \frac{I}{rt}$$

$$P = \frac{5000}{(0.05)(6)}$$

$$P = \frac{5000}{0.3}$$

$$P = ₱16,666.67$$

Answer: Thus, it needs ₱16,666.67 as principal for the investment to earn the mentioned amount of interest.

	Example 4. If a loan is taken out for ₱85,000 at 6% and costs an interest of ₱20,400, how long was the loan for? Solution: $t = \frac{I}{Pr}$ $t = \frac{20,400}{(85,000)(0.06)}$ $t = \frac{20,400}{5100}$ $t = 4$ Answer: Thus, the loan was taken for 4 years. 3. Lesson Activity See Worksheet No. 7 (Activity 5) DAY 4 The teacher may highlight the following points: You have learned in this week's lesson the idea about solving money problems and you are already familiar with how budgeting can be done. Even though you are just a student and you can only save through your allowances, you need to understand how this cash flows every day. Even financial experts are telling us of a special formula for us to be able to establish our financial freedom. You may not clearly understand them, but trying to follow their advice would be a big help for you to build your dreams. At your age, discipline will take you to reaching your dreams.	Add more examples of this type of exercise. The intention is for learners to increase their confidence in solving percentages, rates, and bases. Have them watch videos made by financial experts such as Bro. Bo Sanchez, Chinkee Tan, etc. about the ratio on how to spend salaries.
D. Making Generalizations	DAY 1-4 1. Learners' Takeaways Let learners do the following: 1. What were the most important concepts you learned? 2. What aspects of the topic were the most challenging for you? 3. What questions do you still have about the topic? 2. Reflection on Learning After giving learners time to reflect, facilitate a discussion where they share their reflections with a partner, small group, or the whole class.	Instruct them to use their notebook for writing their reflections. Encourage them to listen actively to each other's perspectives and insights in the sharing part. This can be done at every end of the session or topic.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION				NOTES TO TEACHERS
A. Evaluating Learning	DAY 4 1. Performance Task The learners will create a personal budget using the template in the Worksheet No. 8 2. Homework (Optional)			Students' answers vary.
B. Teacher's Remarks	<i>Note observations on any of the following areas:</i>	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 other related stuff. Teachers may also suggest ways to improve the different activities explored/lesson exemplar.
	strategies explored			
	materials used			
	learner engagement/ interaction			
	others			
C. Teacher's Reflection	<i>Reflection guide or prompt can be on:</i> <u>principles behind the teaching</u> What principles and beliefs informed my lesson? Why did I teach the lesson the way I did? <u>students</u> What roles did my students play in my lesson? What did my students learn? How did they learn? <u>ways forward</u> What could I have done differently? What can I explore in the next lesson?			Teacher'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.