7

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 1
Week
4

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Learning Activity Sheet for Mathematics Grade 7
Quarter 1: Week 4

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Secretary: Sara Z. Duterte
Undersecretary: Gina O. Gonong

Development Team

Writer: Josephine C. Reynoso, Marilyn B. Soriano
Content Reviewer: Aurelia G. Vivas, Resty I. Rodelas, Alberto J. Tiangco, Marilyn B. Soriano, Evelyn C. Callada, Dominador J. Villafria
External Content Validator: Dr. Errol Matthew C. Garcia, Dr. Winston S. Sirug
External Language Validator: Rafael John Sotto
Illustrator:
Layout Artist: Vergel Junior C. Eusebio

Management Team

JOCELYN DR ANDAYA, *CESO IV,* Director IV
CRISTITO A. ECO, *CESO III*, Assistant Regional Director
MICAH G. PACHECO, OIC-Chief Education Program Supervisor, CLMD
DENNIS M. MENDOZA, Regional EPS/Learning Resource Management Section Head
RESTY I. RODELAS, Regional Mathematics Education Program Supervisor
DAISY L. MATAAC, SDO Taguig City & Pateros LRMS Education Program Supervisor
ELSA R. MATA, SDO Navotas LRMS Education Program Supervisor

MATATAG **K to 10 Curriculum** **Weekly Lesson Log**	School		Grade Level	7
	Name of Teacher		Learning Area	Mathematics
	Teaching Dates and Time		Quarter	1

	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES				
A. Content Standards	The learners should have knowledge and understanding of the 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	The learners solve problems on percentage increase.		The learners solve problems on percentage decrease.	
D. 21st Century Skills	Visual Literacy	Information Literacy, Problem Solving	Visual Literacy, Information Literacy	Problem Solving
E. Instructional Design	Engage, Explore, Experience, Empathize, Innovative, Ideation, Integrative, Inclusive, Connection, Creativity, Collaboration, Context			
F. Learning Objectives	At the end of the lesson the learners will be able to illustrate and describe percentage increase.	At the end of the lesson the learners will be able to solve problems on percentage increase.	At the end of the lesson the learners will be able to illustrate and describe percentage decrease.	At the end of the lesson the learners will be able to solve problems on percentage decrease.
II. CONTENT	Percentage Increase	Percentage Increase	Percentage Decrease	Percentage Decrease
III. LEARNING RESOURCES				
A. References				

B. Other Learning Resources	https://www.teacherph.com/basic-education-statistics-philippines/			
IV. TEACHING AND LEARNING PROCEDURES				
Before/Pre-Lesson Proper				
Activating Prior Knowledge	To determine the learners' prior knowledge about the lesson, provide the following activities about fraction, percent, and difference. This can be done through games (in pairs or groups) using flash cards, or slide decks. First five learners who can submit the correct answer for each item will be given incentives. Solve mentally. Write the answer for each number on a show me board. **A.** Perform the following operations on real numbers. 1) 300 + 50 2) 325 – 250 3) 560.25 – 372.2 4) 25.2 ÷ 100.8 5) 30.3 x 100 **B.** Convert the following fractions in percent. 1) $\frac{3}{4}$, 2) $\frac{4}{5}$, 3) $\frac{13}{20}$, 4) $\frac{78}{100}$, 5) $\frac{176}{200}$	To determine the learners' prior knowledge about the lesson, recall the key ideas of percentage increase by posing the following questions. Through interactive discussion, let the learners to answer the questions. 1) When do we say that there is a percentage increase in the given data? 2) The percentage increase gives the increase in the quantity with respect to which given value? 3) What is the formula in finding the percentage increase? **Answers:** 1) We say that there is a percentage increase in the given data if the data has new value that is greater than the original value.	To determine the learners' prior knowledge about the lesson, provide the following activities about change in percentage. *Answer the following questions: Fill-in the blanks.* - Percentage Increase gives the increase in the quantity with respect to <u>original value.</u> - What do you mean by percentage increase? - The formula for the percentage increase is _____. Give the following examples of situations that suggest percentage increase: -The price of Ken's toy car increased from P 250 to P 200. -John worked for 40 hours in the month of February	To determine the learners' prior knowledge about the lesson, recall the key ideas of percentage decrease by posing the following questions. Through interactive discussion, let the learners to answer the questions. 1) When do we say that there is a percentage decrease in the given data? 2) The percentage decrease gives the decrease in the quantity with respect to which given value? 3) What is the formula in finding the percentage decrease? **Answers:** 1) We say that there is a percentage decrease in the given data if the

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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	Discuss some techniques in converting fractions into fractions whose denominator is 100 for easy conversion into decimal and percent. **Answers:** **A.** 1) 350 2) 75 3) 188.05 4) 0.25 5) 3,030 **B.** 1) $\frac{3}{4} = 0.75 = 75\%$ 2) $\frac{4}{5} = 0.8 = 80\%$ 3) $\frac{13}{20} = 0.65 = 65\%$ 4) $\frac{78}{100} = 0.87 = 87\%$ 5) $\frac{176}{200} = 0.88 = 88\%$	2) The percentage increase gives the increase in the quantity with respect to original value. 3) The formula for percentage increase is $percentage\ increase = \left(\frac{new\ value - original\ value}{original\ value}\right) x100\%$	and 50 hours in the month of April.	data has new value that is less than the original value. 2) The percentage decrease gives the decrease in the quantity with respect to original value. 3) The formula for percentage decrease is $percentage\ increase = \left(\frac{original\ value - new\ value}{original\ value}\right) x10$
Lesson Purpose/ Intention	Following the completion of the activity, the teacher will provide an overview of the expected outcomes: a) determine if the given situation suggest a percentage increase, and b) find percentage increase.	At the end of the lesson, the learners are expected to: a) find the percentage increase; and b) solve problems involving percentage increase.	Following the completion of the activity, the teacher will provide an overview of the expected outcomes: a) determine if the given situation suggest a percentage decrease; and b) find percentage decrease.	At the end of the lesson, the learners are expected to: a) find the percentage decrease; and b) solve problems involving percentage decrease.
Lesson Language Practice	To facilitate language learning, and enhance learning experiences, engage the learners through a game-based activity (if possible, use mentimeter) to collect	To facilitate language learning, and enhance learning experiences, engage the learners through an activity that will collect words/terms/scenarios that	To facilitate language learning, and enhance learning experiences, engage the learners through a game-based activity (if possible use	To facilitate language learning, and enhance learning experiences, engage the learners through an activity that will collect

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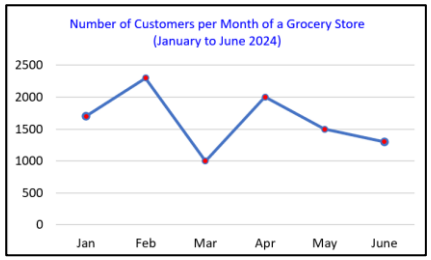
	ideas about the following words: • Original Value • New Value • Change • Percentage • Increase From their answers, form the definitions of the given words and cite examples. **Answers:** **Original value** is the starting value or the value at the beginning of any transaction or process. Sometimes, it is referred to as the old value. **New value** refers to a value that is newly given after any transaction or process. **Change** is the difference between the new value and the original value. **Percentage** is any proportion or share in relation to a whole in terms of percent (%). An **increase** refers to a change in a quantity or value, typically from a lower value to a higher value.	suggest percentage increase. **Answers:** Some of the words/terms/ scenarios that suggest percentage increase such as: - interest - commission - profit - salary increment - increase in production **Interest** is the amount of money paid for the use of other's money. **Commission** is the sum of money that someone receives when they sell something. **Profit** is the amount that is acquired from the sale of a product. **Salary increment** is an increase in an employee's current annual salary in the form of a figure or a percentage. **Increase in production** can be quantified as the change in total output over a specific period, often	mentimeter) to collect ideas about the following words: • Decrease • Percentage Decrease A **decrease** refers to a change in a quantity or value, typically from a higher value to a lower value. **Percentage decrease** refers to the percentage change in the value typically from a higher value to a lower value.	words/terms/scenarios that suggest percentage decrease. **Answers:** Some of the words/terms/ scenarios that suggest percentage decrease such as: - Discount - Depreciation **Discount** is a promotional or marketing strategy that refers to a reduction from the original price of an item. **Depreciation** is the decrease in the value of a fixed asset, like building car, or equipment, over its lifetime until it becomes worthless or reaches a minimal value.

		measured in terms of quantity or value of goods produced.		
During/Lesson Proper				
Reading the Key Idea/ Stem	For concept development, the teacher will present the graph, and the following questions to be used as the springboard to introduce the change as increase in percentage. *Observe the chart below.*  *Ask the learners the following questions:* - Identify two consecutive months were the line graph rises. What do you mean by the graph that rises? - Determine the number of customers of the grocery store during those months. Was the number of customers changed? Which value is greater than the other value?	For concept development, the teacher will read and use the given problem as springboard to introduce the procedure in solving problems involving percentage increase. *The data from the problem below were taken from the website Demand of sugar Philippines CY 2020-2023, by type published by C. Balita, November 9, 2023 and Sugar industry of the Philippines from Wikipedia, the free encyclopedia (September 2020).* **Example Problem:** The production of sugar in a firm in the Philippines is 1,700,000 metric tons in 2022 and 1,850,000 metric tons in 2023, respectively, that ranks the country 17th in the world. Find the percentage change in the	For concept development, the teacher will present the graph of the retail price of diesel from 2023 to 2024 accessible in the indicated link below to be used as springboard to introduce the change as decrease in percentage: *https://www.ceicdata.com/en/philippines/retail-price-petroleum/retail-price-petroleum-ncr-common-price-average-diesel*  *Ask the learners the following questions:* - Identify two consecutive months were the line graph falls. What do you mean by line graph that falls? - Determine the retail price of diesel during	For concept development, the teacher will read and use the given problem as springboard to introduce the procedure in solving problems involving percentage decrease. **Example Problem:** The population in a certain City at the NCR with 19 Barangays decreased from 20,450 to 17,870 due to an epidemic breakout. What is the percentage decrease in the population? Solve the problem through interactive discussions: - What is asked? - What are the given information? Identify as original value and new value.

	- What happened to the number of customers during those identified months? ***Answers:*** - The line graph rises from: a) January to February, & b) March to April *The line graph that rises means an increase in value.* - Jan: 1,700 to Feb: 2,300 Mar: 1,000 to Apr: 2,000 Yes, the number of customers changed between those months. (a) 2,300 is greater than 1,700, and (b) 2,000 is greater than 1,000 - The number of customers change from a) Jan. to Feb. by 600 b) Mar to Apr by 1,000	production of sugar from 2022 to 2023. *Ask the following questions to guide the learners on how to solve the problems:* - What is asked? - What are the given information? Identify as original value and new value. - Which is greater, original value or new value? - How much is the change in value? - Is the problem suggest an increase in percentage? - Solve the problem.	those months. Was the price changed? Which value is greater than the other value? - What happened to the price of diesel during those identified months? ***Answers:*** - The line graph falls from: a) Sep '23 to Oct '23, b) Oct '23 to Dec '23, *The line graph that falls means a decrease in value.* *There are other answers that can be identified from the graph.* - Sept '23: 66.814 to Oct '23: 66.145 Oct '23: 66.145 to Nov '23: 62.002 Yes, the price of diesel changed between those months. (a) 66.814 is greater than 66.145 (b) 66.145 is greater than 62.002 -The price of diesel dropped from a) Sept '23 to Oct '23 by 0.669	- Which is greater, original value or new value? - How much is the change in value? - Is the problem suggest an increase in percentage? - Solve the problem.

			b) Oct '23 to Nov '23 by 4.143	
Developing Understanding of the Key Idea/Stem	To develop learners' understanding on the key concepts and procedure in finding for the percentage increase, the teacher shall use the data from the graph to demonstrate how to find percentage increase and shall emphasize the *increase as change from a lower value (original value) to a higher value (new value).* Ask the learners to find the percentage increase of the number of customers of the grocery store (a) January to February, and (b) March to April. **Solution:** (a) January to February: Original Value = 1,700 New Value = 2,300 $percentage\ increase = \left(\frac{new\ value - original\ value}{original\ value}\right) x100\% = \left(\frac{2,300 - 1,700}{1,700}\right) x100\% = \left(\frac{600}{1,700}\right) x100\%$	To develop learners' understanding on the key concepts and procedure to solve for percentage increase, the teacher will present the solution to illustrate what percentage increase is and demonstrate through explicit teaching. **Solution:** Original value = 1,700,000 metric tons New value = 1,850,000 metric tons *Since the new value is greater than the original value, the problem suggests percentage increase. Use the formula in finding percentage increase.* $percentage\ increase = \left(\frac{new\ value - original\ value}{original\ value}\right) x100\% = \left(\frac{1,700,000 - 1,850,000}{1,700,000}\right) x100\% = 8.82\ \%$	To develop learners' understanding on the key concepts and procedure in finding for the percentage decrease, the teacher shall use the data from the graph to demonstrate how to find percentage decrease and shall emphasize the *decrease as change from a higher value (original value) to a lower value (new value).* Ask the learners to find the percentage decrease in the price of diesel from: (a) Sept '23 to Oct '23, and (b) Oct '23 to Nov '23. **Solution:** (a) Sept '23 to Oct '23: Original Value = 66.814 New Value = 66.145 $percentage\ increase = \left(\frac{original\ value - new\ value}{original\ value}\right) x100\% = \left(\frac{66.814 - 66.145}{66.814}\right) x100\% = \left(\frac{0.669}{66.814}\right) x100\% = 1\%$	To develop learners' understanding on the key concepts and procedure to solve for percentage increase, the teacher will present the solution to illustrate what percentage decrease is. Demonstrate on how to solve the above problem through interactive discussion. **Solution:** Original value = 20,450 New value = 17,870 *The problem stated that the population decreased, which is true. Why?* *Since the original value is greater that the new value, the population decreased. Use the formula in finding percentage decrease.* $percentage\ increase = \left(\frac{original\ value - new\ value}{original\ value}\right) x10 = \left(\frac{20,450 - 17,870}{20,450}\right) x100\%$

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	= 35.29% The percentage increase of the number of customers of the grocery store from January to February is approximately 35.29%. (b) March to April: Original Value = 1,000 New Value = 2,000 *percentage increase* $= \left(\frac{new\ value - original\ value}{original\ value}\right) x100\%$ $= \left(\frac{2{,}000 - 1{,}000}{1{,}000}\right) x100\%$ $= \left(\frac{1{,}000}{1{,}000}\right) x100\%$ $= 100\%$ The percentage increase of the number of customers of the grocery store from March to April is 100%. Ask the learners to work in pairs or in groups to solve problems in percentage increase. Refer to **Activity 1: Percentage Increase.**	Therefore, the sugar production increased by 8.82%. In other words, the percentage increase in the production of sugar in the Philippines from 2022 to 2023 was approximately 8.82%. Ask the learners to work in pairs or in groups to solve problems in percentage increase. Refer to **Activity 1: Problem Solving Adventure.**	The percentage decrease of the price of diesel from Sept '23 to Oct '23 is approximately 1%. (b) Oct '23 to Nov '23: Original Value = 66.145 New Value = 62.002 *percentage increase* $= \left(\frac{new\ value - original\ value}{original\ value}\right) x100$ $= \left(\frac{66.145 - 62.002}{66.145}\right) x100\%$ $= \left(\frac{4.143}{66.145}\right) x100\%$ $= 6.26\%$ The percentage decrease of the price of diesel from Oct '23 to Nov '23 is approximately 6.26%. Ask the learners to work in pairs or in groups to solve problems in percentage increase. Refer to **Activity 1: Percentage Decrease.**	$= \left(\frac{2{,}580}{20{,}450}\right) x100\%$ $= 12.62\%$ The percentage decrease in population in certain city was approximately 12.62%. Ask the learners to work in pairs or in groups to solve for the problems in percentage increase. Refer to **Activity 1: Problem Solving Adventure.**

Deepening Understanding of the Key Idea/Stem	To enhance learners' understanding of the concepts, ask them to work independently on **Activity 2: Mastering Percentage Increase**. Give the correct answers and let the learners to check the papers of one another and discuss their mistakes.	To enhance learners' understanding of the concepts, learners will answer independently the questions found in **Activity 2: Elevate Problem Solving Skills!** Learners will solve the percent increase and explain their solutions. Give them immediate feedback to correct any misconception.	To enhance learners' understanding of the new concepts, learners will answer independently the questions found in **Activity 2: Mastering Percentage Decrease** Give the correct answers and let the learners to check the papers of one another and discuss their mistakes.	To enhance learners' understanding of the concepts, learners will answer independently the questions found in **Activity 2: Elevate Problem Solving Skills!** Learners will solve the percent decrease and explain their solutions. Give them immediate feedback to correct any misconception.

After/Post-Lesson Proper				
Making Generalizations and Abstractions	As a concluding part of the lesson, the learners will form their own generalization on how to determine and compute the percentage increase: Remember that an **increase** happens when the new value is greater than the original value. **Percentage increase** is the difference between the new value and the original value, expressed in the form of a percent. The **formula** for percentage increase is: $percentage\ increase = \left(\frac{new\ value - original\ value}{original\ value}\right) x100\%$	As a concluding part of the lesson, the learners will form their own generalization on how to solve problems involving percent increase: To solve problems involving percentage increase, - Determine what is asked. - Determine the given information (original value and new value). - Check if the new value is greater than the original value, otherwise, it does not suggest percentage increase. - Solve the problem using the formula for percentage increase.	As a concluding part of the lesson, the learners will form their own generalization on how to determine and compute the percentage decrease: Remember that a decrease happens when the new value is less than the original value. **Percentage decrease** is the difference between the original value and the new value, expressed in the form of a percent. The **formula** for percentage decrease is: $percentage\ increase = \left(\frac{original\ value - new\ value}{original\ value}\right) x100\%$	As a concluding part of the lesson, the learners will form their own generalization on how to solve problems involving percent decrease: To solve problems involving percentage decrease, - Determine what is asked. - Determine the given information (original value and new value). - Check if the original value is greater than the new value, otherwise, it does not suggest percentage decrease. - Solve the problem using the formula for percentage decrease.
Evaluating Learning	To determine the learning outcomes, learners will answer **Activity 3: The Test of Mastery** in the provided worksheets.	To determine the learning outcomes, learners will answer **Activity 3: Test Your Problem-Solving Prowess** in the provided worksheets.	To determine the learning outcomes, learners will answer **Activity 3: The Test of Mastery** in the provided Worksheet.	To determine the learning outcomes, learners will answer **Activity 3: Test Your Problem-Solving Prowess** in the provided Worksheet.

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Additional Activities for Application or Remediation (if applicable)	For learners who will not be able to reach 75% of the assessment in activity 3, **Activity 4**: **Unleashing Extra Power in Percentage Increase** is provided for intervention.	For learners who will not be able to reach 75% of the assessment in activity 3, **Activity 4**: **Unleashing Extra Power in Problem Solving in Percentage Increase** is provided for intervention.	For learners who will not be able to reach 75% of the assessment in activity 3, **Activity 4**: **Unleashing Extra Power in Percentage Decrease** is provided for intervention.	For learners who will not be able to reach 75% of the assessment in activity 3, **Activity 4**: **Unleashing Extra Power in Problem Solving in Percentage Increase** is provided for intervention.
Remarks	The lesson focuses on how to solve for percentage increase given the original and new values.	The lesson focuses on solving problems involving Percentage Increase. https://www.cuemath.com/percentage-increase-formula/	The lesson focuses on how to solve the percentage decrease given the original and new values.	The lesson focuses on solving problems involving Percentage Decrease.
Reflection				