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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 2
Lesson
5

Lesson Exemplar for Mathematics Grade 4
Quarter 2: Lesson 5 (Week 5)
SY 2024-2025

Development Team

Writer:
- Steve B. Anapi (Philippine Normal University – Manila)

Validators:
- Aurora B. Gonzales, Ph.D. (Philippine Normal University – Manila)
- Lalaine Ann F. Manuel, Ph.D. (Central Luzon State University)

Management Team

Philippine Normal University
Research Institute for Teacher Quality
SiMERR National Research Centre

MATHEMATICS / QUARTER 2 / GRADE 4

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of the conversion of units of length, mass, capacity, and time.
B. Performance Standards	By the end of the quarter, the learners are able to convert units of length, mass, capacity, and time. (MG)
C. Learning Competencies and Objectives	1. Convert common units of measure from larger to smaller units, and vice versa: a. meter and centimeter, b. kilometer and meter, c. kilogram and gram, d. gram and milligram, and e. liter and milliliter. 2. Solve problems involving the conversion of units of length, mass, and capacity.
D. Content	Conversion of Units of Length, Mass, and Capacity in the Metric System
E. Integration	Sustainable Development and Environmental Conservation (Responsible Consumption and Production) *Entry points for integration:* 1. Highlight the importance of the Metric System as a global standard for measurements. Explain that this system is widely used in research about environmental conservation. 2. Discuss how applying metric conversions can lead to responsible consumption and production. Help students to think critically about how their product choices affect the environment (e.g., use of plastics to package small portions of food, etc., and how this affects the environment as a waste product if not properly managed). Encourage them to buy in bulk and eco-friendly packaging to reduce waste. Guide them to think about how to calculate efficient ways to buy products using a Metric system with consideration to the cost, packaging, and environmental impact.

II. LEARNING RESOURCES
Matanglawin: Philippines' growing problem with plastic. Retrieved from: https://www.youtube.com/watch?v=1Fo_CDHjSdk

<table>
<tr><th colspan="2">III. TEACHING AND LEARNING PROCEDURE</th><th>NOTES TO TEACHERS</th></tr>
<tr><td>A. Activating Prior Knowledge</td><td>
DAY 1
1. Short Review
Multiplication and Division Facts (Drill).
Using flashcards, drill learners on the following: (a) multiplication by 10, 100, and 1 000; and (b) division by 10, 100, and 1 000.

Activity 1 (Group Activity)
Materials Needed: Pictures of pencil, notebook, book, blackboard, tree, etc. (at least 10 objects); and glue/paste.
Instructions:
a. Divide the class into 4-5 groups. Give the materials and instruct them to listen carefully to the instructions.
b. Ask learners to select the appropriate unit of measurement for the length of each of the following objects.
c. Let them paste the pictures of the objects on the centimeter column and meter column.
<table>
<tr><td>Centimeter (cm)</td><td>Meter (m)</td></tr>
<tr><td></td><td></td></tr>
</table>
d. Let them collaborate until they are done with the task.
e. Post all the group’s output on the board.
f. Determine commonalities and differences in their answers then ask them why they pasted these objects in the centimeter column and the meter column.

DAY 2
Activity 2 (Group Activity)
Materials Needed. Pictures of a smartphone, a sack of rice, a teaspoon of salt, a teaspoon of sugar, a coin, a bundle of fruits, etc. (at least 10 objects); and glue/paste.
Instructions.
a. Divide the class into 4-5 groups. Give the materials and instruct them to listen carefully to the instructions.
</td><td>
Drill learners on multiplication and division facts involving multiples of 10, 100, and 1000. The everyday drill will prepare them for the conceptually and procedurally converting metric units of measurement.

Activity 1 will be given to learners to activate prior knowledge on identifying and using appropriate units (m or cm) to measure the length of an object and the distance between two quantities. (see Mathematics CG 2023, Grade 2 Quarter 2, Learning Competency 5). This is a preliminary activity before introducing sub-topic 1.

Activity 2 will be given to learners to activate prior knowledge on estimating and comparing the mass of an object using grams and kilograms (see Mathematics CG 2023, Grade 3 Quarter 2, Learning Competencies 2 and 3).
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	b. Ask learners to select the appropriate unit of measurement for the mass of each of the following objects. c. Let them paste the pictures of the objects on the *gram column* and *kilogram column.* Gram (g) | Kilogram (kg) | d. Let them collaborate until they are done with the task. e. Post all the group's output on the board. f. Determine commonalities and differences in their answers then ask them why they pasted these objects in the *gram column* and the *kilogram column.* **Activity 3 (Group Activity)** Materials Needed. Pictures of a gallon of water, a glass of milk, a cup of soy sauce, a pack of juice, water in a swimming pool, water in a pail, etc. (at least 10 objects); and glue/paste. Instructions. a. Divide the class into 4-5 groups. Give the materials and instruct them to listen carefully to the instructions. b. Ask learners to select the appropriate unit of measurement for the following liquids. c. Let them paste the pictures of the objects on the *milliliter column* and *liter column.* Milliliter (mL) | Liter (L) | d. Let them collaborate until they are done with the task. e. Post all the group's output on the board. *f.* Determine commonalities and differences in their answers then ask them why they pasted these objects in the *milliliter column* and the *liter column.* **2. Feedback (Optional)**	Activity 3 will be given to learners to activate prior knowledge on estimating and comparing capacity using milliliters and liters (see Mathematics CG 2023, Grade 3 Quarter 2, Learning Competency 5). *Activity 2 and 3 are preliminary activities before introducing sub-topic 2. In the group activity, constantly monitor and give feedback after hearing each member communicating mathematically with their peers.
B. Establishing Lesson Purpose	**DAY 1** **1. Lesson Purpose** **Activity 4 (for sub-topic 1)**	Let learners look at the actual ruler and meter stick. Let them recognize the similarities and

	Ruler or Meter Stick? Using the same groupings, give each group an actual meter stick and a ruler. Let them recognize the difference between the two measuring tools. Using the previous activity (Activity 1), ask them the following: **Guide Questions:** 1. Which measuring tool is best to use to measure the length of the objects? Why do you think so? 2. Is it convenient to measure the blackboard using a ruler? Why or why not? 3. Let them look at the centimeter side of the meter stick. How many centimeters are there in a meter stick?	differences. Focus their attention on the centimeter side of both measuring tools.
	DAY 2 **Activity 5 (for sub-topic 2)** Big Class Interaction. Using common household products (e.g. sugar), show four 250 g-pack in the class. Show them a weighing scale and introduce the numerical values in the scale. **Guide Questions:** a. How many grams do I have if I add two 250 g-pack of sugar? b. If I have four 250-g packs of sugar, how many grams do I have in all? c. Let learners put a 250 g-pack of sugar on the weighing scale. Ask them if the pointer of the weighing scale is in the 1 kg mass. d. Let them add the other 250 g-pack of sugar until the pointer of the weighing scale is in 1 kg mass. e. How many grams do I need to get a 1-kilogram mass?	Emphasize to the learners that the numerical values in the usual weighing scale are in kilograms (kg).
	Activity 6 (for sub-topic 2) Big Class Interaction. Materials: At least two 500 mL bottles, two 1 L bottles, and food color Show at least two bottles of water with a capacity of 500 mL (with mixed food color), one bottle of water with a capacity of 1 L (with mixed food color), and an empty bottle with a capacity of 1 L. **Guide Questions:** a. Ask learners, how many 500 mL of water can fill up the empty 1 L bottle. b. Test their hypothesis by asking a volunteer to use a funnel and pour the bottles of water containing 500 mL water. Ask them to stop when it reaches	

	the capacity by comparing it to the other bottle of water with the same 1 L capacity. Ask them again if their hypothesis is correct. **2. Unlocking Content Area Vocabulary** **DAY 1** *For sub-topic 1.* • **Length** measures the size of an object or the distance between two objects or locations. • A **meter stick** is a measuring tool used to measure the length of an object. It is one meter long. **DAY 2** *For sub-topic 2.* • **Mass** is the amount of matter an object contains. • A **weighing scale** is a measuring tool used to measure the mass of an object. • **Capacity** is the amount of liquid that a container can hold or contain.	
C. Developing and Deepening Understanding	**DAY 1** **SUB-TOPIC 1: Converting Units of Length** **1. Explicitation** After introducing the meter stick and eliciting how many centimeters are there in a meter stick, establish the fact that 1 meter equals 100 centimeters, in symbol, 1 m = 100 cm. The prefix *centi* means 100. Emphasize the *meter* (m) is the basic unit of measure for length in the Metric system. Thus, to convert from meter to centimeter, you multiply the number of meters by 100. On the other hand, to convert from centimeter to meter, divide the length of the object in centimeters by 100. The prefix *kilo* means 1 000. Therefore, one kilometer means 1 000 meters, in symbol, 1 km = 1 000 m. To convert from kilometer to meter, you multiply the number of kilometers by 1 000. On the other hand, to convert from meter to kilometer, divide the number of meters by 1 000. **2. Worked Example** Example 1. How many centimeters are there in 8 m? Solution: 8 × 100 Answer: 800 cm	

Example 2. How many meters are there in 6 000 cm?
Solution: 6 000 ÷ 100
Answer: 60 m

Example 3. How many centimeters are there in 135 m?
Solution: 135 × 100
Answer: 13 500 cm

Example 4. How many meters are there in 12 km?
Solution: 12 × 1 000
Answer: 12 000 m
Example 5. How many km are there in 52 000 m?
Solution: 52 000 ÷ 1 000
Answer: 52 km

3. Lesson Activity

A. Complete the following table.

	cm	**m**
1.	900	
2.	1 400	
3.	25 000	
4.		17
5.		405

	m	**km**
1.	54 000	
2.	1 400	
3.		202
4.		182
5.		27

B. True or False. Write TRUE if the statement is correct and FALSE if the statement is incorrect.

1. Meter is an appropriate unit of measure to use for the distance between Manila and Cebu City.
2. 57 km is equal to 5 700 m.
3. 743 cm is equal to 7 m and 43 cm.
4. 10 m and 69 cm is less than 10 690 cm.
5. 42 km and 690 m is greater than 42 690 m.

DAY 2

SUB-TOPIC 2: Converting Units of Mass and Capacity

1. Explicitation

After doing Activities 5 and 6, process and abstract the answers of the learners. They should be able to draw the following:

a. 1 kilogram = 1 000 grams (in symbols, 1 kg = 1 000 g)
b. 1 liter = 1 000 milliliters (in symbols, 1 L = 1 000 mL)

Emphasize that *gram* (g) is the basic unit of measure for the mass of an object while *liter* (L) is the basic unit of measure for capacity/amount of liquid in the Metric system. The prefix *kilo* means 1 000. Thus, 1 kg = 1 000 g. The prefix *milli* is used to express smaller units. Thus, 1 g = 1 000 mg.

Mass Conversions:

- To convert mass in kilograms to grams, multiply the number of kilograms by 1000.
- To convert mass in grams to kilograms, divide the number of grams by 1000.
- To convert mass in grams to milligrams, multiply the number of grams by 1000.
- To convert mass in milligrams to grams, divide the number of milligrams by 1000.

Capacity Conversions:

- To convert capacity in liters to milliliters, multiply the number of liters by 1000.
- To convert capacity in milliliters to liters, divide the number of milliliters by 1000.

2. Worked Example

Mass:

Example 1. How many grams are there in 25 kg?
Solution: 25 × 1 000
Answer: 25 000 g

Example 2. How many kilograms are there in 48 000 grams?
Solution: 48 000 ÷ 1 000
Answer: 48 kg

Example 3. How many milligrams are there in 12 g?
Solution: 12 × 1 000
Answer: 12 000 milligrams

Example 4. How many grams are there in 32 000 milligrams?
Solution: 32 000 ÷ 1 000
Answer: 32 g

Capacity:

Example 1. How many milliliters are there in 83 L?
Solution: 83 × 1 000
Answer: 83 000 L

Example 2. How many liters are there in 504 000 milliliters?
Solution: 504 000 ÷ 1 000
Answer: 504 L

3. Lesson Activity

A. Complete the following table.

	g	**kg**
1.	3 000	
2.	14 000	
3.	207 000	
4.		131
5.		29

	mg	g
1.	67 000	
2.	12 000	
3.		46
4.		65
5.		106

	mL	L
1.	21 000	
2.	282 000	
3.		108
4.		89
5.		24

B. True or False. Write TRUE if the statement is correct and write FALSE if the statement is incorrect.

1. Kilogram is an appropriate unit of measure to use for the mass of one medicine tablet.
2. 46 kg is equal to 4 600 g.
3. 23 253 mL is equal to 23 L and 253 mL.
4. 15 g and 257 mg are less than 152 570 mg.
5. Liter is an appropriate unit of measure to use for the capacity of a gallon of water.

DAY 3

SUB-TOPIC 3: Word Problems Involving Conversions of Units of Length, Mass, and Capacity

1. Explicitation

To solve word problems involving conversions of units of length, mass, and capacity, the following steps are followed:

- What are the given facts?
- What is asked?
- What is the number sentence?

	• What is the answer to the problem? **2. Worked Example** Example 1. Ben has 3 meters of wire. How many 25-cm wires can he make out of his material? Solution: • *What are the given facts?* Ben has 3 meters of wire, and he needs to cut 25-cm of wires out of it. • *What is asked?* How many 75-cm wires can he make out of his material? • *What is the number sentence?* 3 m = 3 × 100 cm 3 m = 300 cm Number of cut wires = 300 ÷ 25 • *What is the answer to the problem?* Number of cut wires = 12 Answer: There are 12 25-cm wires that can be cut out of 3 m wire. Example 2. In a fun run, the distance between the START and END is 12 km. Every water station is placed at 1 500 m. How many water stations are there in all? Solution: • *What are the given facts?* The distance between the START and END is 12 km. Every water station is placed at 1 500 m. • *What is asked?* How many water stations are there in all? • *What is the number sentence?* 12 km = 12 × 1 000 m 12 km = 12 000 m Number of water station = 12 000 ÷ 1 500 • *What is the answer to the problem?* Number of water stations = 8 Answer: There are 8 water stations along the 12 km fun run.	Demonstrate to learners how to do **Think Aloud.** This will help learners with difficulties in understanding several steps of the problem-solving. *Contextualization is encouraged so that learners can relate to the problems.

Example 3. You put the following grocery items in your cart: 7 cans of tuna flakes, 6 packs of instant noodles, and 2 packs of sugar. Each can of tuna is 200 g, each pack of noodles is 100 g, and each pack of sugar is 500 g. How many kilograms are there in the cart in all?

Solution:

- *What are the given facts?*

  There are 5 cans of tuna flakes, 3 packs of instant noodles, and 2 packs of sugar. Each can of tuna is 200 g, each pack of noodles is 100 g, and each pack of sugar is 500 g.

- *What is asked?*

  How many kilograms are there in the cart in all?

- *What is the number sentence?*

  Total mass (g) in the cart = 7 cans of tuna × 200 g
  + 6 packs of noodles × 100 g
  + 2 packs of sugar × 500 g

  Total mass (kg) in the cart = Total mass (g) ÷ 1 000

- *What is the answer to the problem?*

  Total mass (g) = 1 400 g + 600 g + 1 000 g
  = 3 000 g

  Total mass (kg) in the cart = 3 000 ÷ 1 000
  = 3

  Answer: The cart carries a mass of 3 kg in all.

Example 4. A watermelon weighs 8 times as much as a mango. Each mango weighs 250 g. If there are 2 watermelons and 8 mangoes in a basket, what is the total mass of the basket in kilograms?

Solution:

- *What are the given facts?*

  There are 2 watermelons and 8 mangoes in a basket. Each mango weighs 250 g and a watermelon weighs 10 times as much as a mango.

- *What is asked?*

  What is the total mass of the basket in kilograms?

- *What is the number sentence?*

  Mass of 8 mangoes = 8 × 250 g

  Mass of 2 watermelons = 2 × 10 × 250 g

  Total mass (g) in the basket = Mass of 8 mangoes + Mass of 2 watermelons

	Total mass (kg) in the basket = Total mass (g) ÷ 1 000 • *What is the answer to the problem?* Mass of 8 mangoes = 2 000 g Mass of 2 watermelons = 5 000 g Total mass (g) = 2 000 g + 5 000 g = 7 000 g Total mass (kg) in the basket = 7 000 ÷ 1 000 = 7 Answer: The basket carries a mass of 7 kg in all. Example 5. Twenty-four people each bought 350 mL of soda in a grocery store. How many liters of soda were sold? • *What are the given facts?* Twenty people each bought 350 mL of soda in a grocery store. • *What is asked?* How many liters of soda were sold? • *What is the number sentence?* Total capacity (mL) of soda sold = 20 × 350 mL Total capacity (L) of soda sold = Total capacity (mL) ÷ 1 000 • *What is the answer to the problem?* Total capacity (mL) of soda sold = 7 000 Total capacity (L) of soda sold = 7 000 ÷ 1 000 = 7 Answer: There are 7 L of soda sold in all.	
D. Making Generalizations	**1. Learners' Takeaways** **DAY 1** (*For Sub-topic 1*) • To convert from _____ to centimeters, _____ the number of meters by _____. • To convert from _____ to meters, _____ the number of centimeters by _____. • To convert from _____ to meter, _____ the number of kilometers by _____. • To convert from _____ to kilometer, _____ the number of meters by _____. **DAY 2** (*For Sub-topic 2*) • To convert mass in kilograms to grams, _____. • To convert mass in grams to kilograms, _____. • To convert mass in grams to milligrams, _____. • To convert mass in milligrams to grams, _____.	

	• To convert capacity in liters to milliliters, _____. • To convert capacity in milliliters to liters, _____. **DAY 3** **2. Reflection on Learning** (Homework) Let them watch a video on the plastic consumption problem of the Philippines at https://www.youtube.com/watch?v=1Fo_CDHjSdk. **Guide Question** 1. How does packaging contribute to the waste problems of our country? **The battle between sachets and bottles?** Look at the prices of shampoo sachets, a 350 mL bottle of shampoo, and a 1 L bottle of shampoo. Ask your parents to help you in determining their prices in a grocery store. **Guide Questions.** 1. How many sachets of shampoo are needed to reach 350 mL? 1 L? 2. About how much do you need to spend on the total number of sachets of shampoo for 350 mL of shampoo? for a 1 L of shampoo? 3. If you are going to buy your shampoo, which of the three is more cost-effective and environmentally friendly? Why?	Choose **only 1** activity for learners to reflect and apply their knowledge about units of measure and how it is integrated into intelligent consumption and conservation of the environment.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**DAY 4** **1. Formative Assessment** A. Fill in the blanks. 1. 12 000 mL = _____ L 2. 82 kg = _____ g 3. 1 400 cm = _____ m 4. 13 g = _____ mg 5. 154 000 g = _____ kg 6. _____ km = 134 000 m 7. _____ g = 15 000 mg 8. _____ km = 900 000 cm 9. _____ kg = 800 000 g 10. _____ mL = 157 L	**Answer Key:** Part A. 1. 12 L 2. 82 000 g 3. 14 m 4. 13 000 mg 5. 154 kg 6. 134 km 7. 15 g 8. 9 km 9. 800 kg 10. 157 000 mL

B. Solve the following. Show your complete solution using the steps provided earlier.

1. Ana has 24 m of lace. She needs to cut it into small laces each measuring 40 cm. How many 40-cm laces are there in all?
2. There are 50 packs of grocery items in a box. Each pack weighs 300 g. How many kilograms are there in a box?
3. Cris is mixing 2 000 mL of orange juice, 3 000 mL of pineapple juice, 5 000 mL of lemon juice, and 3 000 mL of pomelo juice for his party. How many liters of juice did he prepare for his party?

Rubrics. Each item is worth 5 points.

Point	Remark
5	Provided a complete solution with the correct procedure and arrived at the correct answer.
4	Provided a complete solution with one incorrect procedure but still arrived at the correct answer.
3	Provided a partially completed solution with 2-3 incorrect procedures and arrived at the correct answer.
2	Provided an incomplete solution with 1-2 correct procedures but did not arrive at the correct answer.
1	Provided an incomplete solution with an attempt to solve the problem but did not arrive at the correct answer.
0	Did not attempt to solve the problem.

C. Worksheet (See attached copy of the worksheet)
Total points: 30 points
Rubrics.
A. 1 point for each item; B. 2 points for each item; C. 5 points for each item

Point	Remark
5	Provided a complete solution with the correct procedure and arrived at the correct answer.
4	Provided a complete solution with one incorrect procedure but still arrived at the correct answer.
3	Provided a partially completed solution with 2-3 incorrect procedures and arrived at the correct answer.

Part B.
1. 60 pieces
2. 15 kg
3. 13 L

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<tr><td>2</td><td>Provided an incomplete solution with 1-2 correct procedures but did not arrive at the correct answer.</td></tr>
<tr><td>1</td><td>Provided an incomplete solution with an attempt to solve the problem but did not arrive at the correct answer.</td></tr>
<tr><td>0</td><td>Did not attempt to solve the problem.</td></tr>
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<td>B. Teacher's Remarks</td>
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<table>
<tr><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
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<td>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.</td>
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<td>C. Teacher's Reflection</td>
<td>Reflection guide or prompt can be on:
• <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?</td>
<td>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.</td>
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