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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Science

Quarter 1
Lesson 1
Week
7

Lesson Exemplar for Science Grade 5
Quarter 1: Week 7
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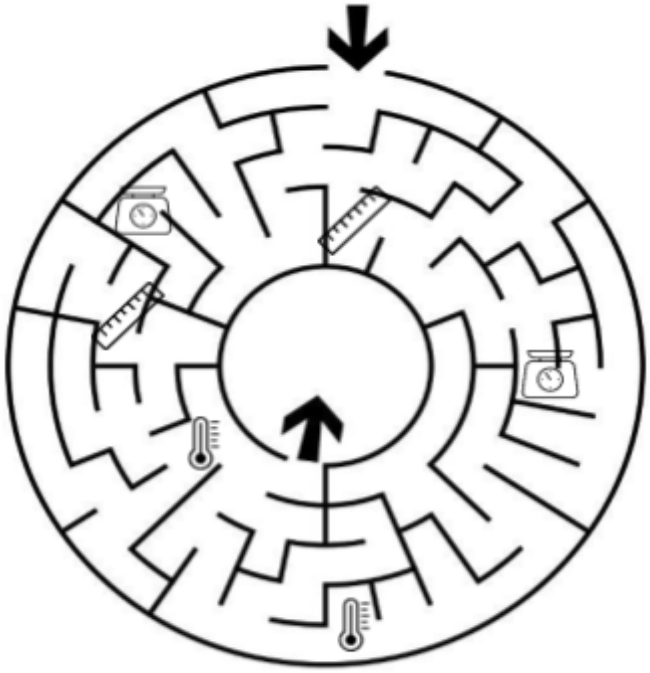
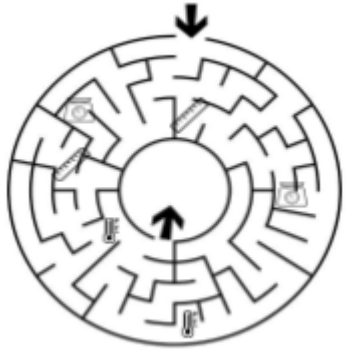
LESSON EXEMPLAR

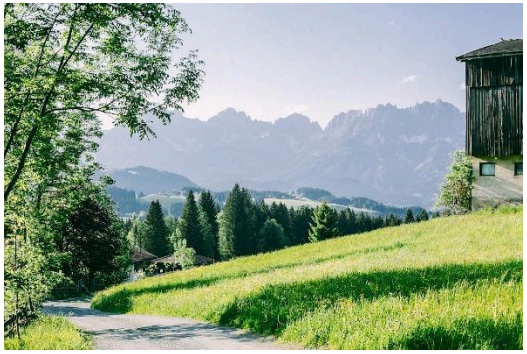
SCIENCE/QUARTER 1/ GRADE 5

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. **Content Standards**	The learners learn that: 1) Scientists identify three states of matter based on shape and volume. 2) Temperature can cause changes of state. 3) Planned simple scientific investigations require several steps and processes. 4) An understanding of matter can be applied to solve real world problems.
B. Performance Standards	By the end of the quarter, learners describe three states of matter based on properties of shape and volume and identify heat as being involved in changes of state. They plan a simple scientific investigation following appropriate steps and using units such as milliliters, liters, grams, kilograms, and degrees Celsius for measuring.
C. **Learning Competencies and Objectives**	**Learning Competency:** The learners identify and appropriately use units in simple science activities, such as milligrams (mg,) grams (g), kilograms (kg), and degrees centigrade (°C). *Lesson Objectives:* The learners will be able to: **1.** identify some units used for mass and temperature; **2.** use appropriate units in simple science activities; and ***3.*** measure the mass and temperature using a weighing scale and thermometer.
D. Content	Use units in simple science activities 1. Milligrams (mg), grams (g), and kilograms (kg) for mass 2. Degrees centigrade (°C) for temperature
E. Integration	Safety: When conducting experiments even with common materials, precaution and safety procedures must still be followed. Accountability and Responsibility: Learners should understand that different materials can be beneficial if use in the right and proper way and can be harmful if used otherwise. Measuring Skill (Science Process Skill Focus): Value of Precision

II. LEARNING RESOURCES
• The Science Process Skills | NARST. (n.d.). https://narst.org/research-matters/science-process-skills • Dictionary.com | Meanings & Definitions of English Words. (2020). In Dictionary.com. https://www.dictionary.com/browse/experiment • Flaticon. Grammy. [Image]. https://www.flaticon.com/free-icon/grammy_5551390 • Orlova, M. (2020). Green field with house and hills and trees [Image]. Pexels. https://images.pexels.com/photos/4946727/pexels-photo-4946727.jpeg?auto=compress&cs=tinysrgb&w=1260&h=750&dpr=1 • Oleksander, P. (2017). Green Trees Surrounded by Snow [Image] . Pexels. https://images.pexels.com/photos/376364/pexels-photo-376364.jpeg

III. TEACHING AND LEARNING PROCEDURE		**NOTES TO TEACHERS**
A. **Activating Prior Knowledge**	**Week 7 - Day 1** **1. Short Review: Science Process Skills** *General Instructions for learners:* Present the final data from your experiment and your answers to the guide questions. You will be graded using the rubric found in Science 5 Week 7 Worksheet Annex A.	Make sure that the learners are aware that their experiment and observation end after Day 5. Make sure that they were informed to pass a written final output for the experiment. Choose only 2-3 presenters to present their final output in front of the class. (Presentation is not included in the rubric anymore). Reiterate the different science process skills used in the experiment. Wrap up the experiment activity and relate the measuring part to the next activity for this day.

	Short Review: A-MAZE-ing Hunt Instructions: Let us answer your assignment last week. *Guide Questions:* 1. Which path is the right one to reach the center? 2. What are the measuring tools seen along the path in the maze? 3. What type of measurement do we usually use them for?  	Present the maze to the students. If you made this their homework, you will just answer this today. If not, allot at least 5 minutes for them to do this task. Answers to Guide Questions: 1.  2. Ruler, weighing scale, thermometer 3. Ruler is used to check which one is longer and which one is shorter (length); Weighing scale is used to check which one is heavier and lighter (mass), while the thermometer is used to check which one is hotter or colder (temperature).
B. Establishing Lesson Purpose	**1. Lesson Purpose: Which one?**	Prepare the two boxes of similar sizes but with things of different masses. Example: One

	Say, “I have here two types of boxes of the same sizes. Then, I need volunteers to lift and compare the two boxes.” *Processing Question/s:* 1. Which box is heavier? 2. How do we confirm that one box is heavier than the other? 3. What are we measuring?  **Mass** is a measurement of how much matter is in an object. Every matter has mass. 4. From the review, which instrument is used in measuring mass? 5. What is/are the units used in measuring mass? How do we properly measure how much matter is in an object using a weighing scale? *(We will be answering this question at the end of the lesson.)* Say, “I have here two pictures, one sunny morning and one snowy morning.”   *Processing Question/s:* 1. Which one seems hotter? 2. How do we confirm which one is hotter than the other? 3. What are we measuring?	box may have chalk inside while the other has a stapler. You can state the processing questions orally or prepare a slide deck for this. Sample answers are given for your reference. Facilitate an interactive discussion. Answers may include: 1. (*It depends on the boxes you will provide)* 2. We “measure” them 3. It is the mass. 4. Weighing scale 5. Question 5 will be answered at the end of the lesson. Provide pictures of a sunny and snowy morning. You can state the processing questions orally or prepare a slide deck for this. Sample answers are given for your reference. Facilitate an interactive discussion. Answers may include: 1. The sunny morning 2. We “measure” them 3. The hotter, the higher the temperature 4. Thermometer 5. Question 5 will be answered at the end of the lesson.

	4. From the review, which instrument is used in measuring temperature? 5. What is/are the units used in measuring temperature? How do we properly measure how hot or cold the temperature is using a thermometer? *(We will be answering this question at the end of the lesson.)* **2. Unlocking Content Vocabulary**: **Matching Type** Instructions: Let us unlock the terms to be used in this lesson using the definition and example. Match column A to column B. Column A — Column B 1. Gram — a. Equivalent to one thousand (1000) grams 2. Celsius — b. Unit of Mass, is equivalent to 0.001 kilograms 3. Kilogram — c. Equivalent to one thousandth (1/1000) grams 4. Milligram — d. Unit of Temperature, is a type of a centigrade scale 5. Unit — e. standard used for making comparisons in measurements	You can prepare the matching type activity by writing on the board or preparing a visual aid / slide deck. Answers: *1. b* *2. d* *3. a* *4. c* *5. e*
C. Developing and Deepening Understanding	1. **Explicitation** **Measurement** involves a number and a unit. For example, the volume of the water in a graduated cylinder is 15 milliliters (mL). 15 is the number while the milliliter is the unit of volume. Ask: *Do you know which unit to use when measuring?* Imagine there are two aspiring scientists (just like you) who want to share their experiments' results. They both measured the mass of the container containing the chemicals used in the experiment using a balance, and they had the same number of measurements, however, they used different units. Aspiring scientist A said his result is 43 grams (g) while aspiring scientist B said it should be 43 milliliters (mL). *Processing Questions:* Which one presented a correct measurement for the mass of the container?	You can prepare a set-up of graduated cylinder with 15 mL reading or just a picture showing it. This is a rhetorical question. For this part, if you can prepare an actual set up using beakers or any container and a balance, you may do so and the learners can perform a mini experiment. Or you can just show a picture for this.

	- *Aspiring Scientist A presented the correct measurement for the mass since grams is the appropriate unit in measuring mass of materials.* How important is the unit of measurement? - *Units provide a standard way to express and compare measurements, ensuring that they are precise and accurate.* *Key concepts:* **Gram (g), kilogram (kg), and milligram (mg)** are some of the units of measurement for mass. **Gram** is the base unit, adding the prefixes like kilo- (one thousand) and milli- (one thousandth), the unit measures differently. *The appropriate unit for measuring mass is typically chosen based on which unit conveniently expresses the value, making it easier to read and understand without using excessively large or small numbers.* Objects with smaller masses may opt to use milligrams like medicinal capsules with 200-500 milligrams.  Objects with masses beyond 1000 grams are often expressed in kilograms. For example, buying 1 cement bag weighing 40 kg instead of expressing it as 40,000 grams. **Exercise:** Identify which unit of measuring mass is used in the following items: 1. 	Answers for the processing questions are given for your reference. Include these key concepts in your discussion. Present these either written or through a slide deck/visual aid. If there will be time constraint, you can continue discussing this on Day 3 before doing LAS1. You may provide more examples here if needed. Answers: 1. grams 2. kilogram

2. 

However, comparing two objects can only be valid when they have similar units.
Now, how do we convert the units into the appropriate one?

One (1) kilogram is equivalent to one thousand (1000) grams.
Example: 1 kg of rice = 1,000 g
(1 x 1000 = 1000 grams)

1500 g = 1.5 kg
(1500 grams / 1000 = 1.5 kg)

Exercise:
1. How many grams (g) is one (1) sack of rice which is equivalent to approximately 50 kilograms?

One (1) milligram is equivalent to one thousandth (1/1000) gram.
Example: 4 mg (4/1000) = 0.004 gram
5 grams = 5000 mg

These units are used under the metric system.

Degree Celsius (°C), a type of a centigrade (centi = 100, grade = gradients) scale, is a unit of measuring temperature, along with degrees Fahrenheit (°F) and Kelvin (K).

Example: The boiling point of water is at **100 degrees Celsius (100 °C).**

This may be hard with the mathematics integration. Please add more samples if needed.

Answer:
1. 50 x 1000 = **50,000 grams**
   50 kg = 50,000 grams

Inform the students that they will be conducting an activity tomorrow using the given units. Ask them to bring the necessary materials for the experiment written in the worksheet.

Before the activity starts, take note of the materials to be

	Say, "We will learn more about these units in our activity tomorrow."	brought by the learners and to be prepared by you. For Part A (Mass Matters), take a look at the materials brought by the students. If you think some materials can be replaced for better results, you may do so. For Part B (Temperature Test), make sure the three (3) glasses have water with different temperature for the sake of the experiment. You can call selected students to present their answers in front of the class. Discuss the answers of the students through facilitated discussion. Divide the class into groups of six. Allow them to work on the activities in LAS2. After conducting the activities, learners will be presenting their results. Call a representative for each group. Provide comments and feedback immediately about their presentation.
	Week 7 - Day 2 2. **Worked Example: Measurement Matter** • Refer to LAS1 Science 5 Week 7 Worksheet Say, "Let us use the units you learned in our simple investigation." *Key Concepts (Part A: Mass Matters)* 1. Mass can be measured using gram (g), kilogram (kg), and milligram (mg). 2. Grams and milligrams are appropriate measurement units for small/tiny/light materials while for big/heavy materials, we use kilograms. 3. You can use your senses and observe when predicting mass but using equipment like a balance or weighing scale can help you accurately compute the mass of a material. *Key Concepts (Part B: Temperature Test)* 1. Temperature can be measured using thermometers. 2. The units for temperature includes degrees Celsius, degrees Fahrenheit, and Kelvin. 3. Essentially, it tells us the coldness or hotness of a material. **Week 7 - Day 3** 3. **Lesson Activity**	

	• Refer to LAS 2 Science 5 Week 7 Worksheet. *Say*, "Let us practice more. Be ready with your answers afterwards. We will allot 20 minutes for the presentation." You will be graded based on the following criteria: Accuracy of content - 40% Delivery - 30% Organization/coherence – 20% Teamwork - 10% 100%	
D. Making Generalizations	**Week 7 - Day 4** **1. Learners' Takeaways** As a review activity, please prepare an exit ticket answering one or more of the exit questions below. One exit ticket is equivalent to a merit point in class. *Exit Questions:* 1. What are the units for measuring the mass? 2. How do we properly measure how much matter is in an object using a weighing scale? 3. What are the units for measuring temperature? 4. How do we properly measure how hot or cold the temperature is using a thermometer? **2. Reflection on Learning** Let us now reflect on what we have covered so far. 1. What could happen if we used the wrong units for measurements? 2. How does using the correct units help scientists communicate their findings clearly?	You may provide any incentive or reward to those who will give their exit ticket. Go back to the lesson purpose and provide feedback regarding the questions.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	**1. Formative Assessment: Multiple Choice Questions** **Read the questions carefully. Choose the letter of the correct answer.** 1. Which unit is used to measure the mass of your meal? a. meters (m) b. degrees Celsius (°C) c. grams (g) d. liters (L) 2. A scientist wants to know how hot a boiling pot of water is. What unit should they use to measure the temperature? a. centimeters (cm) b. degrees Celsius (°C) c. kilograms (kg) d. seconds (s) 3. You estimate that a book has more mass than a pencil. What does "mass" mean? a. How long something is b. How much color something has c. How heavy or light something is d. How hot or cold something is 4. Imagine you are making a cake recipe. The recipe calls for 2 cups of flour. What unit could you use instead of cups to measure the flour? a. grams (g) b. meters (m) c. seconds (s) d. degrees Celsius (°C) 5. Which of the following arrangement shows units of mass from smallest to largest? a. mg, g, kg b. kg, g, mg	You can employ the assessments and can give additional guide questions if you think it is necessary. Answers: 1. c 2. b 3. c 4. a 5. a 6. d

c. g, mg, kg
d. g, kg, mg

6. A bag of rice weighs 5,000 grams. What is its mass in kilograms (kg)?
a. 0.005 kg
b. 0.05 kg
c. 0.5 kg
d. 5 kg

MATCHING TYPE. Match Column A with Column B by writing the letter of the correct answer on the blank provided.

Column A	Column B
_____7. milligrams (mg)	a. measuring the mass of a large box
_____8. grams (g)	b. measuring the weight of a grain of rice
_____9. kilograms (kg)	c. measuring the temperature for baking a cake
_____10. degrees Celsius (°C)	d. measuring the mass of a person

Answer:
7. b
8. a
9. d
10. c

2. Homework
Bring the materials needed for the science investigation next week.

B. **Teacher's Remarks**	*Note observations on any of the following areas:*	**Effective Practices**	**Problems Encountered**
	strategies explored		
	materials used		
	learner engagement/ interaction		

	others			
C. Teacher's Reflection	*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?*			

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