7

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Science

Quarter 1

Week

6

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BAGONG PILIPINAS
ONE NCR STRONGER TOGETHER

Learning Activity Sheet for Science Grade 7
Quarter 1: Week 6

This material is intended exclusively for the use of teachers in the implementation of the MATATAG K to 10 Curriculum. It aims to assist in delivering the curriculum content, standards, and lesson competencies.

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Secretary: Juan Edgardo “Sonny” Angara
Undersecretary: Gina O. Gonong

Development Team

Writers:	June Daffodil F. Saquilabon, Florilyn F. Impuesto, Mabel Jane V. Tagle, Rhodeliza Portuguez
Enhanced by:	Maripaz Mendoza, Merlie Gerlie V. Capiral
Content Validators:	
Internal:	Jocelyn R. Agulto, Corazon A. Javier, Armida S. Oblinada, Gemma C. Caviles, Roxanne S. Villanueva
External:	Ryan Lansangan, Louie B. Dasas
Language Validator:	Donald Samson
Illustrator:	Aileen G. Gutierrez
Layout Artist:	Danica Joy B. Delorino, Aileen G. Gutierrez

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/ LRMS Head
MYRON WILLIE III B. ROQUE, SDO Valenzuela LRMS Education Program Supervisor

MATATAG K to 10 Curriculum Weekly Lesson Log	School		Grade Level	7
	Name of Teacher		Learning Area	Science
	Teaching Dates and Time		Quarter	1 Week 6

	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES				
A. *Content Standards*	Learners learn that there are specific processes for planning, conducting, and recording scientific investigations.			Learners learn that the properties of solutions such as solubility and reaction to litmus determine their use.
B. *Performance Standards*	By the end of the Quarter, learners recognize that scientists use models to describe the particle model of matter. They use diagrams and illustrations to explain the motion and arrangement of particles during changes of state. They demonstrate an understanding of the role of solute and solvent in solutions and the factors that affect solubility. They demonstrate skills to plan and conduct a scientific investigation making accurate measurements and using standard units.			
C. *Learning Competencies*	The learners make accurate measurements using standard units for physical quantities and organize the collected data when carrying out a scientific investigation.			The learners identify the role of the solute and solvent in a solution.
D. *Learning Objectives*	At the end of the lesson, the learners shall be able to: a. identify and describe different standard units of measurement (SI) used in different physical quantities; (e.g mass, length, volume, time, temperature); b. familiarize with the different laboratory tools used to measure physical quantities; and	At the end of the lesson, the learners shall be able to: a. identify appropriate laboratory apparatuses to make accurate measurements of physical quantities; b. measure the physical quantity of different objects; and c. appreciate the use of appropriate laboratory apparatuses.	At the end of the lesson, the learners shall be able to: a. group the measurements using the chosen method of organizing data; b. organize data based on the type of physical quantity; and c. cite the significance of organizing data in real-life situations.	At the end of the lesson, the learners should be able to: a. identify solute and solvent in a solution; b. differentiate the types of solutions.; and c. demonstrate understanding on the importance of solutions to humans.

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(02) 85229412
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	c. realize the importance of using standard units of measurement.			
E. Instructional Design Framework	Context Connection Ideational	Collaboration Context Connection Ideational	Collaboration Context Connection Ideational	Context Connection Ideational
F. 21st Century Skills	Reflective thinking Critical thinking	Reflective thinking Critical thinking Informed decision making	Reflective thinking Critical thinking	Reflective thinking Critical thinking
II. CONTENT	Planning, Following, and Recording Scientific Investigations: **Different Standards of Units. Different Laboratory Tools Used to Gather Physical Quantities.**	Planning, Following, and Recording Scientific Investigations-**Physical Quantities. Making accurate measurement using laboratory apparatus**	Planning, following, and recording scientific investigations-**Methods of Organizing Data based on the type of Physical Quantity**	**Solutions and Types of Solutions**
III. LEARNING RESOURCES				
A. References	Gupta, S. V. (2010). Units of Measurement: Past, Present and Future. International System of Units. Germany: Springer Berlin Heidelberg. Pp 47-65 Gadd, K. (2003). Applied Science. United Kingdom: Nelson Thornes Limited. pp24-27	Gupta, S. V. (2010). Units of Measurement: Past, Present and Future. International System of Units. Germany: Springer Berlin Heidelberg. Pp 47-65 Furgang, K. (2010). Using Math in Science. United States: Benchmark Education Company. pp10-11	Gupta, S. V. (2010). Units of Measurement: Past, Present and Future. International System of Units. Germany: Springer Berlin Heidelberg. Pp 47-65	Chemistry: Exploring Life Through Science Second Edition pp: 47-48
B. Other Learning Resources				Science 7 Learning Module 7 Quarter 1 Week https://www.youtube.com/watch?v=k9NTbjgIcF0&t=360s

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				OpenAI.(2024). *The Magical Mix-Up: A Tale of Solutions* Retrieved from ChatGPT
IV. TEACHING AND LEARNING PROCEDURES				
Before/Pre-Lesson Proper				
Activating Prior Knowledge	Present this scenario to the class: Diego is a "plantito" who loves to grow different kinds of fruits and vegetables. One of his plants bears a very long fruit called sponge gourd (patola). In his excitement, he wants to know how long it becomes by measuring using his hands. **Guide Questions:** 1. Do you think Diego's idea of measurement is correct? 2. Will his measurement be accurate? 3. What tool can you suggest to accurately measure the sponge gourd?	Let the learners read each scenario and then complete the given table. Scenario #1: Anthony's teacher instructed him to measure the window's length and purchase a new curtain rod and curtains for their classroom to reduce the amount of sunlight that enters directly and distracts his classmates. What measuring tool should he need to use? Scenario #2: Joy and Ana are classmates. They are doing science experiments in which they need two different rocks that can be found in their surroundings. They want to first weigh the rocks to compare their mass. What measuring tool should he need to use? Scenario #3: Allan is a dedicated athlete. To keep his body in a healthy state	**Let's recall...** Let the learners read the scenario and fill in the table with necessary data. Scenario#1 Darren's teacher instructed him to measure the cabinet's length, width, and height for the classroom in order to reduce the quantity of clutter in the classroom. Scenario #2 Via is a chemist. Water is one of the components for the research she is working on solutions. Next, she wants to calculate how much water she will need to create a solution. What measuring device does she need? **Physical Quantity** | **Unit** | **Measuring tools** | | | | | |	**Let's recall...** Present the following pictures to the class and let them classify the materials as to homogeneous or heterogeneous mixtures. 1.  2.  3.  4.  18Karat gold ring 5.  air inside a balloon images source: canva.com

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(02) 85229412
ncr@deped.gov.ph
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		and to assess how far he can run each day, he makes sure to run every morning. He even keeps track of the time it takes him to cover a given distance. What measuring tool should he need to use? Scenario #4: Bianca is a chemistry student. Water is one of the components for the research she is working on solutions. She wants to calculate how much water she will need to create a solution. What kind of measuring device is required to use? Scenario #5: Kristoff was active in his first subject class when suddenly he experienced a headache and dizziness. He noticed that his body was getting hot and quickly alerted his teacher. His teacher promptly called his parents and brought him to the clinic to rest. What measuring tool is needed to measure Kristoff's body temperature?	*Sample Answers:* **Physical Quantity** / **Unit** / **Measuring tools** *length, width, height* / *meter/ centimeter* / *meter stick, measuring tape* *volume* / *milliliter/ cubic centimeter* / *graduated cylinder*	*Answers:* *1. heterogeneous* *2. heterogeneous* *3. homogeneous* *4. homogenous* *5. homogenous*

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(02) 85229412
ncr@deped.gov.ph
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Scenarios	Physical Quantity	Unit	Measuring tools
Scenario #1: Anthony			
Scenario #2: Joy and Ana			
Scenario #3: Allan			
Scenario #4: Bianca			
Scenario #5: Kristoff			

Sample Answers:

Scenarios	***Physical Quantity***	***Unit***	***Measuring tools***
Scenario #1: Anthony	*length*	*m*	*meter stick, tape measure*
Scenario #2: Joy and Ana	*mass*	*kg*	*triple beam balance, platform balance*
Scenario #3: Allan	*time*	*s*	*Stop watch*
Scenario #4: Bianca	*volume*	*mL* cm^3	*graduated cylinder*
Scenario #5: Kristoff	*temperature*	*°C*	*Thermometer*

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(02) 85229412
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Lesson Purpose/ Intention	The teacher will ask the learners to share their thoughts about the answers to the questions below: Which is heavier, one kilogram of nail or one kilogram of cotton? Why do you think so?  1 kilogram of nail 1 kilogram of cotton After soliciting answers, present the learning objectives.	The teacher will solicit the ideas of the learners on the lesson of the day based on what is presented in the previous activity on analyzing scenarios. "From your answers in the different scenarios, what have you realized?" After soliciting answers from the learners, the teacher will direct them to the learning intentions for the day.	Present and explain the lesson objectives to the learners. to identify the physical quantities to be measured and collected. to select an appropriate data organization method based on the nature of the measurements. to display data organization by means of labeling and presenting measurements.	Present and explain the lesson objectives to the learners by letting them read the statements altogether. identify solute and solvent in a solution; describe the appearance of different types of solutions and cite the significance of classifying solutions in real-life situations.
Lesson Language Practice	Let the learners match the letter of a physical quantity that can be measured with the objects given below. Let them write the answer in the space provided. A. mass B. temperature C. length D. volume	Present the following words to the learners along with their meanings. Prompt the learners to construct sentences using these words that illustrate their meanings in both scientific contexts and everyday situations. 1. duration - the length of time during which	The teacher will set the class to play a game of 4 pics 1 word, and the students will guess the word related to 4 pictures presented in each set.	Let the learners unlock the meaning of the underlined words in the sentences below using context clues. 1. When you add sugar to water, the sugar <u>dissolves</u> completely, creating a sweet <u>solution</u>. 2. When you add food coloring to a glass of water,

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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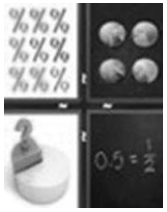
	___1. the space occupied by an object. ___2. the amount of matter or substance that makes up an object ___3. the degree of hotness or coldness of an object ___4. the measurement which identifies the distance between two points *Answers:* *1. D* *2. A* *3. B* *4. C*	something continues or exists. 2. magnitude - the size or extent of a physical quantity, such as length, time, or strength. 3. accurate – correct; without error; closely matching a standard or expected value. 4. precise – exact, being very detailed and clear in terms of measurement *Possible Answers:* *1. The <u>duration</u> of the experiment was two hours, during which we monitored the reaction.* *The <u>duration</u> of the movie was longer than expected, but it was really enjoyable.* *2. The earthquake's <u>magnitude</u> of 7.5 on the Richter scale caused widespread damage in the region.* *The <u>magnitude</u> of the storm was frightening, with strong winds and heavy rain.*	  BEATL *(table)* AGEZORIN *(organize)*   IPE HARPG *(pie graph)* AATD *(data)*  TEAMMEENSUR *(measurement)* *Note: Teacher may replace the pictures used as necessary.*	the water acts as the <u>solvent</u> that spreads the color evenly, creating a <u>homogeneous</u> appearance. 3. When you mix salt into water, the salt acts as the <u>solute</u> and disappears into the liquid. *Sample Answers:* *dissolves – to mix so well with another substances that it becomes no longer visible.* *solution - is a mixture where one substance is completely dissolved in another substance.* *solvent – it is a liquid that can dissolve other substances* *homogenous – uniform in appearance; it means that a mixture looks the same throughout* *solute - is a substance that is dissolved in a liquid (the solvent) to form a solution.*

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(02) 85229412
ncr@deped.gov.ph
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		3. The thermometer gave an accurate reading of 25 degrees Celsius, which matched the temperature outside. *The map was accurate, showing the correct path to the museum* *4. The scientist conducted the experiment with precise measurements, ensuring each sample was weighed to the nearest milligram.* *The tailor took precise measurements to make sure the suit fit him perfectly for the wedding.*		
During/Lesson Proper				
Reading the Key Idea/ Stem	The learners will be asked to read the passage about the history of measurement below: **Ancient Measurement Systems: From Egypt to Rome** Once upon a time, ancient civilizations needed ways to measure the world around them. In Egypt, people used the cubit, the length from an elbow to a fingertip, to build their magnificent pyramids. Meanwhile, in	Let the learners read the text below. **Measuring Physical Quantities** How far is your school from your home? How much is the table heavier than the chair? How much more water can be filled in a jug than that in a glass? How long is the duration of a day? Such questions can be answered only when you are able to measure the physical	The learners will read the passage about data gathering and shall answer a set of guide questions. **Data Organization** Scientists collect and record data during their work. They represent this data in many formats, such as tables, narrative notes, graphs, or diagrams. Data can be recorded in different ways depending on the type of investigation and what the scientist is trying to learn. The way in which	The learners will read the story below, and answer the provided guide questions. **Magic in the Lab** Team Magic Mixers, consisting of Emma and Alex, decided to experiment with powders and liquids to create a sparkling potion. Team Liquid Wizards, led by Ryan, opted for mixing colorful liquids to concoct a mesmerizing solution. As they began their

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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	Mesopotamia, a society thriving on trade used a system based on the number 60, influencing how we measure time today. In the Indus Valley, traders used uniform weights and measures, suggesting a central authority. As civilizations grew, the Greeks and Romans refined these early systems. The Greeks introduced units like the foot and Stadion, while the Romans standardized measurements across their empire with units like the mile and pound. During the Middle Ages, measurement units varied widely across Europe. However, the Magna Carta in England called for uniformity, leading to the yard, foot, and inch we recognize today. This system was essential for trade and construction in a developing society. The chaos of pre-revolutionary France's measurements led to the birth of the metric system in 1795. The meter was	quantities like length, mass, time, volume, etc. The quantities which can be measured are called physical quantities. Length, mass, time, volume, etc., are examples of physical quantities. These quantities share two key aspects: their magnitude, which describes their size, and the unit used for measurement. For instance, if a table's length measures 80 cm, '80' represents its magnitude, and 'cm' denotes the unit of measurement." Measuring instruments are used to measure various physical quantities such as length, mass, time, volume, etc. These measuring instruments make accurate measurements to measure a specific physical quantity that is used in scientific investigation.	data are organized is important when interpreting and drawing conclusions from the data. A data table is one type of graphic organizer used frequently in science. It is used especially during laboratory experiments when qualitative and/or quantitative data are collected. Data tables are not randomly constructed. They have at least two columns or rows, and specific data is entered in each column/row. To design a data table, you must know what the independent and dependent variables are. Imagine you are conducting an experiment to test how air pressure affects the boiling point of water. Here's how you might design a data table: Pressure (kPa) | Boiling point of water (°C) 80 | 95 90 | 97 100 | 100 110 | 103 120 | 105	experiments, the classroom buzzed with excitement. Enter Team Gas Gurus, the third team led by the clever and mischievous twins, Lily and Leo. While others were engrossed in their potions and mixtures, Lily and Leo had a plan involving magical gases. They gathered a selection of enchanted gases and set out to create a bubbly elixir that would dazzle everyone. The teams encountered challenges along the way. Emma and Alex discovered that not all powders dissolved easily, while Ryan's team struggled to find the right proportions for their liquid mixture. Lily and Leo faced the tricky nature of gases but with their ingenuity, they managed to capture the magic in their elixir. After hours of brewing and stirring, the teams proudly presented their magical solutions to Professor Alchemistus. Team Magic Mixers unveiled a shimmering potion that changed colors

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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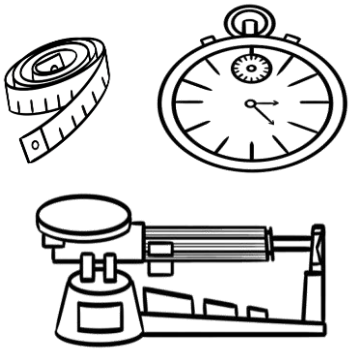
	defined as one ten-millionth of the distance from the equator to the North Pole, simplifying and unifying measurements. In 1960, the International System of Units (SI) was established, further standardizing measurements globally. The meter, kilogram, and second became universal and essential for science, technology, and daily life. By 2019, even the kilogram's definition evolved, linking it to the Planck constant, moving away from physical artifacts. From the ancient cubit to the modern meter, the journey of standard units of measurement reflects humanity's pursuit of precision and fairness, making our complex world a bit simpler and more connected. The basic SI (International System) units of measurement include the following:		In this data table, there are two columns labeled “pressure (kPa)" and "boiling point of water (°C)." Each column has specific data entered. The air pressure (in kPa) is the independent variable because it is deliberately changed or controlled in the experiment. The data is placed in the first column. On the other hand, boiling point of water (in °C) is the dependent variable because it depends on the pressure you set. The data is placed on the second column. Using graphs and charts is another way of organizing data. Data is visually represented using graphs or charts such as bar charts, pie charts, or line graphs. Graphs or charts provide a visual representation of data trends and patterns. The line graph below represents the data presented in the data table below	with each swirl. Team Liquid Wizards showcased a vibrant mixture that seemed to dance in the flask, and Team Gas Gurus presented a fizzing elixir that released captivating bubbles. Professor Alchemistus was delighted. “Now, my young alchemists, you have successfully explored three typoes of solutions: solid in liquid, liquid in liquid, and gas in liquid. Each solution is a magical blend of different substances.” As the students marveled at their creations, Professor Alchemistus revealed that understanding solutions was like unlocking the secrets of magical potions in Chemlandia. The students left the Potion Laboratory that day, not only with a deeper knowledge of solutions but also with a sense of wonder about the magical world of chemistry. And so, in the land of Chemlandia, the students continued their journey of discovery, applying the

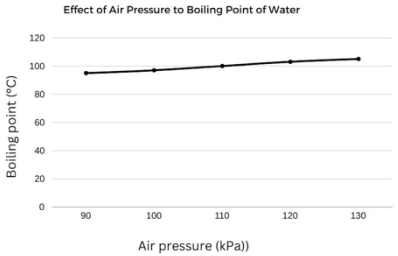
Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
https://www.depedncr.com.ph

				lessons learned from their magical mix-up to unravel the mysteries of enchanted realm of chemistry.

Physical Quantity	Unit of Measurement	Symbol
mass	kilogram	kg
length	meter	m
volume	cubic meter	m^3
time	second	s
temperature	Kelvin	K

Questions:

1. What is the passage all about?
2. What contributions did the Greeks make to the development of measurement units?
3. How did the Romans standardize measurements across their empire?
4. How did the establishment of the International System of Units (SI) in 1960 contribute to global standardization?
5. What might have been some challenges faced by ancient civilizations in standardizing units of measurement?
6. In what ways do standardized units of measurement facilitate international



The air pressure (independent variable) is placed on the x axis while the boiling point of water (dependent variable is placed on the y-axis). The line graph shows that as the air pressure increases, the boiling point of water also increases.

Data is organized also as a simple list of items called list format. It is easy to create and understand and suitable for unordered or sequential data.

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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	trade and scientific collaboration? *Sample Answers:* *1. The passage talks about how measurement units have changed and developed over time, from ancient times to the present-day International System of Units (SI). It tells how different societies created and standardized measurements to help with building, trading, and scientific progress.* *2. The Greeks introduced units like the foot and the Stadion, which were used for measuring distances and contributed to the refinement of early measurement systems.* *3. The Romans standardized measurements across their empire by introducing and enforcing units such as the mile and pound, which ensured uniformity and consistency in trade and construction throughout their vast territories.*			

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(02) 85229412
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	4. The establishment of the International System of Units (SI) in 1960 provided a universal and standardized system of measurement, with units like the meter, kilogram, and second becoming essential for science, technology, and daily life. This facilitated consistent and accurate measurements globally. *5. Challenges faced by ancient civilizations in standardizing units of measurement likely included regional variations, lack of central authority, difficulties in communication and trade between different regions, and the reliance on physical artifacts which could vary or be lost.* 6. *Standardized units of measurement facilitate international trade by ensuring that goods are measured and quantified consistently, reducing misunderstandings and errors. In scientific collaboration, they enable researchers from different parts of the world to share and*			

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(02) 85229412
ncr@deped.gov.ph
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	compare data accurately, enhancing cooperation and the advancement of knowledge.			
Developing Understanding of the Key Idea/Stem	The teacher will show an illustration with a short story to the class, and let the learners share their ideas based on the provided guide questions. A group of friends were having lunch at the park. As they ate, one of them served water into each glass. Out of curiosity, one of them asked how they could know if each glass had the same amount or quantity of water. 1. What is the best way to measure the quantity of water? 2. What instruments found in the laboratory can be used to measure the amount or quantity of liquids?	Each group will be given the materials needed to perform the actual measurement in each station. Once done with the first, they will proceed to the next until they have completed all stations. Station #1: Measure the length of the board in meters. Station #2: Measure the mass of a book in kilogram. Station #3: Measure the volume of the water in liters. Station #4: Measure the temperature of the hot water in degrees Celsius. Be careful in handling the hot water. Station #5: Measure the time it takes for a group mate to walk from one corner of the classroom to the opposite end.	**Guide questions:** 1. What are the different ways in which scientists represent their data? 2. When are the data tables commonly used in science? 3. What do you need when constructing a data table? 4. Why is it important to know the independent and dependent variables when designing a data table? 5. Why is the organization of data important before interpreting and drawing conclusions? *Sample Answers:* *1. Scientists use tables, narrative notes, graphs (such as bar charts, pie charts, line graphs), diagrams and lists in representing their data.*	**Guide questions:** 1. Describe the solutions prepared by each team of students. a. Team Magic Mixers b. Team Liquid Wizards c. Team Gas Gurus 2. What components were present in the solutions that they prepared? What do you call each component? 3. What are the three types of solutions prepared by the three teams?

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(02) 85229412
ncr@deped.gov.ph
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	Sample Answers: *1. The best way to measure the quantity of water in the glasses is to use a graduated cylinder or a measuring cup to ensure each glass contains the same volume of water.* *2. Instruments commonly found in a laboratory that can be used to measure the amount or quantity of liquids include graduated cylinders, volumetric flasks, pipettes, burettes, and beakers.*	<table><tr><th>Scenario</th><th>Trial 1</th><th>Trial 2</th><th>Trial 3</th><th>Average</th></tr><tr><td>Station #1</td><td></td><td></td><td></td><td></td></tr><tr><td>Station #2</td><td></td><td></td><td></td><td></td></tr><tr><td>Station #3</td><td></td><td></td><td></td><td></td></tr><tr><td>Station #4</td><td></td><td></td><td></td><td></td></tr><tr><td>Station #5</td><td></td><td></td><td></td><td></td></tr></table> Note: The teacher will demonstrate or guide learners on how to properly use the measuring instruments involved.	*2. Data tables are frequently used in science during laboratory experiments to collect qualitative and / or quantitative data.* *3. When you are constructing a table you need to identify the dependent and independent variables.* *4. Knowing the independent and dependent variables is important when designing a data table because it allows you to organize and record data systematically, ensuring clarity in how changes in the independent variable affect the dependent variable. This organization is important for accurate data analysis and interpretation.* *5. Organization of data facilitates clear understanding and analysis of data, enables comparisons and identification of patterns and supports accurate interpretations and conclusions.*	

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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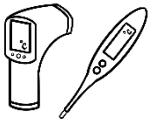
Deepening Understanding of the Key Idea/ Stem

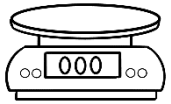
Classify to Identify

The teacher will post pictures of different laboratory apparatus related to measuring, along with their names.

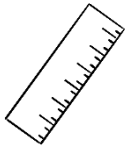


digital thermometer

beaker



electronic balance

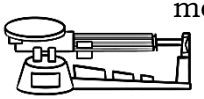


ruler

thermometer

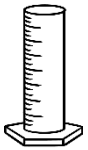
digital clock

measuring tape



triple beam

stop watch



graduated cylinder

The teacher will facilitate a discussion using the following guide questions:

1. How did you measure the length of the board? Aside from the one that you used in the activity, what other measuring tools can be used to measure length?
2. How did you measure the mass of the book? What other measuring tools will be used to measure the mass?
3. How did you measure the volume of the water? What other measuring tools will be used to measure the volume?
4. How did you measure the temperature of the hot water?
5. How did you measure the time your groupmate walked from one point of the classroom to another end?

Think – Pair - Share

The teacher will instruct the learners to read the passage below and construct a data table to organize the data to be collected in the experiment involved.

Juan wanted to find out whether the concentration of salt in water affected how long it took to cool down. He put four identical plastic glasses, each containing 225ml of water and different concentrations of salt, into a freezer. The different salt concentrations were 0 percent, 10 percent, 20 percent, and 30 percent. He recorded the amount of time it took for each solution to cool to a temperature of 3 degrees Celsius. He repeated the experiment two more times for each salt solution.

Sample Answer:

Salt concentration of solutions	***Time it took for the temperature to reach 3°C (minutes)***		
0%	*Trial 1*	*Trial 2*	*Trial 3*
10%			
20%			
30%			

The teacher will present various types of solutions using the table below. Based on the provided compositions of the solutions, the learners will identify the **solute** and **solvent**.

Please refer to Activity 4.3 of the Learning Activity Sheet Week 6.

Answers:

Materials	**Type of solution**	**Solute**	**Solvent**
1. air (78%nitrogen and 21% oxygen)	gas in gas	*Oxygen*	*Nitrogen*
2. carbonated water (present in soft drinks) (1L of water contains 3grams of carbon dioxide at 15°C)	gas in liquid	*Carbon dioxide*	*Water*
3. vinegar (95% water and 5% acetic acid)	liquid in liquid	*Acetic acid*	*Water*
4. seawater (1Liter of salt water contains 35-38g of salt)	solid in liquid	*Salt*	*Water*

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
https://www.depedncr.com.ph

The learners will classify the different measuring devices by writing their names under the physical quantities they measure in the table below.

Physical Quantity	mass	length	volume	time	temperature
Unit of Measure					
Measuring devices					

Guide Questions:

1. How did you identify the appropriate tools for measuring the given physical quantities?

2. How did you identify the units of measurement appropriate to each physical quantity?

3. Which part of the activity did you find easiest to do? Which one was the most difficult? Why?

4. Why is it important to use the correct units of measurement in measuring objects?

6. What is the importance of measuring tools in scientific investigation?

7. Which of the stations did you find easiest to accomplish?

Sample Answers:

1. The length of the board can be measured using a ruler or a measuring tape. Other measuring tools include meter sticks.

2. The mass of a book can be measured using a balance or a weighing scale. Other tools include a triple beam balance and an electronic scale for more precise measurements.

3. The volume of the water can be measured using a graduated cylinder or a measuring cup. Other tools include pipettes, burettes, and volumetric flasks for more precise measurements.

Processing questions:

1. What variables did you include in the data table to effectively organize Juan's experiment's results?

Sample Answer:
The data table include columns for each salt concentration (0%, 10%, 20%, 30%), rows for each trial (Trial 1, Trial 2, Trial 3), and a column to record the time it took for each solution to cool to 3 degrees Celsius.

2. How might organizing data into a clear and structured format, such as a data table, benefit scientists like Juan in analyzing and interpreting the results of experiments?

Sample Answer:
It allows scientists to clearly document and record experimental results, including variables like salt concentrations and cooling times in Juan's experiment. This organized format helps in identifying trends and patterns across multiple trials and conditions.

5. brass (contains 67%copper and 33%zinc)	solid in solid	*Zinc*	*Copper*
6. dental amalgam (contains 3% mercury and 74% silver)	liquid in solid	*Mercury*	*Silver*

NOTE: The teacher will supply more examples of solute and solvent which are not familiar to the students. Further discussions will be done afterwards.

Follow-up activity:
Give examples of solutions that you can find at home. Be sure to write them in the appropriate columns below.

Materials	Type of Solution	Solute	Solvent
1.			
2.			
3.			

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
https://www.depedncr.com.ph

	Answers: *<u>mass</u>* *unit of measure: kilogram (kg)* *measuring devices:* ● *electronic balance* ● *triple beam balance* *<u>length</u>* *unit of measure: meter (m)* *measuring devices:* ● *ruler* ● *measuring tape* *<u>volume</u>* *unit of measure: milliliter (mL)* *measuring devices:* ● *beaker* ● *graduated cylinder* *<u>time</u>* *unit of measure: second (s)* *measuring devices:* ● *digital clock* ● *stop watch* *<u>temperature</u>* *unit of measure: Celsius (°C)* *measuring devices:* ● *digital thermometer* ● *laboratory thermometer* *Note: Other units of measure for each physical*	*4. The temperature of the hot water can be measured using a thermometer.* *5. Time can be measured using a stopwatch or a clock.* *6. Measuring tools are important in scientific investigations because they provide accurate and precise data, which is essential for making reliable conclusions and comparisons.*		

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(02) 85229412
ncr@deped.gov.ph
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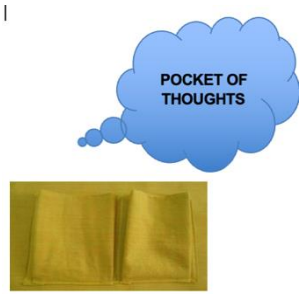
	quantity may also be mentioned/included. Some of the units are not in SI units but are commonly used in practice.			
After/Post-Lesson Proper				
Making Generalizations and Abstractions	**Pocket of Thoughts** The teacher will give each learner a piece of paper to write down what they learned from the lesson. They will also answer this question: "Imagine a day of your life without standard units of measurement. How would it affect your daily activities and routines?" Students will then place their papers into a bag.  The teacher will randomly pick some answers and read them aloud in class.	Analyze each sentence and tell whether it is True or False. If false, state the correct word for the underlined word. 1. To measure the volume of a liquid using a graduated cylinder, the eye should be kept on the level with the top of the meniscus. 2. It is important to calibrate the balance to zero before measuring the mass of an object. 3. A stopwatch should be started and stopped by the same person to maintain consistency. 4. The precision of an instrument is determined by the smallest division it can measure. 5. When using a ruler, measuring tape or meter stick, you should always start measuring from the 1 cm mark.	The learners will be given a strip of paper to write their significant learning in one sentence. Afterwards, the strips of paper will be collected and the teacher will ask a learner to pick 5 strips randomly and read them aloud in class.	The learners will be given strips of paper to write down their most significant learning and learning difficulties about the lesson. The paper will be collected, and the teacher will choose 5 strips randomly. The strips chosen will be recited by a learner.

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(02) 85229412
ncr@deped.gov.ph
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		Answers: *1. lower meniscus* *2. True* *3. True* *4. True* *5. 0 cm*		
Evaluating Learning	Let the learners answer the following questions by writing the letter of the correct answer in their answer sheets. 1. Which of the following is **NOT** a definition of measurement? Measurement is _____. A. how close a given set of measurements is true to its value. B. a technique in which the properties of an object are determined. C. a process of determining how large or small a physical quantity is. D. the process of associating numbers with physical quantities and phenomena. 2. Which best describes the importance of using standard units of measurement?	Let the learners organize the following steps in the correct order for the proper handling of a beam balance. ___Put the rear weights in the notches. *(4)* ___Assemble the pan in the top-notch. *(2)* ___Zero out the balance. *(3)* ___Clean the pan. *(1)* ___Make sure you only have two decimal places in your answer. *(7)* ___Place the object in the center of the pan. *(5)* ___Balance out the object using all three weights. *(6)*	Let the learners answer the following multiple-choice questions by writing the letter of the correct answer. *For items 1- 3. Read the passage:* Sally was in the laboratory. She was experimenting with the types of solutions using sugar and water. She used 3 graduated cylinders and a weighing scale for the amount of sugar in her experiment. Her first measurement was 100 grams of sugar dissolved in 100 ml of water. The second measurement was 200 grams of sugar dissolved in 100 ml of water, and lastly, the third measurement was 400 grams of sugar dissolved in 100 ml of water. 1. What tools did Sally use in her experiment?	Let the learners answer the following multiple-choice questions by writing the letter of the correct answer. 1. What does the term "solvent" mean in a solution? A. A gaseous component B. A type of solid particle C. The substance being dissolved D. The substance doing the dissolving 2. A solution is made by dissolving some salt in a beaker of water. The salt is referred to as the ___: A. solute B. filtrate C. solvent D. solution 3. Which among the following is an example of a solid solution? A. copper dissolved in gold B. alcohol dissolved in water

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(02) 85229412
ncr@deped.gov.ph
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A. It ensures accurate and reproducible results
B. It makes experiments harder to understand
C. It creates confusion in data reporting
D. It reduces the number of tools needed in the laboratory.

3. Which of the following physical quantities uses a meter as the unit of measurement?
A. mass
B. time
C. length
D. temperature

4. Which tool is used to measure the mass of an object?
A. ruler
B. tape measure
C. thermometer
D. platform balance

5. Cesar wants to measure the right amount of water to be placed in his mini aquarium. What unit of measurement must he use to do it?
A. meter (m)
B. cubic meter (m^3)
C. kilogram (kg)
D. Kelvin (K)

A. graduated cylinders and a weighing scale
B. beakers and a microscope
C. test tubes and a Bunsen burner
D. pipettes and a pH meter

2. Which of the following tables is a CORRECT representation of the data for Sally's experiment?

A.

Water	Sugar
100 ml	100 grams
100 ml	400 ml
200 ml	100 grams

B.

Water	Sugar
100 ml	100 grams
100 ml	200 grams
100 ml	400 grams

C.

Water	Sugar
200 ml	100 grams
400 ml	200 grams
100 ml	400 grams

D.

Water	Sugar
100 ml	400 grams
100 ml	100 grams
100 ml	200 grams

C. sugar dissolved in water
D. salt dissolved in water

4. A bottle of whiskey states that it is made up of 40% alcohol. Which one of the following statements about whiskey is **incorrect**?
A. Whiskey is a solution.
B. The alcohol is the solvent.
C. Whiskey is not a suspension.
D. The alcohol is dissolved in water.

5. Why are solutions important in everyday life?
A. They help in dissolving and mixing raw materials.
B. They assist in dissolving and removing dirt and stains.
C. They help in dissolving and delivering medications to the body.
D. All of the above

Answers:
1. D
2. A
3. A
4. B
5. D

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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	Answers: *1. A* *2. A* *3. C* *4. D* *5. B*		3. What were the measurements for the third set-up? A. 100 ml of water with 100 grams of sugar B. 100 ml of water with 200 grams of water C. 100 ml of water with 300 grams of sugar D. 100 ml of water with 400 grams of sugar 4. What do you need to know in order to design a data table? A. The independent variable B. The dependent variable C. Both the independent and dependent variables D. Neither the independent nor dependent variables 5. Why is the organization of data important before interpreting and drawing conclusions? A. It makes the data look neat and tidy. B. It helps scientists remember the data. C. It is a requirement for scientific papers. D. It allows for easier analysis and understanding of the data.	

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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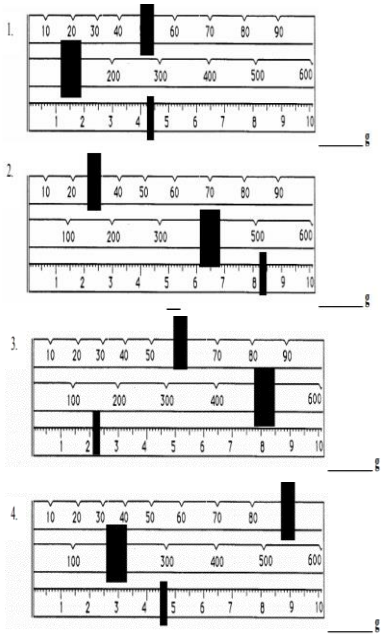
			Answers: *1. A* *2. B* *3. D* *4. C* *5. D*	
Additional Activities for Application or Remediation (if applicable)		Have the students complete the following additional activity to enhance their measurement reading skills. A. Determine the measurement of the object shown on each measuring device below: 		

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(02) 85229412
ncr@deped.gov.ph
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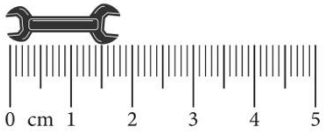
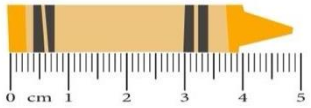
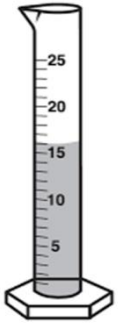
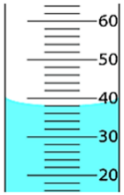
		5.  _____cm 6.  _____cm 7. 8.   ___mL. ____°C 9. 10.   ___mL. ____°C		

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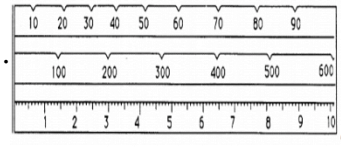
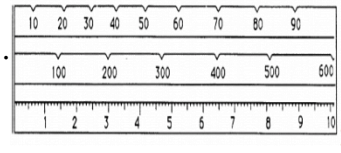
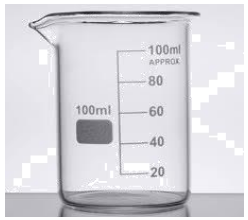
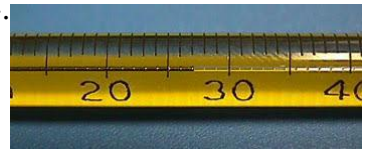
		B. Directions: Make marks on the following triple beam balances to show the grams indicated: 1.  476.5 g 2.  238.2 g 3.  65mL 4.  36°C 5.  8.60cm		
Remarks				
Reflection				

Misamis St., Bago Bantay, Quezon City
(02) 85229412
ncr@deped.gov.ph
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