



Republic of the Philippines  
Department of Education

### DAILY LESSON PLAN

Quarter:	4 <sup>th</sup> Quarter	Week:	Week 1	Learning Area:	Chemistry
MELCS	The learners should be able to investigate the relationship between volume and pressure at constant temperature of a gas			Grade Level:	Grade 10
Lesson Plan	Monday	Tuesday	Wednesday	Thursday	Friday
I. Objectives	Prove that gases have mass, volume, temperature, and pressure.	Gain mastery on the units for volume, pressure, temperature, and its equivalents	Investigate the relationship between volume and pressure of gases at constant temperature	Build skills in problem solving.	Investigate the relationship between volume and temperature of gases at constant pressure
II. Subject Matter	Gases	Gases	Gas Laws	Gas Laws	Gas Laws
A. Topic	Properties of Gases	Commonly Used Units for Volume, Pressure, and Temperature	Boyle's Law	Boyle's Law	Charles's Law
B. References	G10-LM, Chemistry Textbook	G10-LM, Chemistry Textbook	G10-LM, Chemistry Textbook	G10-LM, Chemistry Textbook	G10-LM, Chemistry Textbook
C. Materials	Rubber balloons, digital balance, syringe, 100-ml graduated cylinder, water, cooking oil, alcohol lamp, tripod, erlenmeyer flask	Flashcards with units written on it	Paper, pen, calculator	Paper, pen, calculator,	Paper, pen, calculator,
III. Learning Activities					
Recall	Recall the states of matter learned from the previous grade levels.	Recall the properties of gases and the results of yesterday's activity.	Recall the properties of solid, liquid, and gas based on the results of Activity 1.	Recall the results of Activity 2.	Present sample problem involving Boyle's law then students will analyze whether there will be an increase or decrease in pressure or volume without any computation.
Motivation	Match the picture of solid, liquid, and gas to the properties possess by each state of matter, such as mass, volume, temperature, and pressure.	Using flashcards, let the students identify the properties of gases associated with the basic units written on it.	Why do divers need to wear apparatus when going underwater?	Explain to students the techniques in solving problem involving Boyle's law.	Introduce Jacques Charles through historical vignette. Prepared by DepEd Click
Lesson Proper					

A. Activity	Perform Activity 1 Getting to Know Gases, Parts A, B, C and D on page 365 of Learner's Manual	Match the units given to volume, pressure, or temperature.	Perform Activity 2 Boyles's Law on pages 362-365 Of LM	Complete Table 6 on page 367 of the module.	Perform Activity 3 on page 369 of Learners' Manual.
B. Analysis	Answer the guide questions after each part of the activity.	Study the volume, pressure, and temperature units and their equivalents found on page 362 of Learners' Manual.	<ol style="list-style-type: none"> <li>1. What happens to the volume of the syringe as books are added on top of it?</li> <li>2. What happens to the pressure on the syringe when the books are added?</li> </ol>	<ol style="list-style-type: none"> <li>1. What did you notice in your answers in table 6?</li> <li>2. How will you read the equation below? <math>V \propto 1/P</math> at constant T and n</li> <li>3. Discussion of the equation cited above to verify the meaning of proportionality constant as proven by student's answer in table 6.</li> </ol>	<ol style="list-style-type: none"> <li>1. What happens to the size of the balloon as the temperature decreases?</li> <li>2. How does the change in the temperature relate to the volume of gas in the balloon?</li> </ol>
C. Abstraction	Discussion of the concept of the activity, that gases have mass, volume, temperature, and pressure.	Discuss the units and how scientists derived at those values. Prepared by DepEd Click Build skills in determining the units for volume, temperature, and pressure and their equivalents through practice and drills.	Plot a graph of pressure vs volume. Describe the graph. What is the relationship between volume and pressure of gases at constant temperature?	Derive Boyle's Law equation.  Solve sample problem involving Boyle's law.  Even without computation, can you tell whether a pressure or volume will increase or decrease based on the given values?	Plot a graph of temperature vs volume. Describe the graph. What is the relationship between volume and temperature of gases at constant pressure?
D. Application	Relate the result of the activity in everyday experiences and other applications found on pp. 360-361 of the Learners' Manual.	Look at the units indicated on different ice cream containers and identify whether the unit is in English, Metric, or SI.	Inhaling and exhaling apply Boyle's law. As we inhale, our lungs expand causing a decrease of pressure inside the lungs. As a result, air flows from higher pressure area (outside) onto the lungs. Exhaling is the opposite process.	Why do scuba divers wear protective suits when going down deep the ocean?	The sky lanterns we use in celebrating New Year, Christmas, weddings, and other important occasions operate on the concept of volume-temperature relationship.
IV. Evaluation	Formative test 1-5	Formative test 1-5	none	Solve problems 1 -3 on page 368 of the module.	none

V. Assignment		Study the next activity to familiarize yourself with the concepts to be investigated.	Make a research about the life of Robert Boyle.	Solve the given problems 1-5	Measure an inflated balloon then place it inside your refrigerator in the evening. Take note of the measurement and appearance of the balloon in the morning (by group).
Remarks					
Signature:					
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