7

DepED
DEPARTMENT OF EDUCATION

Learning Activity Sheet for Science

Quarter 1

Week

8

DepED MATATAG
Bansang Makabata Batang Makabansa

BAGONG PILIPINAS

DEPARTMENT OF EDUCATION NCR

ONE NCR STRONGER TOGETHER

Learning Activity Sheet Science Grade 7
Quarter 1: Week 8

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.

Every care has been taken to ensure the accuracy of the information provided in this material. For inquiries or feedback, please call the Office of the Director of the Department of Education – National Capital Region via telephone number (02) 85229412 or send an email to ncr@deped.gov.ph.

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

Development Team

Writers:	Rhodeliza T. Portuguez, Jeanwell A. Tandog
Content Editor:	Priscila D. Cabigting
Mechanical Editor	Waylie Nina D. Claro
Illustrators:	John Albert A. Rico, Jeffrey L. Sanggalang
Layout Artists:	Joe Angelo L. Basco, Elaine Margarett U. Baguio

Management Team

Alberto T. Escobarte, Viernalyn M. Nama, Dianne Catherine Teves-Antonio, Louie Oller V. Erni, Nanette Joy P. Larinay, Lhovie C Damian, Redgynn A. Bernales

Development Team

Enhanced by:	Maripaz Mendoza, Merlie Gerlie V. Capiral
Content Validators:	
Internal:	Corazon A. Javier, Jocelyn R. Agulto, Armida Oblinada, Maripaz T. Mendoza, Roxanne S. Villanueva, Rowena C. Lamera
External:	Ryan Lansangan, Louie B. Dasas
Language Validator:	Donald Samson
Illustrator:	Aileen G. Gutierrez
Layout Artists:	Danica Joy B. Delorino, Aileen G. Gutierrez

Management Team

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

Department of Education – National Capital Region (DepEd- NCR)

Office Address:	6 Misamis St, Bago Bantay, Quezon City Metro Manila, Philippines, 1105
Telefax:	(02) 85229412
Email Address:	ncr@deped.gov.ph

LEARNING ACTIVITY SHEET

Learning Area:	**SCIENCE**	**Quarter:**	**1**
Week:	**8**	**Day:**	**1**
Lesson Title/ Topic:	**Solutions, Solubility, and Concentration**		
Name:		**Grade & Section:**	**7**

Activity 1: Solutions, Solubility and Concentration

Objective(s):

1. Identify the factors that affect solubility.
2. Explain how these factors affect the solubility of substances.

Activity 1.1: Factors Affecting Solubility

Read the passage and answer the guide questions below:

Factors affecting Solubility

Solubility is one property of substances. It refers to the amount of solute that can dissolve in a specific amount of solvent at a given temperature.

A substance may be described as very soluble, slightly soluble, or insoluble depending on the amount that will be dissolved to form a solution. The solubility of substances is affected by many factors, such as

(1) the nature of the solute and the solvent, (2) the temperature of the mixture, (3) the rate of stirring (4) the particle size (5) in the case of gases, the pressure. When heat is applied to a solution more solute dissolve.

The general rule for solubility is “like dissolves like,” which means a solvent will dissolve solute particles of a type similar to it.

Guide Questions:

1. What are the different factors that affect solubility?

   _____
   _____

2. When the solution is heated, what happens to the solute in the solvent?

   _____
   _____

3. How does your mother cook sinigang? Does she use real sampalok or instant sampalok mix? Why?

   _____
   _____

4. Does oil and water mix? Why or why not?

   _____
   _____
   _____

5. What happens to the solute when you stir it in solution?

_____
_____
_____

Activity 1.2: Solubility Rules
Instruction(s):

1. Determine if the solubility will become faster or slower in each.
2. Classify the underlined materials to the appropriate column.

Materials	FASTER	SLOWER
1. Coffee granules in <u>cold water</u> vs. coffee granules in <u>hot water</u>		
2. Burning <u>sawdust</u> vs <u>wooden chips</u>		
3. Removing chewed gum using <u>water</u> vs. <u>oil</u>		
4. <u>Chunks of sugar</u> in water vs. <u>powdered sugar</u> in water		
5. <u>Acetone</u> vs <u>oil</u> in nail polish		

Activity 1.3 Factors Affecting Solubility

Instruction(s): Select from the box and write down the factors affecting solubility in the given situations.

- Stirring
- Size of Solute
- Temperature
- Pressure
- Nature of Solute and Solvent

SITUATION	Factors Affecting Solubility
1. Solubility of carbon dioxide in soft drinks	
2. Gasoline does not dissolve in water, decreasing the solubility of gasoline	
3. Two tablespoons of sugar are added to two glasses of water of the same amount. Glass A is stirred while Glass B is not. Sugar dissolved faster in Glass A	
4. Assuming the same amount of fine salt and rock salt. Fine salt dissolves in water faster compared to rock salt.	
5. When a beverage is pressurized with carbon dioxide (CO_2) gas, the gas dissolves in the liquid to form carbonic acid.	

LEARNING ACTIVITY SHEET

Learning Area:	**SCIENCE**	**Quarter:**	**1**
Week:	**8**	**Day:**	**2**
Lesson Title/ Topic:	**Investigation of Factors Affecting Solubility**		
Name:		**Grade & Section:**	**7**

Activity 2: Investigation of Factors Affecting Solubility

Objective(s):

1.Investigate the factors affecting solubility.
2.Complete a concept map on Factors affecting Solubility

Activity 2.1 "Life of a Scientist"

Instruction(s):
Read the following and answer the Guide Questions below.

In a bustling chemistry lab, Mia, a young scientist, was assigned an experiment involving mixing substances with heat. Aware of the risks, she prepared carefully. Mia reviewed the procedure, gathered safety gear, and set up her workspace.

Double-checking chemical labels, Mia measured the substances precisely. She heated them gradually, monitoring closely for the right temperature. With caution, she mixed the solutions using a stirring rod, staying alert for any changes.

Afterward, Mia turned off the heat, let everything cool, and cleaned up. She disposed of waste properly and washed her hands. Mia reflected on her experiment, satisfied that her precautions ensured safety and success, proving the importance of lab safety.

GUIDE QUESTIONS:

1. Does Mia exhibit the right process to be safe in the laboratory? Explain how Mia exhibited safety in the laboratory?

   _____
   _____

2. What is the most important thing to remember when handling hot objects?

   _____
   _____

Activity 2. 2 Investigating Factors Affecting Solubility

Instruction(s):

1. Prepare the materials needed and conduct an investigation assigned per group.
2. Record your observations after mixing
   Group 1: oil and water
   Group 2: powdered tea and water
   Group 3: rock salt vs iodized salt in water
   Group 4: salt in hot water

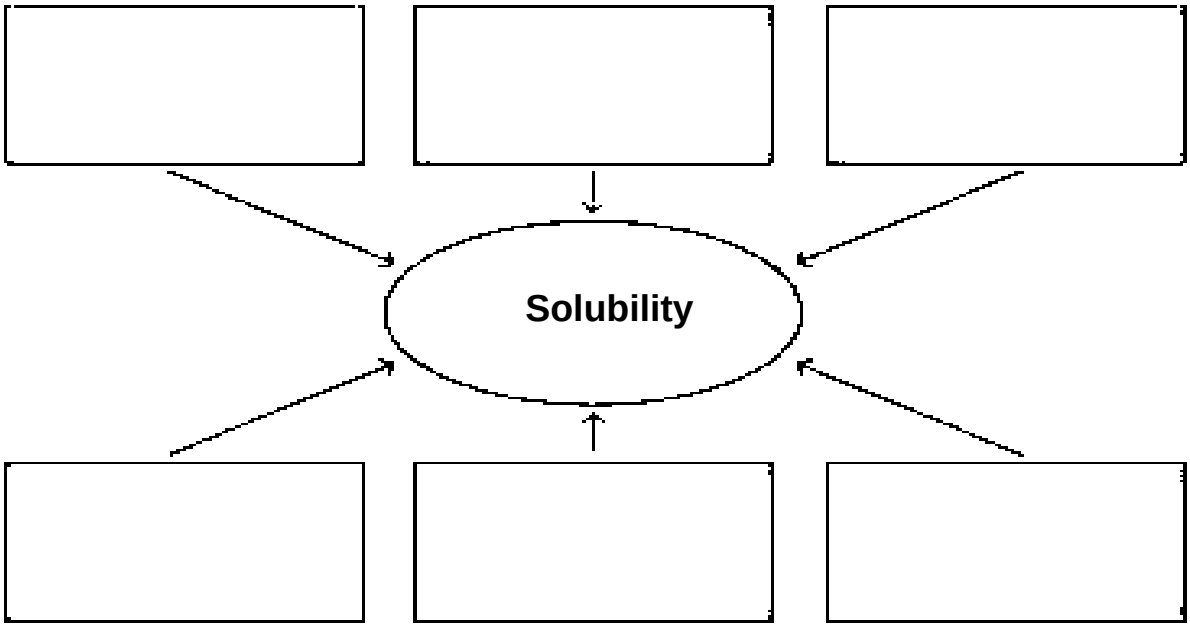
- **Materials Needed:**
  Beakers
  Various solutes (e.g. sugar, rock salt, iodized salt, powdered tea, oil)
  Distilled water
  Stirring rods
  Thermometers
  Hot plate or burner
  Safety goggles
  Worksheets

Guide Questions:

1. Which of the mixtures you observed produced a solution?
   _____
   _____
2. What factors affect the solubility of the mixtures you observed?
   _____
   _____
3. Why did the oil not mix with water?
   _____
   _____
4. How can knowledge of the factors affecting solubility help you in your everyday life?
   _____
   _____

Activity 2.3 Graphic Organizer

Instruction(s)
Complete the graphic organizer on factors affecting solubility with examples for each.



LEARNING ACTIVITY SHEET

Learning Area:	**SCIENCE**	**Quarter:**	**1**
Week:	**8**	**Day:**	**3**
Lesson Title/ Topic:	**Acids, Bases and Salts**		
Name:		**Grade & Section:**	**7**

Activity 3: Acid, Bases and Salts

Objective(s):
1. Identify the general properties of acids and bases.
2. Differentiate acids from bases based on their reaction with litmus paper.

Activity 3.1 Words to Remember

Instruction(s):
Match the terms in **Column A** to their meaning in **Column B** by writing the correct letter of your answer.

Column A	ANSWER	Column B
1. Acids		A. Produced by the reaction of an acid with a base
2. Bases		B. An indicator that changes color according to acidity and basicity
3. Salts		C. Substance that can neutralize acid
4. pH Scale		D. Substance that contains Hydrogen and has pH less than 7
5. Litmus Paper		E. Quantitative measure of the acidity and basicity of a substance

Activity 3.2 Chemistry Around Us

Instruction(s):

1.Read the following and answer the Guide Questions below.

Chemistry surrounds us in every facet of our daily lives, often in ways we may not even notice. One captivating realm of chemistry is the study of acids and bases, two fundamental categories of substances that play crucial roles in our day to day lives. There are substances that exhibit certain color in an acidic medium and another color in a basic medium. They are called acid-base indicators.

Litmus paper is one of the indicators being used in studying acids and bases. It shows red color in acidic solutions and blue color in basic solutions. Other indicators include phenolphthalein and methyl orange.

Quantitatively, pH is used to determine the strength of acidity and basicity. Acids have a pH value less than 7, pure water is neutral with a pH of 7, and bases have a pH greater than 7.

Here is a summary of useful and interesting facts about acids and bases.

- ✓ Acids and bases are not just abstract concepts confined to laboratories; they are active participants in our daily lives.
- ✓ From the foods we eat to the products we use; their influence is pervasive.
- ✓ Developing an appreciation for these fundamental chemical principles enhances our understanding of the world around us, empowering us to make informed choices and contribute to a safer and healthier environment.

A. Guide Questions:

1.Differentiate acids, bases, and salts.

_____

_____

_____

2.What role does litmus paper play in differentiating acids, bases, and salts?

_____

_____

_____

3. Give examples of acids and bases used in your household.

_____

_____

_____

_____

B. Guide questions: (after Video viewing)

1. In what number of pH scales will form a slightly acidic solution be formed? strongly acidic solution be formed? How about slightly basic solution? strongly basic solution?

_____

_____

_____

2. Give other examples of acids and bases that can be easily found in your homes. How about the base?

_____

_____

_____

3.What is the color of acid in litmus paper? How about the base?

_____

_____

_____

Activity 3.3 Experiment Time

Instruction(s):

1. With the use of litmus paper, test the given sample of substances and classify them as acids or bases.

2. Gather and organize your findings in the data.

NOTE: Please do the inference before performing the experiment proper.

Materials: plastic cups, litmus paper, calamansi, bleach, vinegar, hand soap, soda

Sample	Inference (Change in color)	Observation (Change in color)	Classification
calamansi			
bleach			
vinegar			
hand soap			
soda			

Questions:

1.Are your inferences similar to your actual observations during the experiment?

_____

_____

2.Which of the samples are acidic?

_____

_____

3. Which of the samples are bases?

_____

_____

4. Differentiate your observations when the substances were tested using the litmus paper.

_____

_____

LEARNING ACTIVITY SHEET

Learning Area:	**SCIENCE**	**Quarter:**	**1**
Week:	**8**	**Day:**	**4**
Lesson Title/ Topic:	**Proper Use and Handling of Science Equipment**		
Name:		**Grade & Section:**	**7**

Activity 4: Proper Use and handling of Science Equipment

Objective(s): Demonstrate proper handling of science equipment

Activity 4.1: Road Signs & Its Meaning

Instruction(s): Match the meaning of each sign correctly.

NO LEFT TURN

MERGE

NO PARKING

SLIPPERY ROAD

NO OVERTAKING

Activity 4.2 Lab Safety

A. Identify three behaviors or situations shown in the pictures that are considered unsafe.

1
2
3

B. Identify three behaviors or situations shown in the pictures that are considered precautionary measures.

1
2
3

C. What are the proper uses and handling of science equipment?

- ✓ Handling of Glassware

  _____
  _____

- ✓ Measuring volume with graduated cylinders

  _____
  _____

- ✓ Heating Apparatus

  _____
  _____

D. Why do we need to observe laboratory safety rules and precautions?

_____

_____

E. Why do we need to follow laboratory safety rules and precautions?

_____

_____

Activity 4.3 "MIRROR ME"

Instruction(s):

1.The teacher will facilitate a guided demonstration of the following:

- Proper Handling of Glassware
- Measuring volume with graduated cylinders
- Heating
- Use of protective devices in the laboratory

2. Assign task per group for demonstration. Use the rubrics below.

Rubrics for Student Demonstration

Proper Setting up of equipment-	25 points
Following Procedure-	15 points
Cooperation-	10 points
TOTAL	50 points

Group 1	Proper Handling of Glassware
Materials	Beaker, test tubes, graduated cylinder
Instruction/s	With the provided apparatus demonstrate the correct way of holding and transporting glassware from the table to the storage cabinets

Group 2	Measuring volume with graduated cylinders
Materials	Graduated cylinder, dropper or pipette
Instruction/s	Measure 100mL of water using graduated cylinder and transfer the contents in a wide mouthed container
	Using medicine dropper, add 5 drops of oil to the container with water. Observe what happens to the oil droplets.

Group 3	Heating
Materials	Beaker, iron stand, ring clamp, or tripod, wire gauze, alcohol lamp
Instruction/s	Assemble your heating set up using the provided apparatuses
	Place 100 mL of water in your beaker and apply heat for 10 minutes. Record your data

Group 4	Use of protective devices in the laboratory
Materials	Goggles, apron, laboratory gown, gloves
Instruction/s	Demonstrate in the class the proper use of goggles, aprons, lab gown and gloves after reviewing the safety rules in the science laboratory.

GUIDE QUESTIONS:

1. What laboratory equipment did I use for:

a. Measuring

_____

_____

b. Heating

_____

_____

c. Protection

_____

_____

d. Proper Handling

_____

_____

2.What is the proper way of handling glassware?

_____

_____

3. How is a graduated cylinder used to measure the volume of water?

_____

_____

4.How are wire gauze, alcohol lamp and ring clamp used to heat objects?

_____

_____