4

DepED
DEPARTMENT OF EDUCATION

Learning Activity Sheet for Science

Quarter 1
Week
3

Learning Activity Sheet Science Grade 4
Quarter 1: Week 3

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.
Published by the Department of Education
Secretary: Juan Edgardo "Sonny" Angara
Undersecretary: Gina O. Gonong

Development Team

Enhanced by:	Jeric N. Estaco, Eleanor V. de Roja,
Content Validators:	
Internal:	Liza A. Alvarez, Hernan C. Apura, Bradley Goldie K. Loo, Maria Pilar O. Capalongan, Emiterio C. Macarubo, Manolo C. Davantes, Jr
External:	Coleen Amada, Abigail Arillaga
Language Validator	Manuel S. Are
Illustrator:	Lovely Rollaine B. Cruz
Layout Artist:	Danica Joy B. Delorino

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

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 4**	**Quarter:**	**1**
Week:	**3**	**Day:**	**1**
Lesson Title/ Topic:	**Materials and their Uses**		
Name:		**Grade & Section:**	**4**

Activity 1: Importance of the Knowledge of Chemical Properties in Hazard Mapping

Objectives:

a. Identify materials that can be burnt, react with other materials, or are degradable or non-biodegradable.
b. Explain the importance of the knowledge of chemical properties in hazard mapping.

Activity 1.1 Read the passage and answer the questions below.

Dozens of people have fallen sick in coastal villages in the Philippines after a major oil spill from a sunken tanker. The MT Princess Empress was carrying 800,000 liters of industrial fuel oil when it sank off the coast of the Oriental Mindoro province last week.

That oil has since reached the shores of several nearby fishing villages, coating beaches in black sludge. Residents have reported experiencing cramps, vomiting, and dizziness. Clean-up workers deployed to the affected village of Pola have also been reported feeling ill, local media reported. Breathing fuel oil vapors can cause symptoms such as nausea and headaches, while skin contact may cause itchiness and blisters. Philippines authorities have declared a state of calamity for the affected areas in the province and imposed a fishing ban until the spill is cleaned up. However, the ban has a huge impact on the livelihoods of many locals in the area. More than 18,000 fishermen across 60 villages have been barred from the water, local authorities said.

The Philippines' tourism ministry has also raised concerns about the spill-tainting waters at popular diving destinations including the Verde Island passage and Apo Reef in Mindoro and World War Two shipwrecks in Palawan. Some 36,000 hectares (88,958 acres) of coral reefs, mangroves and seagrass are also at risk from the spill, marine biologists say. Oil can kill corals or impede their growth. It can also poison or suffocate wildlife, which further disrupts food chains and ecosystems. The Philippines Coast Guard has been trying to contain the spill for over a week - since the ship sank on 28 February. They have also deployed oil spill booms and sprayed chemicals in effort to control the spread. Authorities said on Monday they believed they had located the ship, which had moved from the spot it sank last week.

(Philippines oil spill: Residents report nausea and dizziness in affected villages - BBC News)

Guide Questions:

Based on the article, learners will identify the hazard, why the material is hazardous, and how it affects humans and the environment.

Hazard	Why is the material hazardous?	How does the hazard affect humans and the environment?

Activity 1.2 Conduct hazard mapping using the **Home and School Watching Checklist.** Put a check mark (/) or (X) mark if you observe this in school.

A. In School		
Observation	**✓ or x**	**Chemical Property involved**
1. Exposed strong chemicals and hazardous liquids like muriatic acid, and other reactive materials.		
2. Unlabeled chemicals		
3. Garbage area (Segregation of waste)		
4. The chair desk/ tables Legs are rusted		
5. There is old and dry plywood near the LPG storage or near electrical outlet		

B. At Home		
Observation	**✓ or x**	**Chemical Property involved**
1. 70% alcohol near the gas stove		
2. Gate/ window with rust		
3. Unlabeled kerosene/ thinner/ motor oil bottle		
4. Fruit and vegetable peelings disposed together with other waste		
5. Unclosed LPG tank bulb.		

Call to Action:

Formulate at least two policies in the classroom or school that support hazard assessments of materials:

1._____

_____

_____

2._____

_____

_____

LEARNING ACTIVITY SHEET

Learning Area:	**Science 4**	**Quarter:**	**1**
Week:	**3**	**Day:**	**2**
Lesson Title/ Topic:	**Materials and their Uses**		
Name:		**Grade & Section:**	**4**

Activity 2: Ways how to handle and store properly the materials that can be burnt, can react with other materials, or are degradable/biodegradable.

Objectives:

1. Suggest ways to properly handle and store materials that can be burnt, react with other materials or are degradable/biodegradable.
2. Promote proper storage of materials based on their chemical properties.
3. Familiarize yourself with first aid procedures when these harmful materials are mishandled.

Activity 2.1 Read the passage and answer the questions below:

What A Great Help!

One sunny afternoon, Jeff's parents asked him to help organize the garage. Jeff, excited for an adventure, put on his work gloves and got ready to do the task.

As they started sorting through the garage, Jeff came across some interesting things. There were cans of paint, boxes of old newspapers, and a bunch of tools scattered around. Curious as ever, Jeff asked his parents about these items.

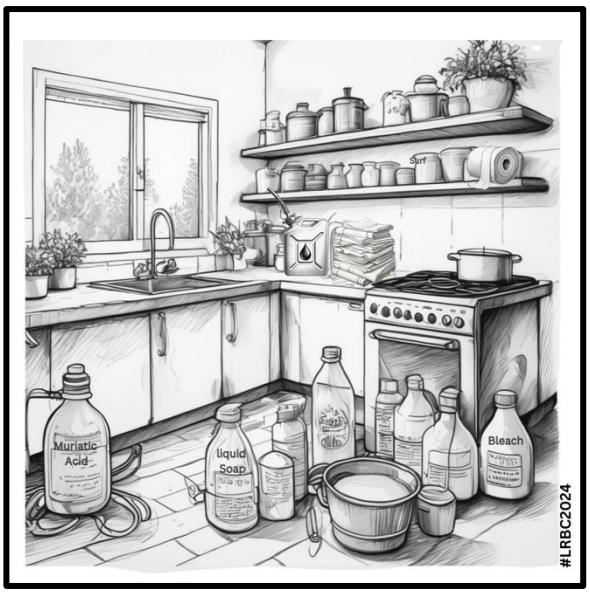
"These cans of paint are flammable," explained Mom, pointing to them. "That means the paint cans can catch fire easily if they're not stored properly."

"Dad, why are these newspapers in a different pile?" Jeff asked, noticing a stack in one corner.

"Those are biodegradable," Dad replied. "They can break down naturally, but if we leave them lying around, they can make a mess and attract insects."

Jeff's eyes widened as he continued exploring. They found rusty nails, screws, and some old gardening tools. “Dad, why are these tools all rusty?" Jeff asked, inspecting a shovel with orange spots. “That’s because they rust easily," Dad explained. "When metal gets wet, it can start to decay. That's why we need to keep them dry and store them properly. “Suddenly, it all clicked for Jeff. Proper storage wasn't just about keeping the garage tidy; it was about keeping everyone safe too!

Determined, Jeff helped his parents organize the garage. They placed the flammable paint cans in a cool, dry cabinet away from heat. The biodegradable newspapers went into a recycling bin to be reused properly. And the tools which easily form rust were cleaned, dried, and stored in a toolbox to protect them from moisture.



As they finished, Jeff felt proud of his work. He had learned an important lesson about the proper storage of different materials and why it mattered. Now, whenever he helped in the garage, Jeff knew exactly what to do to keep everything safe and sound. And that made him very happy.

Guide Questions:

1. Based on the story, how did Jeff's family store the material in their garage?

_____

_____

2. What is the newfound knowledge Jeff learned from cleaning the garage?

_____

_____

3. Is the knowledge obtained by Jeff applicable in your home/situation? Explain.

_____

_____

4. How does knowledge on the chemical properties of matter become helpful in the proper storage of the materials at home?

_____

_____

Activity 2.2 Put (X) mark on the illustration containing improper handling or storage of materials.

Guide Questions:

1. What are the possible risks if the following materials are not handled or stored properly based on their chemical property?

Materials	Risks
a. Combustible and flammable materials	
b. Rusty tools	
c. Left-over food	

Rubrics for evaluating the learners

Criteria	Excellent (4)	Proficient (3)	Basic (2)	Needs Improvement (1)
1. Knowledge of Handling Materials	Demonstrates thorough understanding of proper handling techniques for various materials.	Shows a good understanding of proper handling techniques for most materials	Demonstrates some understanding of proper handling techniques, but with inconsistencies.	Shows limited understanding of proper handling techniques for materials.
2. Knowledge of Storing Materials	Provides detailed and accurate suggestions for storing materials safely and efficiently.	Offers clear suggestions for storing most materials, with minor gaps in understanding	Provides some suggestions for storing materials but lacks detail or clarity in explanations.	Provides minimal or inaccurate suggestions for storing materials.
3. Use of Diagrams/ Illustrations	Diagrams or illustrations are clear, colorful, and effectively enhance understanding of methods/ processes used.	Diagrams or illustrations are mostly clear and support understanding of methods/ processes used.	Diagrams or illustrations are present but may lack clarity or details, somewhat enhancing understanding.	Diagrams or illustrations are absent or unclear, hindering understanding of methods/ processes used.
4. Familiarity in First-Aid on harmful materials are mishandled	Can identify and explain appropriate first-aid measures for a wide range of hazardous materials	Shows good understanding of corresponding first aid measures for some hazardous materials	Has basic knowledge on general first aid measures on few hazardous materials	Unfamiliar with proper first-aid on different types of hazardous materials
5.Organization and Presentation	Ideas are well-organized, logically presented, and easy to follow.	Ideas are organized and presented coherently, with minor lapses in structure.	Ideas are somewhat organized but may lack coherence or logical flow.	Ideas are disorganized and difficult to follow with little coherence or logical structure.
6. Creativity and Originality	Shows creativity and originality in suggesting unique ways to handle and store materials.	Demonstrates some creativity in suggesting ways to handle and store materials, with some original ideas.	Presents ideas for handling and storing materials but lacks creativity or originality.	Ideas for handling and storing materials are unoriginal and lack creativity.

LEARNING ACTIVITY SHEET

Learning Area:	**Science 4**	**Quarter:**	**1**
Week:	**3**	**Day:**	**3**
Lesson Title/ Topic:	**Materials and their Uses**		
Name:		**Grade & Section:**	**4**

Activity 3: Effects of the increase in temperature on materials

Objectives:

1. Define temperature operationally.
2. Discuss the effects of the increase in temperature on materials

Activity 3.1 Read the passage and answer the questions below

The Roasting Adventure

Terry loved exploring the world around him and learning about the wonders of science. One day, as he strolled through the barangay, he smelled something delicious – the tempting aroma of a roasting pig! Intrigued, Terry followed the scent to the barangay square, where a festive celebration was underway. There, he found a large crowd gathered around a roaring fire, watching as a whole pig slowly turned on a spit over the flames. It was a traditional method of cooking known as roasting, and Terry was captivated by the science behind it. Curious to learn more, Terry approached the elder, a wise old man named Grandpa Gus, who was overseeing the roasting process. Grandpa Gus greeted Terry with a warm smile and invited him to join the fun.

As the pig sizzled and crackled over the fire, Grandpa Gus began to explain the science behind roasting. He told Terry that roasting is a form of cooking that uses dry heat to cook food, and it involves a fascinating blend of chemistry and physics. “First," Grandpa Gus said, "we need to understand how heat works. When we build a fire, we create heat energy. This energy is then transferred to the pig through a process called conduction. As the pig cooks, the heat causes the proteins and fats inside to break down, leading to chemical changes and creating delicious flavors and aromas. “Terry nodded, fascinated by Grandpa Gus's explanation. He watched the pig as the flames licked its golden-brown skin.

"But that's not all," Grandpa Gus continued. "As the pig cooks, the moisture inside begins to evaporate, creating steam. This steam helps keep the meat moist and tender, preventing it from drying out."

Terry was amazed at the science behind roasting. He had never realized that cooking could be so intricate and fascinating. As the sun began to set, and the aroma of the roasting pig filled the air, Grandpa Gus invited Terry to taste the finished dish. With eager anticipation, he took a bite of the succulent meat, savoring the flavors and textures.

As he enjoyed his meal, Terry couldn't help but feel grateful for the opportunity to learn about the science of roasting from Grandpa Gus. It was a delicious and educational adventure he would never forget.

Guide Questions:

1. What did Terry discover as he walked in the barangay?

   _____

   _____

2. What lessons did Terry learn from Grandpa Gus about roasting?

   _____

   _____

3. What chemical changes happen during the roasting of the pig?

   _____

   _____

4. Do you see something like roasting a pig at home? Share a story about it.

   _____

   _____

LEARNING ACTIVITY SHEET

Learning Area:	**Science 4**	**Quarter:**	**1**
Week:	**3**	**Day:**	**4**
Lesson Title/ Topic:	**Materials and their Uses**		
Name:		**Grade & Section:**	**4**

Activity 4: Effects of the Increase and Decrease of Temperature on Materials

Objectives:

a. Describe the effects of heat on certain materials.

b. Demonstrate the effects of heat on certain materials.

c. Define chemical change operationally.

Activity 4.1 Read the passage and answer the questions below:

Mother and Daughter Bonding

One summer day, Lily's mom decided to bake cookies in the kitchen. Lily loved helping her mom in the kitchen, so she eagerly joined in.

While they were preparing the cookie dough, Lily's mom explained, "Did you know, Lily, that heat changes how things react and look? Just like how we bake cookies in the oven, heat can also change the chemical properties of some materials."

"Really?" Lily asked, her eyes widening with curiosity.

"Yes, really!" her mom replied with a smile. "Let me show you an example."

Lily's mom showed her the mixture of flour, milk, water, egg, sugar, and chocolate. “Look, Lily, this mixture is completely different from the cookie.” “The taste, odor, texture, and color are different from the raw mixture it’s made from,” her mom explained.

Lily’s mother reached out for a matchstick and ignited it. “Watch what happens,” she said. "The heat from the flame causes the matchstick to turn to coal and smoke.” That's a change through its chemical properties caused by the heat!" Lily nodded, intrigued by the change.

"What else can heat do?" Lily asked. Come, and I will show you more,” said the mother. Together, they went outside to the backyard where Lily's mother had a griller.

“Let’s cook barbeque, your favorite! We don’t eat raw meat for barbeque. Smell and touch the raw barbeque. Compare it with the roasted one. Are they the same?” asked her mother. “Of course not, mother!” Lily replied. “Yes, we apply heat to barbecue. When it is already cooked, the odor, color, taste, and texture change. This is another example of change caused by heat,” her mother explained.

Lily smiled excitedly. She had learned something new about how heat could change the things around her. From then on, whenever she saw something cooking in the oven, she would remember the effect of heat on materials which cause change. And she couldn't wait to learn more!

Guide Questions:

1. What household activities did Lily and her mother enjoy doing?

_____
_____

2. How did Lily's mother explain chemical changes?

_____
_____

3. What happens to a material during a chemical change?

_____
_____

4. Have you encountered the same experience with Lily when doing household activities involving chemical changes? Share your story.

_____
_____

Activity 4.2 Observe the items below and determine the effects of heat on the following materials.

grilling Tilapia

_____
_____
_____
_____
_____

baking bread

_____
_____
_____
_____
_____

cooking Sinigang

_____
_____
_____
_____
_____

cooking pancake

_____
_____
_____
_____
_____

#LRBC2024

overheated sugar

_____
_____
_____
_____
_____