PIVOT 4A LEARNER'S MATERIAL

QUARTER 2
Science
G6

MELC -based SLM

DepEd CALABARZON
Curriculum and Learning Management Division

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The Editors

PIVOT 4A Learner's Material
Quarter 2
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Science
Grade 6

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Guide in Using PIVOT 4A Learner's Material

For the Parents/Guardians

This module aims to assist you, dear parents, guardians, or siblings of the learners, to understand how materials and activities are used in the new normal. It is designed to provide information, activities, and new learning that learners need to work on.

Activities presented in this module are based on the Most Essential Learning Competencies (MELCs) in Science as prescribed by the Department of Education.

Further, this learning resource hopes to engage the learners in guided and independent learning activities at their own pace. Furthermore, this also aims to help learners acquire the essential 21st century skills while taking into consideration their needs and circumstances.

You are expected to assist the children in the tasks and ensure the learner's mastery of the subject matter. Be reminded that learners have to answer all the activities in their own notebook.

For the Learners

The module is designed to suit your needs and interests using the IDEA instructional process. This will help you attain the prescribed grade-level knowledge, skills, attitude, and values at your own pace outside the normal classroom setting.

The module is composed of different types of activities that are arranged according to graduated levels of difficulty—from simple to complex. You are expected to :

a. answer all activities on separate sheets of paper;

b. accomplish the **PIVOT Assessment Card for Learners on page 38** by providing the appropriate symbols that correspond to your personal assessment of your performance; and

c. submit the outputs to your respective teachers on the time and date agreed upon.

Parts of PIVOT 4A Learner's Material

	K to 12 Delivery Process	Descriptions
Introduction	What I need to know	This part presents the MELC/s and the desired learning outcomes for the day or week, purpose of the lesson, core content and relevant samples. This maximizes awareness of his/her own knowledge as regards content and skills required for the lesson.
	What is new	
Development	What I know	This part presents activities, tasks and contents of value and interest to learner. This exposes him/her on what he/she knew, what he/she does not know and what he/she wants to know and learn. Most of the activities and tasks simply and directly revolve around the concepts of developing mastery of the target skills or MELC/s.
	What is in	
	What is it	
Engagement	What is more	In this part, the learner engages in various tasks and opportunities in building his/her knowledge, skills and attitude/values (KSAVs) to meaningfully connect his/her concepts after doing the tasks in the D part. This also exposes him/her to real life situations/tasks that shall: ignite his/ her interests to meet the expectation; make his/her performance satisfactory; and/or produce a product or performance which will help him/her fully understand the target skills and concepts .
	What I can do	
	What else I can do	
Assimilation	What I have learned	This part brings the learner to a process where he/she shall demonstrate ideas, interpretation, mindset or values and create pieces of information that will form part of his/her knowledge in reflecting, relating or using them effectively in any situation or context. Also, this part encourages him/her in creating conceptual structures giving him/her the avenue to integrate new and old learnings.
	What I can achieve	

This module is a guide and a resource of information in understanding the Most Essential Learning Competencies (MELCs). Understanding the target contents and skills can be further enriched thru the K to 12 Learning Materials and other supplementary materials such as Worktexts and Textbooks provided by schools and/or Schools Division Offices, and thru other learning delivery modalities, including radio-based instruction (RBI) and TV-based instruction (TVI).

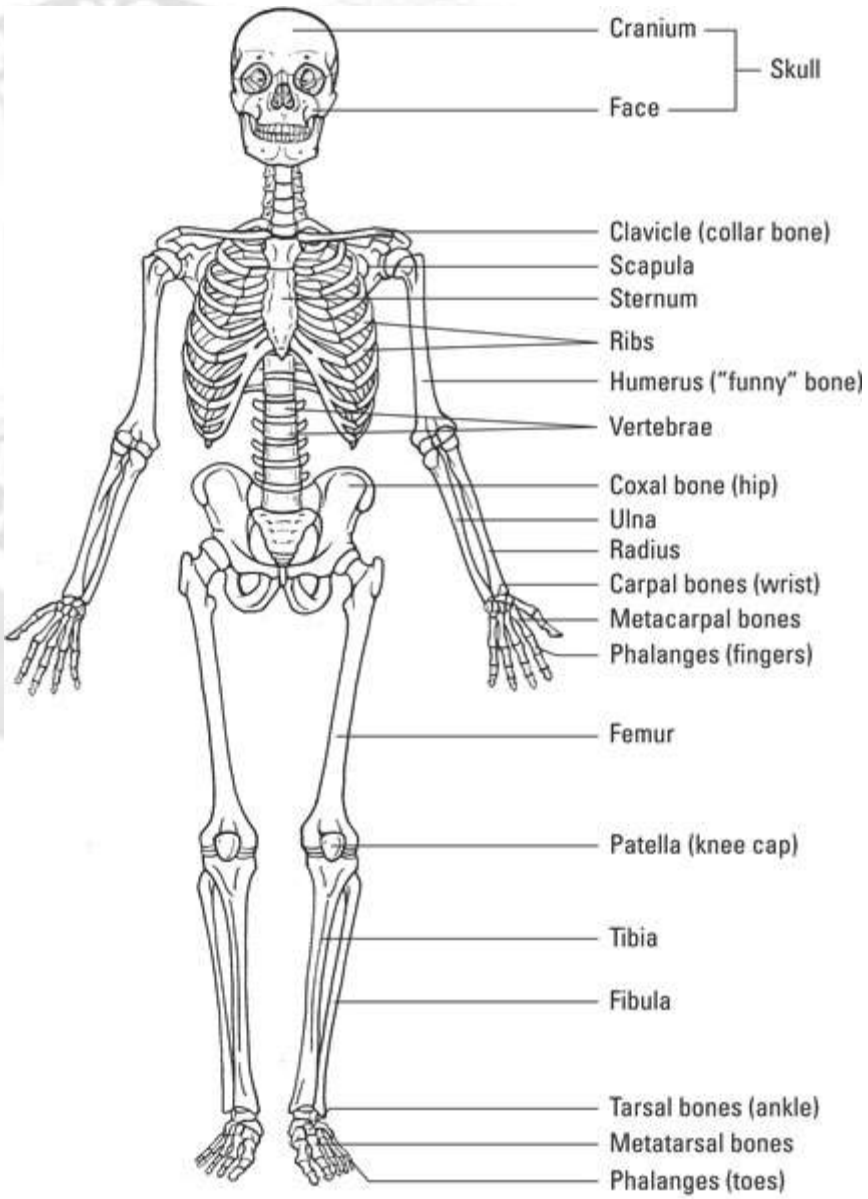
WEEKS 1-2

Different Organs of the Body Parts and Function of Musculo-Skeletal System

I

Lesson

The skeletal system is the framework of the body. It is composed of bones, bone marrow, joints, cartilage and ligaments. The bones support and give shape to the body. The bone marrow produces red blood cells. The joint is a place where two bones meet. The cartilage covers the bones with a fluid to make the movement easier. Ligaments are connective tissues that holds the joints together.



The Musculo-Skeletal System is like a frame. It gives your body shape and support. It support your body as you move. Some bones protect some vital parts or internal organs of your body. Some bones enable the body to make different movement. The bones in the head. The bone forming the head is the skull or cranium. It is like a built-in helmet is made up of eight bones that have grown together. You have about 206 bones in your body. As a baby you had more than 300 bones. The skull protects the brain. It is hard and strong but it can be cracked if it receives a severe blow.

The jawbones support the teeth and gums enabling us to bite and chew our food. The backbones or the spinal column holds your head and body straight. It consist of 26 separate bones called vertebrae with disk made of cartilage. The cartilage prevents these bones from hitting each other when you move. The vertebrae protect the spinal cord. There are 7 cervical, 12 thoracic, 5 lumbar 1 sacrum and 1 coccyx vertebrae. If you look closely at one vertebra you will see a hole in its center through which the spinal cord passes. The vertebrae are separated by cartilage which prevents these bones from hitting each other when you move. The backbone protects the spinal cord. Your backbone is your main support.

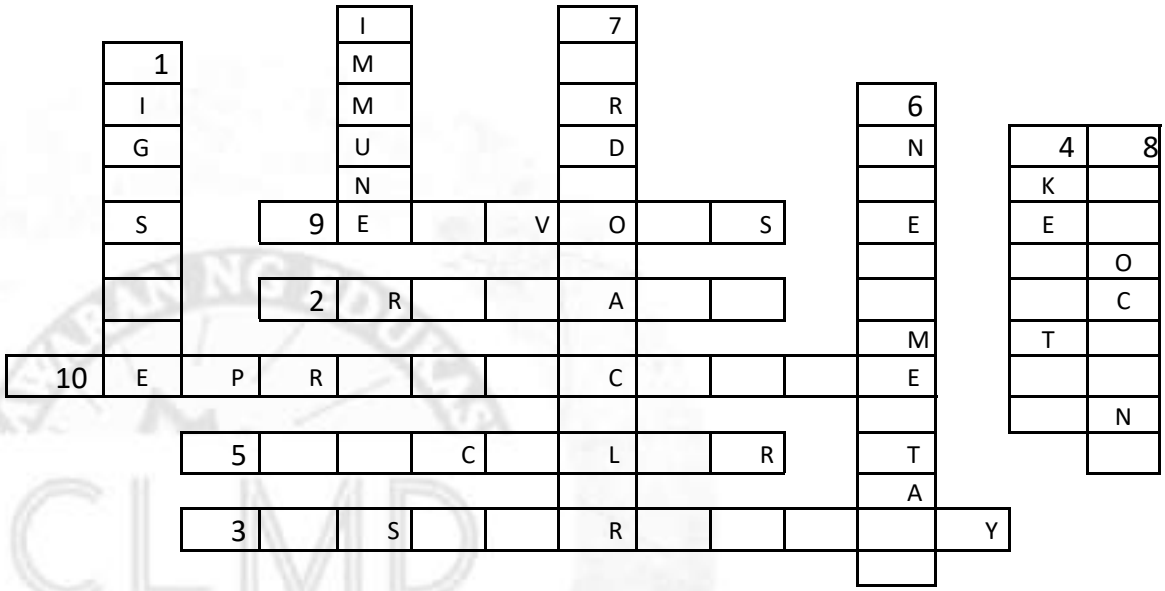
The vertebrae in your backbone let you move in different ways. The skeletal system serves many important functions; it provides the shape and form for the body, support and protection, allows bodily movement, produces blood for the body, and stores minerals. The number of bones in the human skeletal system is a controversial topic.

Humans are born with over 300 bones; however, many bones fuse together between birth and maturity. As a result, an average adult skeleton consists of 206 bones. The number of bones varies according to the method used to derive the count. While some consider certain structures to be a single bone with multiple parts, others may see it as a single part with multiple bones.

There are five general classifications of bones. These are long bones, short bones, flat bones, irregular bones, and sesamoid bones. The human skeleton is composed of both fused and individual bones supported by ligaments, tendons, muscles and cartilage. It is a complex structure with two distinct divisions; the axial skeleton, which includes the vertebral column, and the appendicular skeleton.

D

Learning Task 1: As you start exploring the subject, answer the following questions. Write your answers on your answer sheet.



Across

2. Filters and eliminates liquid wastes; regulates water balance.

3. Enables gas exchange with the blood

5. Enables movement, maintains posture and can store energy.

9. Senses external environment and communicates with and activates other parts of the body.

10. Produces gametes and supports development.

Down

1. Allows ingestion and breaks down food so that nutrients can be absorbed.

4. Provides mechanical support; stores minerals and produces red blood cells.

6. Protects the body's internal environment and stores fat.

7. Enables the transport of nutrients, gasses and wastes to and from cells.

8. Secretes hormones into the bloodstream for regulation of cellular activities.

E

Learning Task 2: Use the word below to identify parts of the skeleton. Write your answers on your answer sheet.

Bone Vocabulary

1. Skull
2. Femur/ Upper Leg Bone
3. Shoulder Joint
4. Rib Cage
5. Patella/ Knee Cap
6. Spine
7. Clavicle/ Collar Bone
8. Pelvis
9. Metatarsals/ Foot Bones
10. Fibula
11. Tibia
12. Humerus/ Upper Arm Bone
13. Radius
14. Ulna
15. Metacarpals/ Hand Bones

A

Learning Task 3: Match the parts of the skeletal system in Column A with the functions in Column B. Write your answers on your answer sheet.

Column A	Column B
1. Skull	a. the inner layer of the bone that contains yellowish substance which manufacture blood cells in the body.
2. Spinal column	b. protects the spinal cord
3. Bones	c. a rigid case that protects the brain
4. Hinge joint	d. allows movement in all direction
5. Ball and socket	e. allows movement in one direction

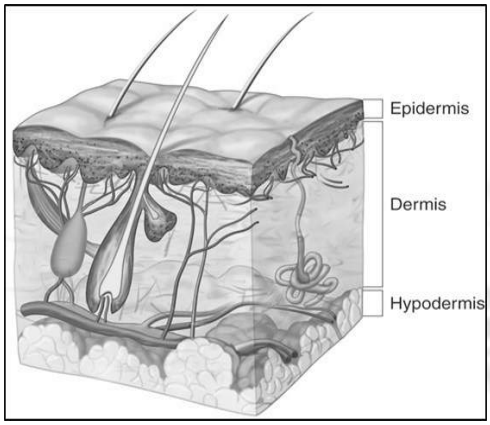
Parts and Functions of the Integumentary System

I

Lesson

Integumentary is one of the systems which play an important role in the body. It is made up of different organs that we cannot live without.
Objectives:

At the end of the lesson you should be able to:
Describe the function of the integumentary system
Identify the parts of the integumentary system and its parts



The Integumentary is an organ system consisting of different parts. It has a set of important functions in the body. The following are the important functions of this organ system.
It acts as a barrier to protect the body from the outside world.
It protects the body against diseases
It helps retain body fluids.
It eliminates waste products in the body in the form of sweat, oil, and wax.

This system also made up of different parts namely skin, hair, nails and endocrine glands.

SKIN

It is the largest organ of the body but only a few millimeters thick. It forms body's outer covering. It protects the body from chemicals, diseases, ultraviolet rays of the sun and the physical damage. It is the body's first line of defense.

It is divided into 3 sub-parts namely epidermis, dermis and hypodermis.

A. Epidermis. It is the outermost layer of the skin that covers almost entire body surface. It is the thinnest layer of the skin. It also provides a waterproof barrier for the body and creates the skin tone. It is made up of special cells called **keratinocytes.**

B. Dermis. It is a deeper layer of the skin found beneath the epidermis and the thickest layer of the skin. It also gives the skin strength and elasticity. It is made up of dense irregular connective tissue , nervous tissue, blood and blood vessels.

C. Hypodermis. It is the deepest layer of the skin. It is made up of fats and connective tissues which attaches the skin from other parts.

HAIR. It is an accessory organ of the integumentary system. It aids in a person's social functioning. It is made up of columns of tightly packed dead keratinocytes and is found and scattered all over the body. It is divided into different parts namely hair follicle and hair bulb.

A. Hair follicle

It anchors the hair into the skin.
It regulates hair growth.
It opens the sebaceous glands.
It lets the oil and wax from the body to go out.

B. Hair bulb

It forms the base of the hair follicle.
It is made up of living cells that divide and grow to build the hair shaft.
It modify hair growth and structure at different times of life.

NAILS. It covers the tips of the fingers and toes. It is also an accessory organ of the integumentary system that is made up of sheets of hardened keratinocytes. It protects the fingers and toes from environmental damage. It is made up of several parts namely nail plate and nail cuticle.

A. Nail plate

It is the actual fingernail.
It is made up of translucent keratin.

B. Cuticle

It is a layer of clear skin located at the bottom edge of the fingers and toes.

EXOCRINE GLANDS. It helps produce body sweat, oil and wax, helps cool down the skin surface, helps protect the skin and moisturizes the skin surface. It is divided into 2 parts namely sebaceous gland and sweat gland.

A. Sebaceous gland

A small-oil producing gland found in the dermis.
It is attached to the hair follicles.
It produces oil sebum, and waxy substance.

B. Sweat Gland

It is a small tubular structure of the skin that produce sweat found in the dermis and goes out of the skin **pores**.

D

Learning Task 1: Complete the sentences in the paragraph. Write your answers on your answer sheet.

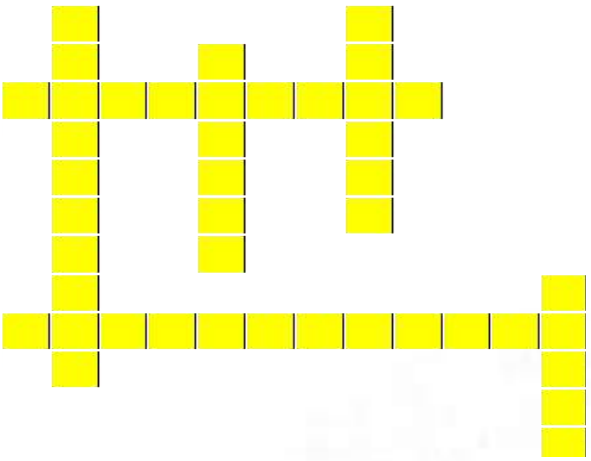
The _____ is a part of the integumentary system which covers almost the entire body. Another part of it is the _____ which is an accessory that is made up of layers of dead keratinocytes. Another accessory of the integumentary system is the _____ which is found at the end of the fingers and toes. The exocrine glands has 2 parts, these are the _____ glands and the _____ which produces the sweat and sebum respectively.

E

Learning Task 2: Match Column A with Column B. Write your answers on your answer sheet.

COLUMN A	COLUMN B
1. Hair shaft	A. The thickest layer of the skin
2. Cuticle	B. Produces the sebum or oily
3. Dermis	C. substance
4. Nail Matrix	D. Seen above the scalp
5. Sebaceous Gland	E. Protects the nails from bacteria
	F. The area where nails start to grow

Learning Task 3: Fill in the crossword puzzle with the correct answers. Use the given clues below. Write your answers on your answer sheet.



ACROSS

The outermost layer of the skin
It anchors the hair into the skin

DOWN

The innermost layer of the skin
The thickest layer of the skin
An accessory organ found at the tip of fingers and toes
The oily substance produce in the sebaceous glands

A

Learning Task 4: Answer the questions below. Write the letter of your answer on your answer sheet.

1. What is the thinnest and outermost layer of the skin?
   a. Sebaceous gland
   b. Sweat gland
   c. Epidermis
   d. Dermis
2. Which of the following is the function of the integumentary system?
   a. It protects the body against UV rays.
   b. It serves as the barrier of the body from physical damage.
   c. It is body's outer covering
   d. All of the above
3. Which of the following is an accessory organ of the integumentary system is made up of columns of tightly packed dead keratinocytes found all over of the body?
   a. Skin
   b. Hair
   c. nails
   d. exocrine glands
4. Which part of the integumentary system is an accessory organ that is made up of sheets of hardened keratinocytes?
   a. Skin
   b. Hair
   c. nails
   d. exocrine glands
5. Which part of the integumentary system do the sweat, oil and wax go out?
   a. Skin
   b. Hair
   c. nails
   d. exocrine gland

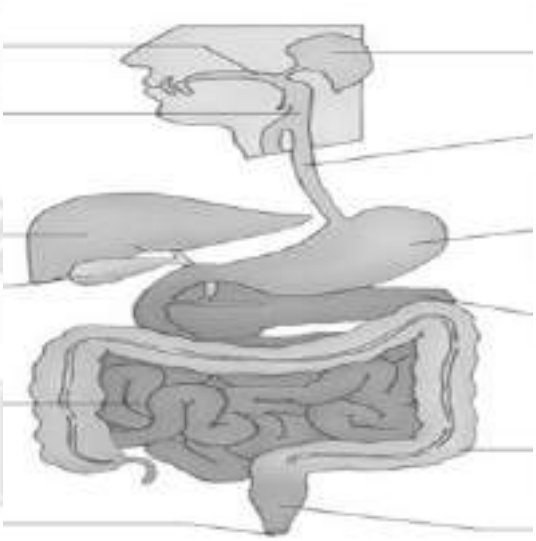
WEEK 3

Parts and Function of Digestive System

I Lesson

Digestion is the process of breaking down food into nutrients, which the body uses for energy, growth and cell repair. It consists mainly of a long muscular tube called the digestive tract. This starts at the mouth, continues via esophagus and stomach, to the intestines and ends at the anus.

The system also relies on the pancreas, liver and gall bladder to help digest the food.



Organs of Digestion

Mouth. It is the first part of the digestive system composed of teeth and the tongue. The tongue and the teeth are involved in the digestion of food in the mouth. There are different kinds of teeth and performs different functions in the digestion

Incisors. The front teeth with sharp edges for biting and cutting the food.
Canine. The pointed teeth which grip and tear the food.
Premolars. They crush and grind the food
Molars. The flat teeth used for chewing the food.

Esophagus. It is a long muscular tube that connects the pharynx to the throat to the stomach. The walls of the esophagus is lined with smooth muscles that contracts rhythmically to move the food through the digestive system in the process of peristalsis.

Stomach. It is a large J-shaped organ at the end of the esophagus, on the left side of the body. The capacity of the stomach is 50ml when empty and can expand up to 2 to 4 liters when full. The end of the stomach has a sphincter muscle that closes and opens to allow the flow of from the esophagus to the stomach.

3. Small intestine. It is the long coiled connected from the stomach. If it is stretched, it is about seven meters long. It has villi, small like finger projections that protrude in the lining of the intestinal wall to increase the absorptive area. The absorption of the nutrients occurs in the small intestine with the help of villi.

There are three parts of the Small Intestine:
Duodenum. It is the upper 20 cm. connected to the stomach
Jejunum. It is about 2.5 meters long.
Ileum. It is the longest half coiled through the abdominal cavity
The last 20 or 30 centimeters of the colon are called rectum.

4. Large intestine or colon. It is a large coiled tube attached to the end of the small intestine. It is only about 1.5 meters long, which includes the colon, rectum, and appendix and twice as wide as the small intestine. The last 20 or 30 centimeters of the colon are called rectum.

D

Learning Task 1: Identify the organs of digestion being described. Select your answer from the list. Do this on your answer sheet.

Mouth	esophagus	stomach
Large intestine	small intestine	

_____ 1. a long coiled connected from the stomach.

_____2. a long muscular tube that connects the pharynx to the throat to the stomach.

_____3. a large J-shaped organ at the end of the esophagus, on the left side of the body.

_____4. Is the first part in the digestive system composed of teeth and the tongue.

_____5. a large coiled tube attached to the end of the small intestine.

E

Learning Task 2: Place the events in the correct order. Number each sentence 1-5.

___ 1. Food ends up in the small intestine.

___ 2. Food is chewed up.

___ 3. Food is in the large intestine.

___ 4. Food travels through the esophagus.

___ 5. Food waste leaves the body.

A

Learning Task 3: Choose the letter of the correct answer. Do this on your answer sheet.

1. Which moves the food from the esophagus to the stomach?
   a. Swallowing b. fluid c. peristalsis d. digestion
2. It is the organ where digestion starts
   a. Mouth c. stomach
   b. Small intestine d. large intestine
3. Which organ takes nutrients from your food and puts it in your bloodstream?
   a. Stomach b. esophagus c. small intestine d. large intestine
4. In which part of the digestive system are proteins digested completely?
   a. Stomach c. small intestine
   b. Large intestine d. esophagus
5. In which part of the digestion system does digestion end?
   a. Mouth c. stomach
   b. Small intestine d. large intestine

Parts and Function of Excretory System & Nervous System

Lesson

I

At the end of this lesson you should be able to describe the function of the excretory system and identify its parts.

Excretory System is the organ system that is responsible for eliminating wastes from the body. Removal of these wastes from the body is necessary because they become poisonous when they remain in the body for long. The excretory system works with other system and organs in the body. The lungs is the respiratory system eliminate water vapor and carbon dioxide through exhalation. The digestive system removes feces by defecation from the large intestine and out through the anus. During perspiration, the skin, a part of the integumentary system, excretes sweat from the sweat glands.

The Urinary System is a part of the excretory system that collects and eliminates liquid waste. It consists of the left and right kidneys, the ureters, the urinary bladder, and the urethra.

KIDNEYS are bean-shaped organs that are approximately 10cm long and 5 cm wide each. They are found near your backbone, one on each side. They are the main excretory organs in the body. They eliminate water, urea, and other waste products in the form of urine, a liquid waste that passes from your body. It is 95% water, in which the waste products are dissolved.

The kidneys should function properly to maintain a healthy life. Blood carries waste products from the different parts of the body to the kidneys through the renal arteries, the blood vessels leading to the kidneys. Inside the kidneys, the blood passes through filtering units called nephrons, where impurities such as urea, salts and other toxins are filtered out. Other substances such as water, glucose and other nutrients, are returned to the bloodstream through the renal veins, the blood vessels that carry blood from the kidneys.

URETERS are the tubes that are approximately 45 cm long each. They carry urine from the kidneys to the urinary bladder, a pear-shaped muscular sac located in the pelvis, where urine is temporarily stored before elimination from the body It can hold more than 2 cups or 473 ML of liquid. Urine flows to the urethra, a duct that is approximately 20cm long in males and 5cm long in females. A ring-shaped muscle around the urethra controls the flow of urine out of the body through contraction.

The Nervous System

Do you ever wonder how you could walk on a beam without losing your balance? Why is it that when you touch something hot, you pull your hand away even before you even think about it? You will find the answers to these questions as you read this lesson.

Living things have systems that control, regulate, and coordinate body processes. In this lesson, you will explore how the nervous system controls, regulates and coordinates most of your body functions.

The Nervous System and its Function

The Nervous System is the control unit of the body . Its function is to integrate and coordinate bodily activities. It coordinates the activities and communicates with the sense organs and the other body systems through the wire like nerve cells or neurons that transmits messages passing through spinal cord to the brain and back to the nerve cells or neurons for the interpretation of the senses .

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The brain is an amazing organ that performs different functions such as processing memory, judgement , and reasoning. It controls body movement, emotions , feelings and vital sign of life such as breathing. The brain has three main parts: cerebrum , cerebellum and the brainstem or the medulla oblongata

Another organ in the nervous system is the spinal cord. It a cord like material inside the backbone. It bridges impulse between the brain and the body. This means all the signals that go to and from the brain pass through the spinal cord and deliver it to the right muscles and senses .

Neuron is also another organ in the nervous system. It is a wire like organ that is found all over the body. Its main function is to deliver messages within the nervous system and between other body system. It is divided into three parts: axon, cell body and dendrites .Neurons can be classified based on the direction in which they send information .These can be sensory neurons , motor neuron and inter neuron .

D

Learning Task 1: Identify what is being described. Choose the best answer.

1. A muscular sac where urine is temporarily stored
   a. ureter b. kidneys c. urethra d. urinary bladder
2. The filtering unit of the kidney
   a. ureter b. urethra c. bladder d. nephron
3. The procedure by which the blood undergoes artificial filtering to remove wastes
   a. defacation b. exhalation c.hemodialysis d.urethra
4. The organ through which urine leaves your body
   a. anus b skin c. kidney d. urethra
5. The process by which wastes generally leave your body.
   a. digestion b. excretion c. respiration d. perspiration

Learning Task 2: Determine if each sentence is correct or incorrect. Write ***C*** on the line if it is correct. If it is Incorrect, encircle the word(s) that make(s) it incorrect and write the correct word(s) on the line.

_____1. The cerebrum is the largest part of the brain

_____2. The brain is the control center of the nervous system.

_____3. The brain is made up of the cerebrum, cerebellum and spinal column.

_____4. The nervous system consists of the heart, brain and spinal column.

_____5. The nerves interpret the meaning of what is perceived by the sense organs.

E

Learning Task 3: Answer the questions by writing **True** or **False**. If it is false, replace the underlined word with the correct word to make the statement correct.

_____1. The nervous system is the control system of the body.

_____ 2. The nerve cells is the basic unit of the nervous system.

_____ 3. The brain is found all over your body .

_____ 4. The brain has three main parts : cerebrum , cerebellum and the medulla oblongata

A

Learning Task 4: Number the sentence from 1-5 to show the direction of the information to reach the desired response to the given stimulus. Write the numbers on the lines.

_____ 1. The sensory nerves send the impulse to the brain through the spinal cord.

_____ 2. The receptors (eyes) receive information from the environment.

_____ 3. The motor nerves carry the impulse the effectors.

_____ 4. The brain interprets the impulse.

_____ 5. The message goes back to the spinal cord to the motor nerves.

Respiratory System

Lesson

I

The respiratory system plays a vital role in the human body. At the end of the lesson you should be able to identify the major parts of the respiratory system and explain the functions of the respiratory system.

RESPIRATORY SYSTEM

The respiratory system is an equally important system of the body that we cannot live without.

1. It is a system which takes charge of the breathing process.
2. It is made up of several organs which is responsible for gas exchange in the body.
3. The organs help for taking in oxygen and expelling carbon dioxide from the body.
4. It is made up of several parts without different functions namely.

1. Nose

an organ of the respiratory system found protruding between the eyes.
it is the part where the air that we inhale enters and carries out the air that we exhale.

2. Nasal cavity

It is the part found inside thee nose
It is also lined with mucous membrane that helps keep the nose moist
It is also lined with hairlike structures called cilia which helps trapped dirt entering the nose

3. Mouth

It is a hollow cavity that allows food and air to enter the body

4. Throat (Pharynx)

It is a muscular tube that runs from the back of your nose down into your neck It is the passageway of the air entering the nasal cavity up to the esophagus and larynx.

5. Voice Box (Larynx)

It serves as the passageway of air between the pharynx above and trachea below. It plays an essential role in human speech

6. Windpipe (Trachea)

It is a tube that is about 4 inches long. It is found just under the larynx or voice box and then divides into 2 smaller tubes called bronchi.

7. Bronchial tubes or Bronchi

These are tubes which serves as the main passageway of the air entering the lungs.

8. Bronchioles

These are passages that branched off from the bronchi. These are tubes that hold the airsacs or alveoli.

9. Air sacs or Alveoli

These are tiny sacs inside the lungs. It is the part where the exchange of gas takes place. It is the part where oxygen is taken in and carbon dioxide is carried out.

10. Lungs

These are pair of spongy, air-filled organs located on either side of the chest or thorax.

11. Diaphragm

It is a thin skeletal muscle that sits at the base of the chest and separates the abdomen from the chest. It contracts and flattens when you inhale. It creates a vacuum effect that pulls air into the lungs. It relaxes when you exhale.

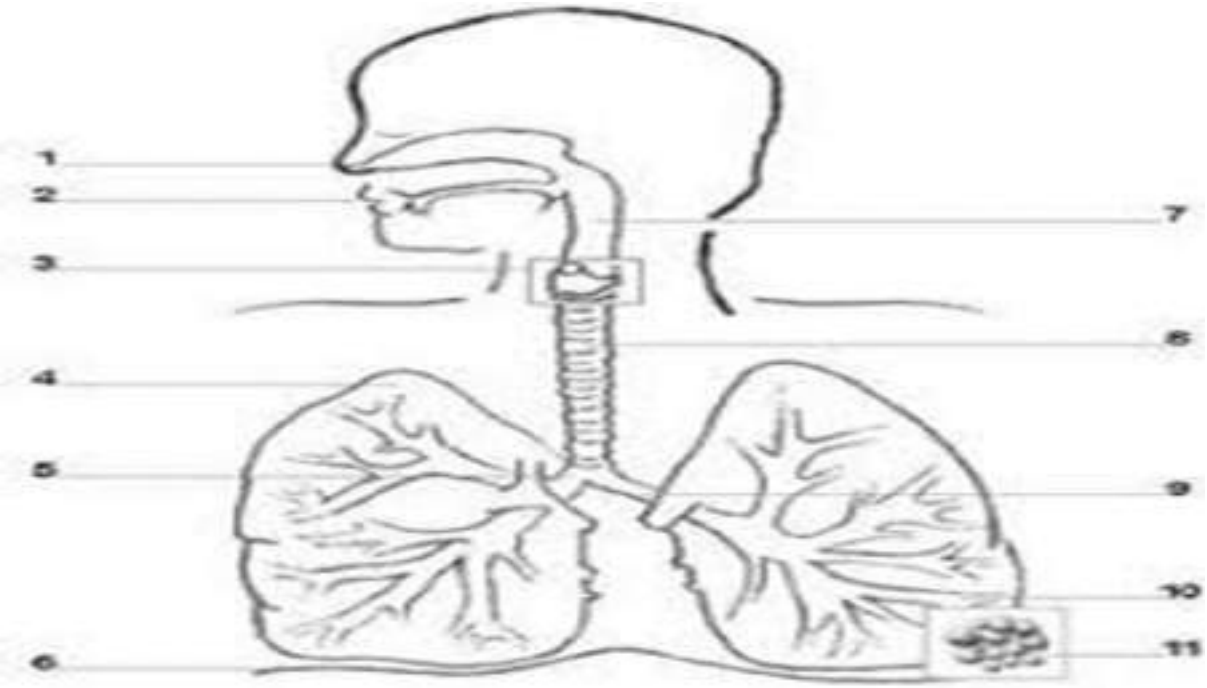
D

Learning Task 1: Match the parts of the respiratory system in Column A with its description in column B.

Column A	Column B
_____1. Nose	A. It plays an essential role in human speech
_____2. Mouth	B. These are tubes that holds the airsacs
_____3. Throat	C. The part where air enters the body
_____4. Voice box	D. Contracts and relaxes when we inhale and exhale
_____5. Windpipe	E. The part where the exchange of gas takes place
_____6. Bronchi	F. A part that allows food and air to enter the body
_____7. Bronchioles	G. A tube that is found under the larynx
_____8. Air sacs	H. A pair of spongy, air-filled organ
_____9. Lungs	I. A tube that serves as the main passageway of air
_____10. Diaphragm	J. A tube that runs from your nose down to the neck

E

Learning Task 2: Study the picture of the respiratory system below. Label the parts correctly. Do this on your answer sheet.



A

List down activities that you observe at home that shows the value or use of your respiratory system. Write this in your notebook.

WEEKS 4-5

The Distinguishing Characteristics of Vertebrates and Invertebrates

I

Lesson

Different animals share our planet with us. Many are alike and many are different. Scientist classify based on characteristics, their similarities and dissimilarities. As you go through this lesson, you should be able to describe the characteristics of vertebrates and invertebrates and practice ways of caring and protecting animals.

As we go on with the topic, please try to scan the following questions so that you will have an idea what this lesson is all about.

What is an invertebrates? What is a vertebrates?

What are the distinguishing characteristics of a vertebrate and in vertebrates?

How do we classify them?

Give some examples of vertebrates and invertebrates?

Lets find out the distinguishing characteristics of Vertebrates and Invertebrates!

Vertebrates

Animals that have backbones are called vertebrates. The vertebrates are classified into five classes; namely, mammals, birds, fish, reptiles, and amphibians. Most ***Mammals*** do not lay eggs. They give birth to their young. They feed their young with milk produced by the mammary glands. Examples of mammals found in our community are dogs, cats, carabaos, cows, goats, and pigs. ***Birds*** are covered by feathers. They lay eggs. Birds possess one pair of legs and one pair of wings. Example of birds are hens, hawk, and owls. ***Reptiles*** have bodies that are covered with scales or plates. They lay their eggs on land. They can leave on land and on water. Crocodiles and turtles are some example of reptiles. ***Amphibians*** such as frogs, salamanders live a double life. They live part of their lives in water while they are young. When they mature, they live on land to survive. All amphibians lay eggs on water for example a frog lays eggs on water which hatched into

tadpoles. These tadpoles swim around and breathe with gills. As they grow older, they change. They develop legs and lungs and begin to live on land. Most ***Fish*** are covered with scales. Some are egg layers; other are live bearers. They spend all their lives in water. Fish have gills which are used for breathing.

Invertebrates

Invertebrates are animals that don't have a backbone. The vertebral column is another name for the backbone. Over 90% of all species on Earth are invertebrates, and invertebrate species have been found in the fossil record as far back as 600 million years ago. Molecular biology studies suggest that all invertebrates evolved from a single invertebrate group.

Characteristics of Invertebrates

In addition to not having a backbone, invertebrates have soft bodies because they don't have an internal skeleton (endoskeleton) for support. Instead, many have structures on the outside (exoskeleton) that provide support and protection. In addition, invertebrates are cold-blooded, meaning they can't regulate their body temperature, so it changes depending on the environment.

Types of Invertebrates

- Protozoans – single-celled organisms such as amoebas and paramecia
- Annelids – earthworms, leeches
- Echinoderms – starfish, sea urchins, sea cucumbers
- Mollusks – snails, octopus, squid, snails, clams
- Arthropods – insects, spiders, crustaceans such as shrimp, crabs, lobsters

D

Learning Task 1: Choose the correct answer. Write your answers on your answer sheet.

1. Birds are able to fly because _____.
   a. they are able to control air currents,
   b. they have colorful feathers.
   c. they have light and hollow bones,
   d. they have scales all over their bodies.
2. Which of the following is not considered a worm?
   a. ascaris b. fluke c. planaria d. millipede
3. Which of the following animal is a not vertebrate?
   a.frog b. birds c. reptiles d. insects
4. Which of the following animal is a vertebrate?
   a. worms b. snakes c. snail d. jellyfish
5. Between 90%-95% of all animals on earth can be classified as_____
   a. invertebrates b. vertebrates c. reptiles d. mammals

Learning Task 2: Fill in the table using the list of animals below.

Centipedes	Dolphin	Tamaraw	Monkey	Mosquito
Beetle	Bat	Mouse	Rabbit	Ant

With Backbone	Without Backbone

What is your basis for grouping them into two?

Learning Task 3: Put a letter **V** if the animal is a Vertebrate and **I** if Invertebrates. Write your answer in your notebook.

☐ 	☐ 	☐ 
☐ 	☐ 	

E

Learning Task 4: Identify the animals describe below. Choose your answer from the box below. Do this on your answer sheet.

Mammals	**Birds**	**Reptiles**
Fish	**Amphibians**	

_____1. Their Bodies are covered with feathers. They have wings and two legs for running.

_____2. Their unique characteristic is the presence of the mammary glands. They bring forth their young alive. They feed their young with their milk from the mammary glands. Their bodies are covered with hair and fur.

_____3. They live in water, their bodies are usually covered with scales. They are able to breath in water because they have gills. They used their fins to be able to swim in water.

_____4. Animals that live their life both in water and land. They have smooth, moist and scale less skin.

_____5. They are terrestrial animals. They have dry scaly skin.

A

Draw 2 animals familiar to you. List their distinguishing characteristics.

WEEK 6

Tropical Rainforest, Coral Reefs and Mangrove Swaps

I

Lesson

Have you been ever to swamp or grassland or beach, a reef or mangrove ?What kind of plants can you find there ? What kind of animals live in there? Let us try to explore and discover the marvels of Science through this module allow us to show you the amazing way scientist work with ideas As you will move through this module you will find engaging questions about the interactions among living things (biotic) and non-living things(Abiotic) . We encourage you to find ways to answer these questions by providing varied activities. We expect that through this module you will become more self-seeking in science and make your learning meaningful.

The organism that thrive in one place depend on their environment. They form relationship with other organism and with the non-living things in their habitat in order to survive. Together, they form ecosystem. Scientist known as Ecologist study these relationship in order to know about each organism and the ecosystem as a whole.

As we go through this lesson, we should be able to know:
What are components of an ecosystem
What are the important roles and relationship between organism in each ecosystem.

TROPICAL RAIN FOREST

Tropical Rainforest are woodlands composed mostly of all tall trees and extensive foliage cover. They are regions with yea round warmth and abundant rainfall, and occupy 6 to 7 percent of earth surface. They produce a large percentage of the needed oxygen on earth. Rainforests are also estimated to house more than half of the world's plant and animal species, most of them still undiscovered. Rain forest grow in four major layers:

1) The canopy or the top layers
2.) the subcanopy which is a layer of trees below the canopy
3.) the understory which is the shady lower and
4.) the floor forest.

More than 70% of the organism in the forest live in the canopy and subcanopy. the shady understory mostly has small palms, young trees, and non woody plants. The floor of the forest has a thin layer of fallen leaves and branches as well are scattered seeds and fruits that some animals gather and eat. Several varieties of fishes, amphibians , reptiles , birds and mammals abound in the rainforest and its rivers .However insects, are the most populous among the animals sometimes with about 40 kinds of ants in just one tree or 1200 kinds of beetles in just 19 individual in tree crowns. A study has shown that there are possibly over 30 million insects dwelling in the canopies of tropical rainforest. Because of the great diversity of life in them, rainforest are ranked as the most complex on land .

The Philippines used to have about 70% of its rainforest a hundred years ago. Presently, only less than 8% of the country rainforests are untouched by deforestation and urbanization. If deforestation does not stop, there might be no more rainforests in the Philippines after 15 years.

CORAL REEFS

Coral reefs are also one of the most biologically diverse ecosystem on earth, and are "called the rainforest of the sea". They are mostly found in shallow tropical seas. Coral reefs are made up of limestones which is secreted by corals and deposited in a period of thousands to millions of years. They can be of three types: Fringing reefs, barrier reefs, and atolls. Fringing reefs are underwater stands of living coral animals that grow fairly close to the shore. Barrier reefs occur farther offshore and are separated from the shoreline by channels called lagoons. Atolls are roughly circular reef systems that surround a deep or large lagoon. Coral reefs are form when coral polyps from their limestone skeleton by absorbing calcium from sea water. Reefs are not only made of hard and soft coral but also sponges, crustaceans ,jellyfishes, sea anemones, Mollusks, sea turtles, reef sharks, dolphins, various fishes and much more .They provide homes for marine animals, which makes marine food chains active and continuous. Because of its great diversity, competition may arise among the organisms in the coral reefs as they compete over food and space. Since they are dependent and interrelated to each other, variation in one species can severely affect other species. Other than that, calamities like storms, volcanic eruptions, and hurricanes as well as human activities may greatly affect the type of organisms and their relationships within the reefs.

MANGROVE SWAMPS

Mangroves are trees that grow along the coast. They are usually found in shallow waters along the mouths of bays, lagoons and river, Mangroves can tolerate salty water because their roots can filter out the salts before absorbing water into the plant. they also have the ability to store salt salts in their bark or old leaves and shed them periodically to get rid of the salts. Mangrove roots form breeding grounds or nurseries for many fishes and marine organism. They interwind roots protect the larvae and young animals from predators and act as home to rich communities of marine invertebrates and algae. They also provide shelter to seasonal visitors like egrets and migratory birds. These birds also receive nourishment by eating shrimps, crabs, and other mollusks around the mangroves. Mangroves also stabilize the shoreline. they have stilt like roots that catch particles of silt, dirt and sand that build up shorelines. They also remove large quantities of inorganic nutrients and sediments to maintain quality of coastal waters.

D

Learning Task 1: Answer the following questions. Write your answer in your notebook.

1. What is an ecosystem? What are examples of diverse ecosystem?
2. What is a rainforest? Why is rain forest known as the lungs of the earth?
3. What are the major parts of the rainforest? Describe each.
4. What are coral reefs? Where are they found? Why are they important to marine lives?
5. What are the different types of coral reefs. Describe each.

Learning Task 2: Fill in the blanks. Write your answers on a separate sheet.

Breeding ground	**Aquatic**	**roots of the sea**	**coastal**	**marine**

If there are no mangrove forests, then the sea will have no meaning. It is having a tree with no roots, for the mangroves are the 1.____Mangrove swamp are found along the 2._____area They are important to 3._____life. They are serve as 4. _____ground for fishes and marine organism. They protect the 5. ___from erosion and effects of storms.

E

Learning Task 3: Complete the chart. Copy this in your answer sheet.

RAINFOREST LAYER	BRIEF DESCRIPTION
1.canopy	
2.sub-canopy	
3.understory	
4. floor of the forest	

TYPES OF CORAL REEFS	BRIEF DESCRIPTION
1.fringing reefs	
2. barriers reefs	
3. atolls	
4. mangrove swamps	

A

Answer the following questions in your answer sheet.

1. What are the living (biotic) and non-living things(abiotic) in tropical rainforests, coral reefs, and in the mangrove swamps?

2. Explain the Interactions among living things in tropical rainforest, coral reefs and mangrove.

WEEK 7

Protection and Conservation of Tropical Rainforest, Coral Reefs and Mangrove Swamps

I Lesson

As we live everyday, we encounter different organism whether living or non-living things .As we do our tasks or works daily , we interact with them . We need them as they need us In this lesson, you will learn the physical conditions of tropical rainforests ,coral reefs, and mangrove swamps. plants and animals, Also ,we will learn the feeding relationship and how the ecosystem function, the need to protect them

As we go through this lesson, we should be able to answer the ff: questions

- What are the physical conditions of tropical rainforest, coral reefs and mangrove swamps?
- Why do we need to protect and conserve them
- How can we protect them?

As we live everyday, we encounter different organism whether living or non-living things .As we do our tasks or works daily , we interact with them . We need them as they need us In this lesson, you will learn the physical conditions of tropical rainforests, coral reefs, and mangrove swamps. plants and animals, Also, we will learn the feeding relationship and how the ecosystem function, the need to protect them

As we go through this lesson, we should be able to answer the ff: questions

- What are the physical conditions of tropical rainforest, coral reefs and mangrove swamps?
- Why do we need to protect and conserve them?
- How can we protect them?

Let us learn how to help protect and conserve tropical rainforest, coral reefs & mangrove swamps.

TROPICAL RAIN FOREST

Rainforests are often called the lungs of the planet for their role in absorbing carbon dioxide, a greenhouse gas, and increasing local humidity. **Rainforests** also stabilize climate, house incredible amounts of plants and wildlife, and produce nourishing rainfall all around the planet. They make much of the oxygen humans and animals depend on. Without them, there would be less air to breathe! Rainforests also help maintain Earth's climate. By taking in carbon dioxide, they help to reduce the greenhouse effect. They help stabilize the world's climate; provide a home to many plants and animals; maintain the water cycle protect against flood, drought, and erosion; are a source for medicines and foods; support tribal people; and are an interesting place to visit.

We need the rain forests to produce oxygen and clean the atmosphere to help us breathe. We also know that the earth's climate can be affected, as well as the water cycle. Rainforests also provide us with many valuable medicinal plants, and may be a source of a cure from some deadly diseases.

CORAL REEFS

Coral ecosystems are a source of food for millions; protect coastlines from storms and erosion; provide habitat, spawning and nursery grounds for economically important fish species; provide jobs and income to local economies from fishing, recreation, and tourism; are a source of new medicines, There are **w**ays to protect the reefs such as discouraging people from collecting coral for ornamental purposes, illegal dynamite fishing, dumping of garbage into the sea.

MANGROVE SWAMPS

Mangroves are the first line of defense for coastal communities. They stabilize shorelines by slowing erosion and provide natural barriers protecting coastal communities from increased storm surge, flooding, and hurricane. **Mangrove** forests are home to a large variety of fish, crab, shrimp, and mollusk species. These fisheries form an essential source of food for thousands of coastal communities around the world. This helps stabilizes the coastline and prevents erosion from waves and storms. **Mangroves**, seagrass beds, and coral reefs work as a single system that keeps coastal zones healthy. **Mangroves** provide essential habitat for thousands of species.

It would be hard to do without mangroves. Creating land ideal for coastal development, these trees die from subsequent population stresses. Their abundance of sea creatures leads to overfishing. without mangroves, "red tide" algae blooms in the water, kills sea life, and shuts down beaches.

Questions:

1. What are the different types of rainforest?
2. How can we protect the rainforest, coral reefs and the mangroves?
3. What are the ways of conserving them?
4. Why do we need to protect them?
5. How can we help in our own little way to protect and conserve them?

D

Learning Task 1: True or False .Write ***TRUE*** if the statement is correct and ***FALSE*** if it is incorrect. Write your answers on a separate sheet.

_____1. Corals are living organisms.
_____2. Ecosystem can be destroyed by human activities.
_____3. Mangroves, coral reefs, and rainforest are examples of ecosystem.
_____4. Destroying the ecosystem can harm humans and other forms of organism
_____5. If there are no mangroves forest, then the sea will have no meaning.

E

Learning Task 2: Complete the sentences. Write your answer in your notebook.

1.Coral reefs are endangered by _____?

a. Climate change c. pollution

b. overfishing d. all of the above

2. A coral reefs provides _____for a small fish.

a. food and shelter c. sewage

b. friends d. all of the above

3. What does endangered mean?

a. no longer existing b. habitat c. resources d. shelter

4. No longer existing, as an animal species

a. Habitat b. Extinct c. Resources d. Conservation

5. Which of the following is a threat to coral reefs?

a. oil spills c. sewage

b. pesticides d. All of the above

A

Complete the paragraph below. Choose your answers from the box. Do this on your answer sheet.

_____ are often called the _____ of the planet for their role in absorbing carbon dioxide, a greenhouse gas, and increasing local humidity. **Rainforests** also stabilize climate, house incredible amounts of plants and wildlife, and produce nourishing rainfall all around the planet. They make much of the oxygen humans and animals depend on. Without them, there would be less air to breathe! Rainforests also help maintain Earth's climate. By taking in carbon dioxide, they help to reduce the green-house effect. They help stabilize the world's _____; provide a home to many plants and animals; maintain the water cycle protect against flood, drought, and erosion; are a source for _____ and foods; support tribal people; and are an interesting place to visit.

lungs	rainforests	climate	medicines

PIVOT Assessment Card for Learners

Personal Assessment on Learner's Level of Performance

Using the symbols below, choose one which best describes your experience in working on each given task. Draw it in the column for Level of Performance (LP). Be guided by the descriptions below.

☆ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/lesson.

✓ - I was able to do/perform the task. It was quite challenging but it still helped me in understanding the target content/lesson.

? - I was not able to do/perform the task. It was extremely difficult. I need additional enrichment activities to be able to do/perform this task.

Distribution of Learning Tasks Per Week for Quarter 2

Week 1	LP	Week 2	LP	Week 3	LP	Week 4	LP
Learning Task 1		Learning Task 1		Learning Task 1		Learning Task 1	
Learning Task 2		Learning Task 2		Learning Task 2		Learning Task 2	
Learning Task 3		Learning Task 3		Learning Task 3		Learning Task 3	
Learning Task 4		Learning Task 4		Learning Task 4		Learning Task 4	
Learning Task 5		Learning Task 5		Learning Task 5		Learning Task 5	
Learning Task 6		Learning Task 6		Learning Task 6		Learning Task 6	
Learning Task 7		Learning Task 7		Learning Task 7		Learning Task 7	
Learning Task 8		Learning Task 8		Learning Task 8		Learning Task 8	

Week 5	LP	Week 6	LP	Week 7	LP	Week 8	LP
Learning Task 1		Learning Task 1		Learning Task 1		Learning Task 1	
Learning Task 2		Learning Task 2		Learning Task 2		Learning Task 2	
Learning Task 3		Learning Task 3		Learning Task 3		Learning Task 3	
Learning Task 4		Learning Task 4		Learning Task 4		Learning Task 4	
Learning Task 5		Learning Task 5		Learning Task 5		Learning Task 5	
Learning Task 6		Learning Task 6		Learning Task 6		Learning Task 6	
Learning Task 7		Learning Task 7		Learning Task 7		Learning Task 7	
Learning Task 8		Learning Task 8		Learning Task 8		Learning Task 8	

Note: If the lesson is designed for two or more weeks as shown in the eartag, just copy your personal evaluation indicated in the first Level of Performance found in the second column up to the succeeding columns, ie. if the lesson is designed for weeks 4-6, just copy your personal evaluation indicated in the LP column for week 4, week 5 and week 6. Thank you.

References

Department of Education. (2020). *K to 12 Most Essential Learning Competencies with Corresponding CG Codes.* Pasig City: Department of Education.

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