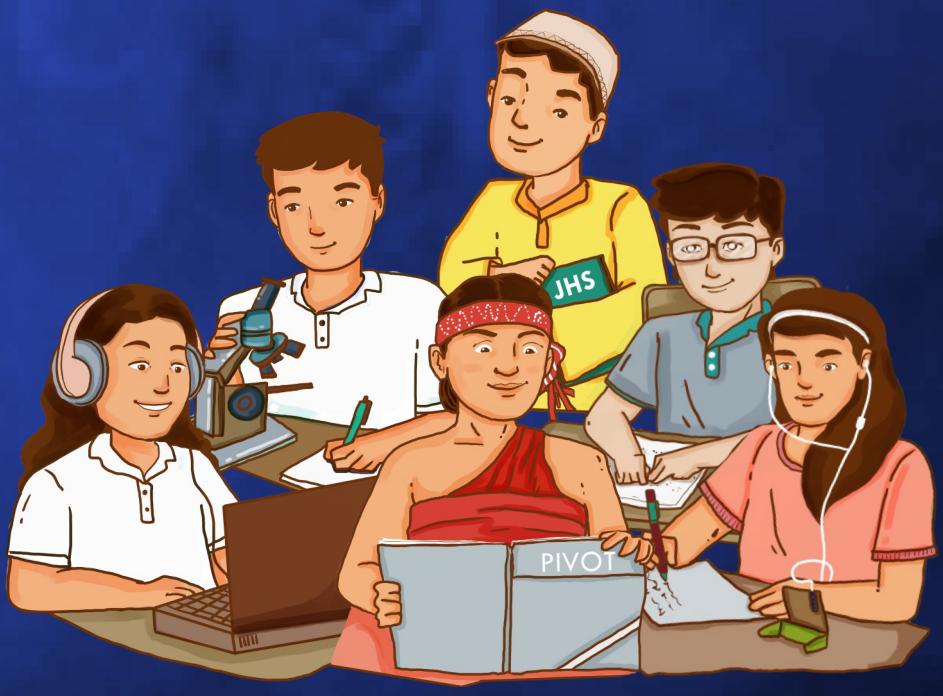
PIVOT 4A
LEARNER'S MATERIAL

QUARTER 2
Science G7



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 7

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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 answer sheet.

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 Learning 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).

WEEK 1

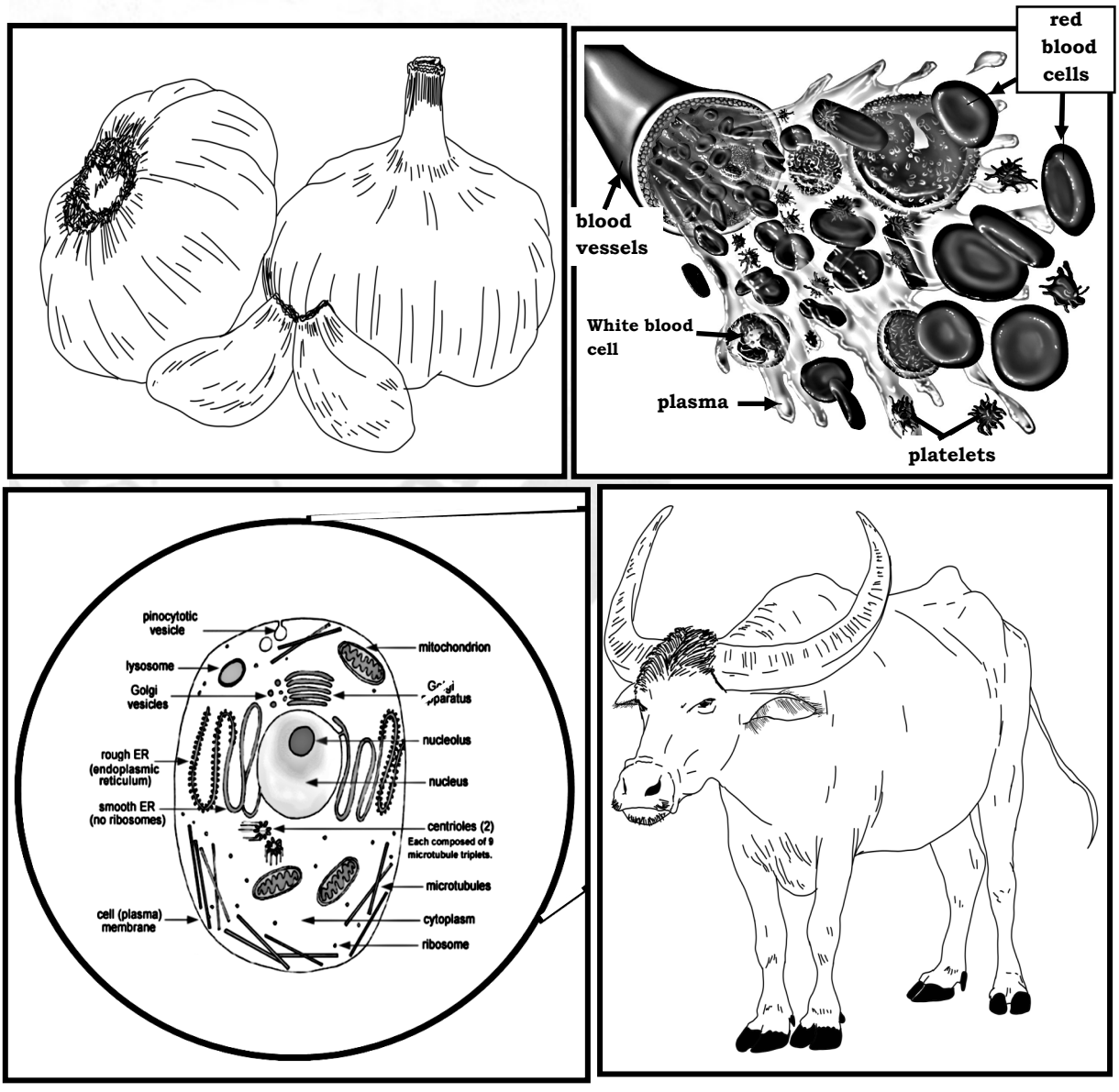
Parts and Function of a Microscope

Lesson I

There are many living things around us. Living things vary in terms of their physical characteristics, habitat and the way they reproduce. Some living things are big while others are very small that you cannot even see them using your naked eyes. To be able to learn and understand their nature and characteristics, we need to use a special instrument like a **microscope**.

This lesson will help you to identify the parts of the **microscope** and their functions **.**

Examine the pictures below, ca you identify which of them can be seen with our naked eye or with the aid of a microscope?



The microscope is an important investigative tool used for studying objects and organisms around us. Microorganisms like bacteria cannot only be seen by the naked eye. Knowing its parts as well as the appropriate ways of using and maintaining it will make your study exciting, efficient and meaningful.

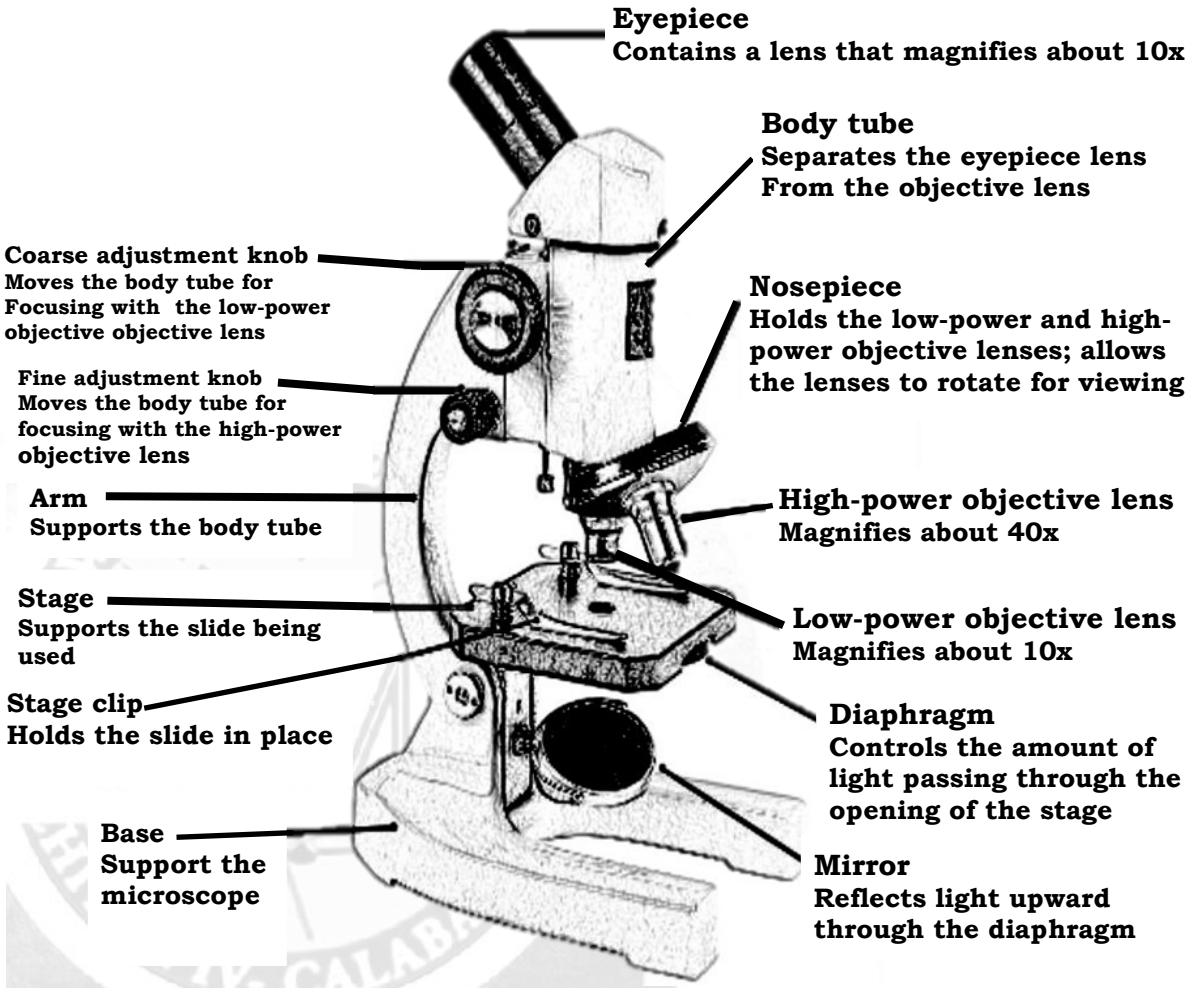
The microscope is an important tool in the study of living things. It contains lens or a combination of lenses to produce highly magnified or enlarged images of small objects or specimens. A light source could be the sunlight through the mirror or from an electric light bulb. **Compound microscope** is the most common type of microscope. The word compound is used because in order to magnify an image, a path of light from the source will pass through a path with series of lenses, where each lens enlarges the image formed by the previous lens. In this process the images of the small object become larger when you view it.

The parts of a compound microscope can be divided into three groups. The magnifying, illuminating and the mechanical parts. The magnifying parts include: the objective lenses and the eyepiece. The **eyepiece** allows you to look through and observe the enlarge image of the object while the **objectives lenses** magnify the image.

The illuminating parts provide and manage the light source in order to clearly see the image of the object. The parts include the: **diaphragm** which controls the passing of light in the opening of the stage and the **mirror or an electric lamp/ light bulb** used to provide light on the object and help focuses it.

The mechanical parts provide support and protection to the other parts of the microscope. The parts include, the course adjustment knob, fine adjustment knob, stage and stage clip, arm and base, revolving nosepiece, and the body tube. The **course adjustment knob** which is used to move the tube and the objective lenses closer or farther away from the stage to view the image of the object while the **fine adjustment knob** which moves the stage up and down and brings the image of the object into fine focus producing a clearer and more detailed view of the object. The **stage** and **stage clip** are used to support and hold the slide in place. The **arm** supports the tube and connect it to the **base**. The **revolving nosepiece** allows proper position the objectives lenses and the **body tube** holds the eyepiece and the revolving nosepiece in place.

Look at the illustration of the compound microscope below. **Describe each part. You can also determine the function of each part**.



Aside from knowing about the essentials of the microscope and its functions, it is also important to learn and practice how to take good care of this instrument. **You should always follow the guidelines on how to maintain the good working condition of the microscope. If you are given the opportunity to use it, handle it properly and clean its parts using the appropriate materials. Return it to its proper casing and store it in a clean and dry storage cabinet away from laboratory chemicals.**

D

Learning Task 1: Study the letter-maze below. Look for the six parts of the microscope hidden on the letter-maze. Write your answers in your answer sheet.

A	P	E	Y	E	P	I	E	C	E	L	L	S	O
R	L	A	D	L	L	S	W	A	O	S	E	R	V
C	A	R	E	F	U	L	L	M	B	E	S	T	F
O	C	O	A	R	M	T	S	E	J	O	T	I	D
B	O	D	Y	T	U	B	E	R	E	G	O	T	I
I	D	I	A	M	E	T	E	A	C	E	L	O	A
N	A	T	I	V	E	A	X	K	T	N	O	B	P
E	C	O	N	O	M	L	P	E	I	G	C	S	H
X	T	O	V	L	I	K	E	T	V	A	A	E	R
P	I	L	I	S	R	I	R	A	E	G	T	V	A
L	V	B	T	T	R	T	I	S	L	E	I	A	G
A	I	A	J	E	O	E	M	K	E	M	O	T	M
I	T	S	T	R	R	L	E	S	N	E	N	I	O
N	Y	E	O	F	A	Y	N	G	S	N	A	O	V
T	R	A	N	S	P	O	T	A	T	I	O	N	E

Learning Task 2: Copy the chart below in your answer sheet. Identify the parts of the microscope listed inside the box. Group them according to their basic function.

base	**body**	**tube**	**arm**
course adjustment	**eye piece**	**mirror**	**diaphragm**
fine adjustment knob	**objective lens**	**nosepiece**	**stage**

Magnifying	Illuminating	Mechanical

E

Learning Task 3: Study the part of a microscope listed in the box below. Match each part of the microscope to its correct descriptions. Write your answer in your answer sheet.

base	eyepiece	Body tube	nosepiece	stage
objective lens	course adjustment knob	fine adjustment knob	diaphragm	arm

1. Use to view the image and contains a lens with 10x magnification
2. Support the slide which contains the specimen
3. Use to adjust the focus of the low power objective lens
4. Regulate the amount of light that will pass through the opening of the stage
5. Support the eyepiece and the objective lens
6. Use to adjust the focus of the high power objective lens
7. Use to further magnify the image in about 10x to 40x
8. Holds the objective lens and allows to switch from low power to high power objectives
9. Supports the body tube
10. Main support of the entire microscope

A

Learning Task 4: Read the following situations. Identify the part and the function of the microscope mentioned in each situation. Write your answers in your answer sheet.

Situation No. 1. Joey is about to start working on his experiment about plant cell using a compound microscope. He noticed that one of the objective lens is missing and the course adjustment knob is not working. The eyepiece lens is also broken.

Situation No. 2. Liza and her group are observing a wet mount. They are having difficulty viewing the specimen. They wanted to tilt the microscope hoping to get the proper position of the microscope.

Situation No. 3. After completing a laboratory experiment using a microscope., Kathy immediately placed the microscope inside a laboratory cabinet containing other science instruments and some laboratory chemical.

The Compound Microscope

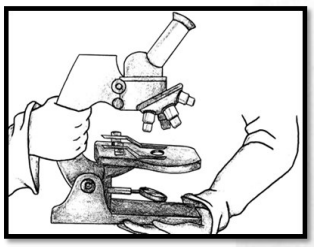
WEEK 2

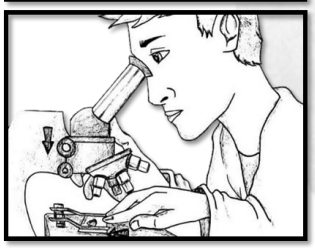
I

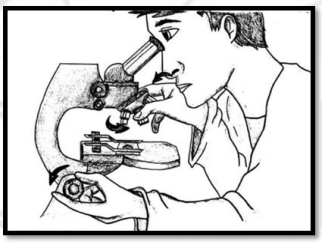
Lesson

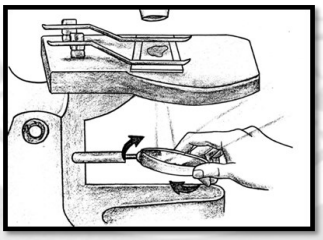
You have learned in the previous lesson that microscope is composed of parts with functions. In this lesson, you will study some appropriate techniques on how to use a compound microscope to gather information about very small objects. The lessons include varied activities that will guide you on how to use a compound microscope whenever the opportunity allows you to physically visit your school laboratory or your science classroom to conduct a hands-on practice. Specifically, you are expected to learn how to **focus specimens using the compound microscope.**

In a laboratory, a small sample of something like cells, plasma, tissues, or any part from an organ or organism that represents a whole are used from which a diagnosis is rendered or other determination of said object's nature is made. These samples are called specimens. In determining the characteristics of these samples, these specimens are examined under a microscope. Do you want to know the procedure on how to focus the specimens? Examine the illustrations below. What can you tell about each illustration?

1. 

2. 

3. 

4. 

Now, start your learning journey and work on the learning tasks presented in the succeeding pages of this lesson. Although you may not be able to get hold of the actual microscope, the learning tasks will provide you exciting opportunity to explore the basic mechanism of a microscope. ENJOY LEARNING.

D

When carrying out activity using a microscope in the laboratory, there are necessary reminders that you have to observe and follow carefully. These include the following:

1. Carry the microscope with your both hands. Grasp the arm with one hand and place the other hand under the base for support.
2. Put the microscope on a table with the arm towards you.
3. Do not touch the glass part of the lenses with your fingers.
4. Use only a special lens paper to clean the lenses.
5. Keep your microscope covered when not in used.

There are several steps to follow when examining specimens under the microscope. How do you focus specimens using a compound microscope? Study the steps below.

1. Put a slide on the stage. Position the specimen over the opening on the stage and use the stage clip to hold it in place.
2. Check the stage from the side. Slowly turn the course adjustment knob to lower the body tube until the lower-power objective almost touches the slide.
3. Turn the course adjustment knob to raise the body tube.
4. Look into the eyepiece and turn the fine adjustment knob until the specimen is properly focus.
5. While looking into the eyepiece, adjust the diaphragm and the mirror until you see a bright white circle of light.
6. Shift to high power objective lens. Gently revolve the nosepiece until the high-power objective lens clicks in place. Be sure that the lens will hit the slide.
7. Rotate the nosepiece until the low-power objective lens clicks into place.
8. Look into the eyepiece, and gently turn the course adjustment knob until you get the clear focus of the specimen.

Learning Task 1 : The numbered steps in using a microscope to focus specimens listed in the box are not arranged properly**.** Arrange each step in their correct sequence. Write the answers in your answer sheet.

1. Put the microscope on a table with the arm towards you.
2. In carrying the microscope, hold firmly the microscope's arm with one hand and place the other hand under the base for support.
3. Check the stage from the side. Slowly turn the course adjustment knob to lower the body tube until the lower-power objective almost touches the slide.
4. Turn the course adjustment knob to raise the body tube.
5. Rotate the nosepiece until the low-power objective lens clicks into place.
6. While looking into the eyepiece, adjust the diaphragm and the mirror until you see a bright white circle of light.
7. Put a slide on the stage. Position the specimen over the opening on the stage and use the stage clip to hold it in place.
8. Look into the eyepiece and turn the fine adjustment knob until the specimen is properly focus.
9. Shift to high power objective lens, Gently revolve the nosepiece until the high power objective lens clicks in place. Be sure that the lens will hit the slide.
10. Look into the eyepiece, and gently turn the course adjustment knob until you get the clear focus of the specimen.

The correct sequence of each step is numbered as:

7, _____, _____, _____,

_____, _____,_____, _____

The compound microscope may contain two to three objectives. This objective has its own magnification number. The shortest one marked 3x, 4x or 5x is called the scanner. The low-power objective (LPO) is marked 10x or 12x whereas the high-power objective (HPO) is marked 40x, 43x or 60x.

The total magnification with which you are viewing the object can be calculated by multiplying the magnification of the eyepiece lens by the magnification of the objective lens you are using.

For example: eyepiece = 10x Low Power Objective (LPO) = 100x

What is the total magnification? (10x) (10x) = 100x

This means that object you are viewing is magnified 100 times. Isn`t that amazing? The knowledge on the basic parts and functions of a microscope is important not only to you as a student but also to those whose are engaged in the different field and practices on our society. Microscope can be used in numerous ways. In the medical field, pathologist and other medical professionals use it to conduct medical laboratory examinations and advanced researches. At present, many scientists around the world are working extensively in their respective laboratories in order to develop a vaccine to prevent the spread of the coronavirus causing COVID-19. Microscopes are also being utilized in our industries for the inspection and assembly of electronic components like those which can be found inside our mobile phones.

Aside from knowing about the essentials of the microscope and its functions, it is also important to learn and practice how to take good care of this instrument. You should always follow the guidelines on how to maintain the good working condition of the microscope. If you are given the opportunity to use it, handle it properly and clean its parts using the appropriate materials. Return it to its proper casing and store it in a clean and dry storage cabinet away from laboratory chemicals.

Learning Task 2: The following illustrations present several steps in using a compound microscope. Write a short description of each illustration in your answer sheet.

Illustration A

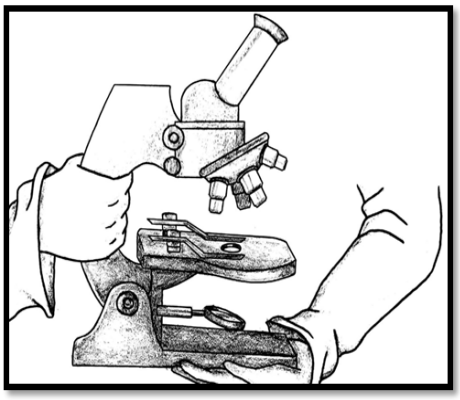


Illustration B

Illustration C

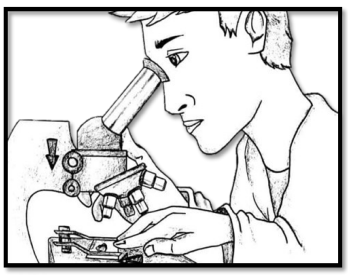
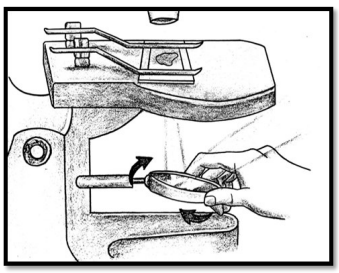


Illustration D



E

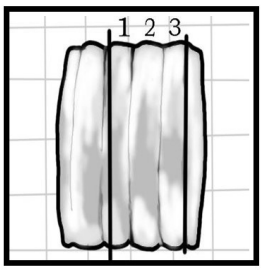
Learning Task No. 3: Read the instructions in a Do-It-Yourself Science Project below. Follow each step. Describe your output in your portfolio answer sheet.

Do-It-Yourself Science Project – Even if you are staying at home you would be able to at least experience using a very simple microscope. How? Well today you are going to make an improvised microscope. Look for the materials that you need and follow the steps presented here. Ask assistance from your parent/ guardian or an older member of your family specially when using cutting tools.

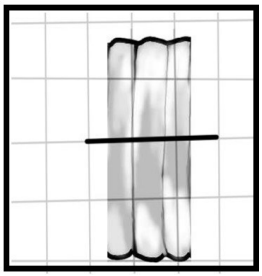
Materials:

- small empty plastic water bottle
- black permanent marker
- scissors,
- sample red/purple onion skin
- toothpick

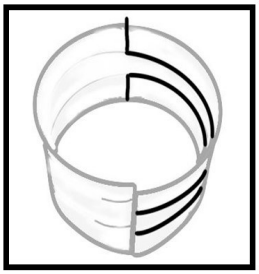
Do-It-Yourself MICROSCOPE



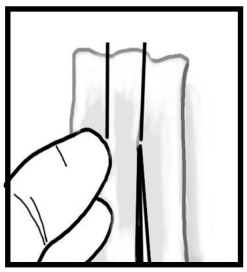
We need a cylindrical part which has three horizontal bulges like the above. Trim grooves on each side.



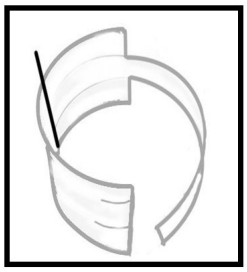
Cut middle of the part to make "C" shape



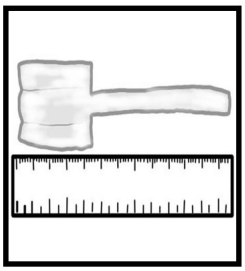
Trim the part along the black line



The trail shape part does not have any grooves. It has a plain tape shape.



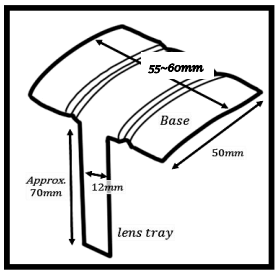
The trimming has been finished. Then cut long the red line on the photo above.

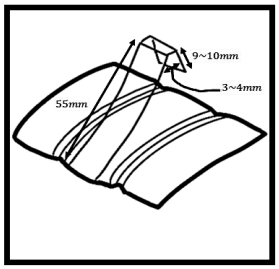


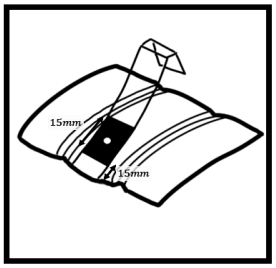
Make sure the right side is flat. If it is not flat, please trim it again.

CAUTION: Always practice safety measure when doing your DIY project and always ask for assistance.

Part 2: How to assemble and operate your DIY Microscope?







Guide Questions:

1. What is/are the reason(s) why you make an improvised microscope?
2. What specimen is used when viewing under your improvised microscope?

Learning Task 4: Study the given table below. Identify the three (3) specific tasks that can be done using a microscope. List down the fields or disciplines where microscopes are being used for.

Example:

Specific Task	Field or Discipline
Use to conduct a complete blood count. (CBC)	Medicine/Medical

Learning Task 5. Show what you have learned about using a microscope. Read the following questions or statements then provide the appropriate answers.

1. What are the parts of the microscope that magnify the image of the specimen?
2. Which part of the microscope is used for sharpening the image of the specimen after it is focused?
3. If you wanted to change the objective lenses, which part of the microscope would you manipulate?
4. Suppose the eyepiece magnification is 10x and the low-power objective lens magnification is 40x. What is the total magnification of the image? Explain your answer.
5. If your science teacher instructed you to move the microscope, describe how you would carry it.

A

Write three sentences reflection after doing the activity.

I understand that_____
_____.
I realized that_____
_____.

WEEK 3

Levels of Biological Organization

Lesson I

This lesson will help you to understand and describe the different levels of biological organization from cell to biosphere. To study the biological level of organization, we need to start with the simplest building blocks of life. The **cell** is the smallest independently functioning unit of a living organism. A cell can regulate its internal environment, take in and use energy, respond to its environment, and develop and maintain its complex organization. All organism is composed of cells. They occur singly in a great variety of single-celled organisms or unicellular organisms like amoebas and most bacteria. Cells are the subunits that make up multicellular organisms such as birds and trees. Your body consists of trillions of cells of many different kinds.

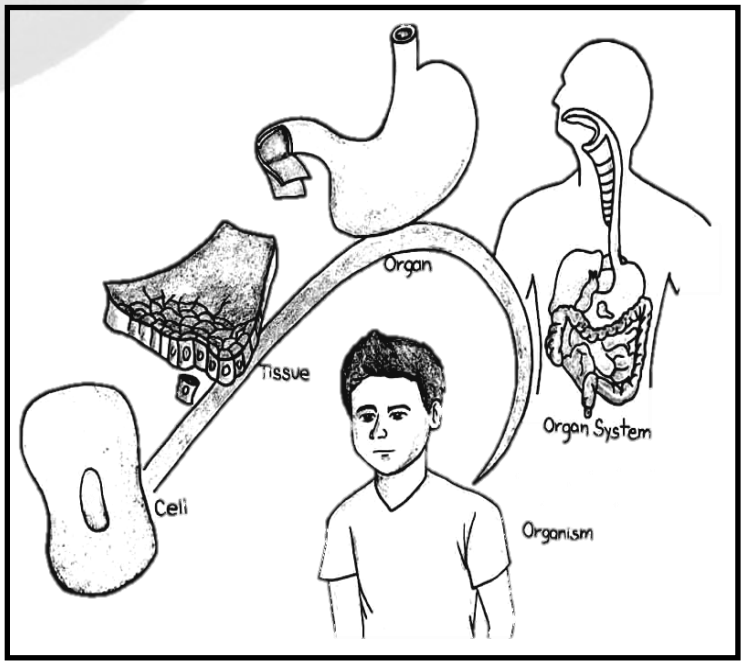
In any multicellular organism, cells do not function alone. Cells that re similar in structure and functions are usually linked together to form **tissues**. Tissues are the second level of the biological organization. For example, the cells in our bones form bone tissues, a strong solid tissue that gives us shape and support. The blood cells in our body are part of the blood tissue, a fluid tissue responsible for transporting food and oxygen throughout our body.

The tissues are further organized to form **organs**. An organ is an anatomically distinct structure which composed of two or more types of tissues that work together. Our heart for example, is an organ that is made up of muscle tissues and nerve tissues. You are probably familiar with the names of several body organs. We have the brain, lungs, stomach, kidneys and the skin.

Similar to cells and tissues, organs rarely work by itself. Organs in a way "collaborate" with other organs and perform a specific function. These organs form an organ system. The organ system is next higher level of organization in living things. We define organ system as a group of organs working together to perform a specific function for the **organism**.

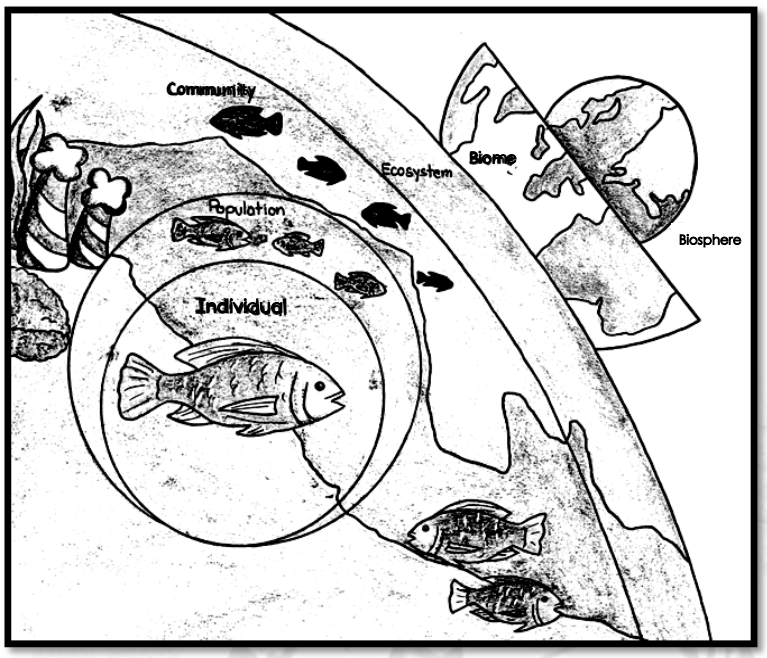
The best example of an organism is you. Yes, you are an organism. Dogs, cats and other animals around us are also organisms. Even single-celled bacterium is an organism. **Organism is an individual living thing that may be made up of one or more organ systems that carries out all the basic life functions.**

Study the illustration below. Cells, tissues, organs, organ systems and organisms comprises the different levels of biological organization. The smooth functioning of a complex organism happens when all these levels or parts work together.



Basic Levels of Biological Organization

There are also levels of biological organization above the individual organism. Study the illustration in order to give you an overview of the different level of biological organization which is beyond the individual organism.



The organisms of the same kind, we call it species that live in the same area make up a **population**. Like when individual person lives in the same location or area, they make up the human population of that area, and if a certain species of fish like milkfish or locally known as "Bangus", are living in the same area, they comprise the milkfish population.

The entire array populations that live in the same location make up a **community**. The community consists of different populations of organism living in the same area. For example, the Laguna Lake caters to different kinds of living things like fishes, water plants and grasses. All of these organisms comprise the community of living things in the lake.

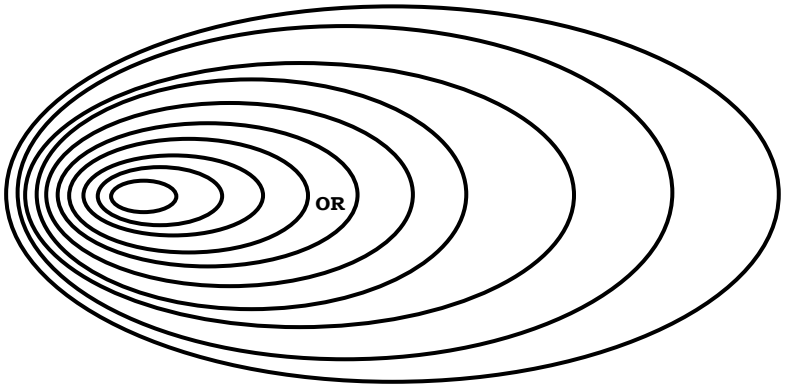
When the community interacts with its physical environment which includes water, air, sunlight, soil, rock and minerals. This brings us to the next level of organization called **ecosystem**. An ecosystem consists of all the living things in a given area together with the nonliving things. The Laguna Lake is an example of an ecosystem.

A group of similar ecosystems with the same type of physical environment is called a **biome**. Many different biomes consist our **biosphere**. The biosphere is the part of our planet where all life exists including all of the environments on Earth that support life. These include regions of land, bodies of water and the lower portion of the atmosphere.

D

Learning Task 1 : Study the given diagram. Complete it using the different terms presented inside the box. Use only the code given to each term. The first term was done for you to serve as an example. Copy the entire diagram and write your complete answers in your answer sheet.

OR - Organism	**C** - Cell	**T** - Tissue	**OS** -Organ System
B – Biome	**O** – Organ	**BS** - Biosphere	**P** – Population
	CT – Community	**E** – Ecosystem	



THE SPECTRUM OF BIOLOGICAL ORGANIZATION

Learning Task 2: Study the given dialogue boxes. Assume that you are talking to your friend about important ideas on the levels of biological organization. Write the necessary information in order to complete your conversation. Use your answer sheet for your answers.

1. What is the difference between an organ and an organ system?

_____
_____

2. _____
_____
_____

In an organism, the structure and function of parts are related. Function is the task the specific part, while structure is the arrangement of the parts in an organism.

3. How do tissues work together as organs?

_____
_____
_____

Learning Task 3: Complete the given table that presents the levels of biological organization. Provide the necessary information and illustration required for each column. Copy the table in your answer sheet and write the complete answers.

LEVELS OF BIOLOGICAL ORGANIZATION

LEVEL:	WHAT IS IT?	DRAW IT.	DESCRIBE IT.
1	CELL		It is the smallest unit of structure and function of
2			
3			

E

Learning Task 4: Challenge your understanding of the levels of biological organization specifically human body's organization. Complete the following analogies. Do this by matching the levels of organization of the human body – **CELL, TISSUE, ORGAN, ORGAN SYSTEM, ORGANISM (WHOLE BODY)** to the appropriate part of the analogy.

Example: Your house
Concrete cement/nails: CELL
Concrete Hollow Block/Wood panel: TISSUE
Walls: ORGAN
Kitchen: ORGAN SYSTEM
House: ORGANISM

1. **Your school.**
   _____ - CELL
   _____ - TISSUE
   _____ - ORGAN
   _____ - ORGAN SYSTEM
   _____ - ORGANISM

2. **Your municipality or city.**
   _____ - CELL
   _____ - TISSUE
   _____ - ORGAN
   _____ - ORGAN SYSTEM
   _____ - ORGANISM

3. **Our country the Philippines**
   _____ - CELL
   _____ - TISSUE
   _____ - ORGAN
   _____ - ORGAN SYSTEM
   _____ - ORGANISM

4. **Make your own analogy**:_____
   _____ - CELL
   _____ - TISSUE
   _____ - ORGAN
   _____ - ORGAN SYSTEM
   _____ - ORGANISM

A

Learning Task 5: Answer these questions in your answer sheet.

1. Which part of the human body is more complex, the heart or the circulatory system. Explain your answer.
2. Why do you think it is important for you to study the levels of biological organization?

WEEK 4

What Makes Animal Cells Different from Plant Cells?

I Lesson

We learned from the previous lesson about levels of organization, and we learned that all organisms are made up of cells. We also learned from the first week of this quarter that the cells can be seen by the use of a microscope. What are the parts of the cell? What are their functions? Why is the cell the basic and structural unit of all organisms? Let us find out in this module.

According to the **Cell Theory**, all living organisms are composed of cells. The cell is the basic unit of life and cells arise from pre-existing cells. These are formulated by German scientists: Theodor Schwann (1810–1822), Matthias Schleiden 1804–1881, and Rudolph Virchow (1821–1902). The Cell Theory developed with the advent of technology. In the modern version, it includes the following: (1) energy flow occurs within cells; (2) heredity information (DNA) is passed on from cell to cell and; (3) all cells have the same basic chemical composition.

Students like you can mostly see the nucleus of a cell using a **light microscope**, but what about the other parts? Biologists use an electron microscope. An **electron microscope** is a microscope that attains extremely high resolution using an electron beam instead of a beam of light to illuminate the object of study. The word **organelle** ("little organs") is used to describe these tiny cellular structures. The **nucleus** is the part of the cell that can be observed easily. It is the control center of the cell also labeled as "the brain" of the cell. This is where the DNA is located. **Deoxyribonucleic acid** or DNA exists in all living things and has the ability to make exact copies of itself. It comprises the chromosomes making it the bearer of genetic information of an organism. The **nucleolus** is where the subunits of ribosome are produced. The **ribosome** is the one that synthesizes protein. The **cytoplasm** is where all the organelles are embedded. It is a "jelly-like" substance that surrounds the organelles of the cell. The covering of our cell is the **plasma membrane**. It is like "the skin" that encloses the cell parts from the outside environment. It allows the entry of the materials inside the cell and it is also where wastes exit.

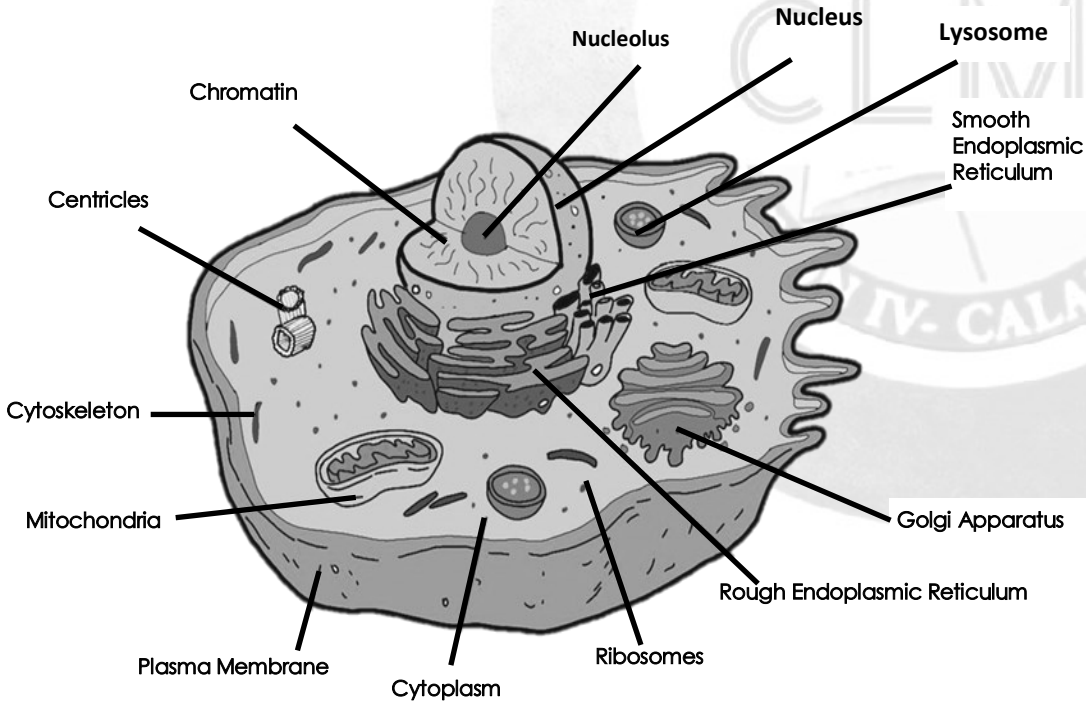
The other parts of the cell are mitochondrion, endoplasmic reticulum, ribosomes, Golgi bodies, vacuoles, and lysosomes. The **mitochondrion** is where cellular respiration takes place. The product of cellular respiration process is cellular energy. This cellular energy is used by other parts of the cell. The popular tag line for mitochondrion is "the powerhouse" of the cell. The **endoplasmic reticulum (ER)** serves as synthesizer, sorter, and transporter of materials such as protein and lipids. It is categorized into two: the rough and the smooth. The **rough endoplasmic reticulum** contains ribosomes and its main function is to synthesize and transport proteins and other materials throughout the cell. The **smooth endoplasmic reticulum** on the other hand does not contain ribosomes and it is the one that synthesizes lipids (such as phospholipids and cholesterol), carbohydrates, and steroids. Remember that the ribosomes are the ones that produce protein. If there is a production of proteins, the **Golgi bodies** are the one that process and pack the proteins. **Lysosomes** are "the digestion machine" of the cell. When the cell absorbs materials (food) from the outside, the lysosomes will cling to it and starts to break it down by releasing their enzymes. The complex sugars, carbohydrates, and other big molecules will become simple molecules that can be used by the cell. Lysosomes also break down unwanted materials like bacteria and old organelles.

The **vacuole** in plants is larger than in animals taking up almost all the space in a plant cell. It makes the plant cell rigid. The plants stand upright because of the water in the vacuoles. The freshness of leaves is also due to water in the vacuole. Some vacuoles in plants contain toxic or poisonous substances. In animal cells, the vacuoles are small and are called **vesicles**. It stores water and food and also has the task of excretion of waste materials.

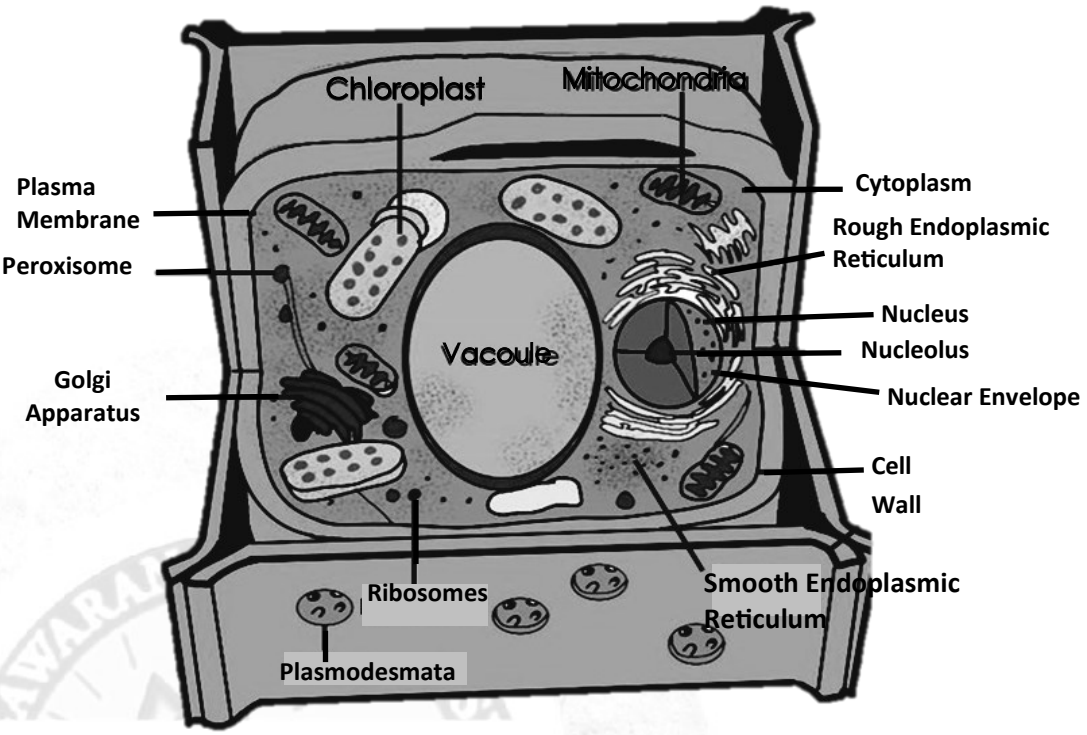
The general parts of the cell are given to you. But some parts are particular to a plant cell and an animal cell. What are these parts? The plant cell has a cell wall and chloroplast. The **cell wall** is the outer lining beside the plasma membrane. The cell wall adds stability and protection to plant cells. The chlorophyll in the **chloroplasts** absorb light energy and convert it into chemical energy and allows plants to carry out the process of photosyntesis. The **amyloplasts** are found on plant cells that stores starch. Animal cells have **centrioles**. Its function is connected to cell reproduction.

Take a look on the illustration of animal and plant cells. Note the parts and functions of the organelles as well as their similarities and differences.

Animal Cell



Anatomy of the Plant Cell



D

Learning Task 1: Look at the picture. Try to recognized the organelles. Choose your answers from the box below. Write your answers in your answer sheet.

Endoplasmic reticulum	Cell membrane	Golgi Bodies
Nucleus	Mitochondrion	Chloroplast

1. 

2. 

3. 

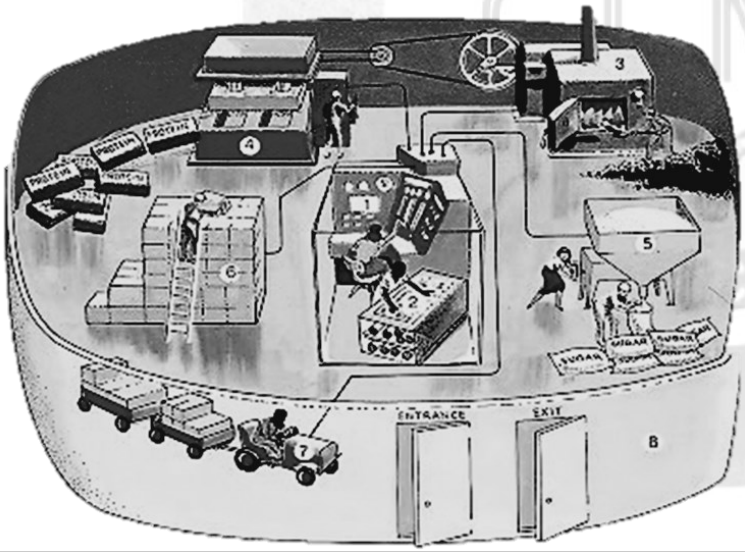
4. 

5. 

Learning Task 2: The organelles are giving their job description to you. Can you identify which organelles are they? Write your answers in your answer sheet.

1. Hi! My responsibility is to add stability and protection to plant cells. What am I?
2. Hi! I produce proteins inside the cell. What am I?
3. Hello! I have a green pigment called the **chlorophyll**. I also absorb solar energy to do the process of photosynthesis. What am I?
4. Good morning po! My work is to store food materials and excretes waste materials. I take a large space on plants. I make the leaves of plants fresh. What am I?
5. Hi! All organelles are embedded in me. I am a "jelly-like" substance. What am I?

Learning Task 3: Study the picture presented below and relate the cell parts to the parts of a factory. Choose your answers from the text box presented after the image. Write down the function of each cell part.



* Code for making products	*'Kitchen' or Food production Center
* First production site	* Factory Compound wall and Guarded gate
* Headquarters of a factory	* Packaging and transportation of products
* Main electric station	* Products are classified and addressed

Cell Parts	Part of the Factory	Function
Nucleus		
DNA		
Mitochondrion		
Endoplasmic reticulum		
Chloroplast		

Cell Parts	Part of the Factory	Function
Golgi apparatus		
Vesicles		
Cell Membrane		

Learning Task 4: Determine whether the organelles are found in an animal cell, a plant cell, or both. Put a **check mark** (✓) on the column you choose for each part.

Organelles	Animal cell only	Plant cell only	Found on Both Animal and Plant Cells
Nucleus			
Cell wall			
Vacuoles			
Lysosome			
Ribosome			
Nucleolus			
Centrioles			
Golgi bodies			
Cytoplasm			
Amyloplast			
Chloroplast			
Cell membrane			
Mitochondrion			

E

Learning Task 5: Read carefully the objective, materials, and procedure part. Prepare the needed materials for this learning task. Remember, this needs your creativity. Be careful in performing the task.

Objective: To be able to create your own animal cell and plant cell model using recycled materials.

Materials:

- Old pages of notebook
- old newspaper
- cornstarch (gawgaw)/glue
- old lid containers
- food color-3 different colors (optional),
- toothpick
- walis tingting.

Procedure:

1. Look for old lids (cover) of containers; you can use either circular lid or rectangular/ square lid.
2. Make a paste from cornstarch (gawgaw) or you can use glue.
3. Use the strips of paper and paste/glue to mold the organelles. Do so that it can fit on the lids that you have. Let it dry. Take note of the shape of each organelle.
4. Paint your organelles using food color (optional). Arrange the organelles accordingly. Label your organelle using a toothpick or stick as stand for flag lets.

Guide questions:

1. What kind of cell were you able to make, animal or plant?
2. What make it animal or plant cell?
3. What are the parts that you included in your own model of the cell?
4. What do you feel after you have done your work?
5. If you are going to do it again, how will you improve it?

Learning Task 6: Explain in your own words the following situations. Write your explanations in your answer sheet.

1. All living organisms have cells. Some are unicellular organisms wherein the cell is the organism itself. Explain why cells are the basic unit of life.
2. How can you take care of your cells?
3. Would life on Earth exist without cells? Why do you think so?

WEEK 5

Differentiating Asexual from Sexual Reproduction

I

Lesson

In the previous lesson, you concluded that the cell is the basic unit of life. There are two types of cells, namely, multicellular and unicellular cell. What is the difference between the two? **Multicellular cells** and animals are made up of tissues that made up tissues and organs. On the other hand, **unicellular cells** are single-cell organisms. Examples of unicellular cells such as bacteria and some fungi and protists. These are also examples of microorganisms. **Microorganisms** are organisms that can be seen only with the aid of a microscope.

Probiotic drinks are very popular these days, one of the active ingredients of drinks is lactobacilli. This type of microorganisms may help us to have healthy digestion. Other microorganisms that are beneficial to us are yeast (used in baking and fermentation), **phytoplankton** (food for marine life), and **nitrogen-fixing bacteria** (enrich nutrient and nitrogen fixation in soil). There are also harmful microorganisms. ***Escherichia coli*** *(E.coli)* is a bacterium that gives us gastrointestinal illness. Harmful algal bloom gives off toxic chemicals (red tide) that produce harmful effects to fishes, shellfish, and other marine life and humans. Athlete's foot is a fungal infection between our toes. There are many harmful protozoans. These are amoeba which cause amoebiasis or amoebic dysentery in human beings; ***Giardia intestinalis*** causes giardiasis (intestinal disease); and ***Plasmodium vivax*** that causes malaria. A virus is not technically alive if it is not in a living host. It is described as a submicroscopic infectious agent. It can infect all living things including bacteria. Its only function is to reproduce by replicating itself inside a host cell and the host cell will perish. The virus offspring invades a new host and the cycle continues.

Microorganisms reproduce rapidly due to its simple structure and size. But how do they reproduce? In what way microorganisms and other organisms multiply? **Reproduction** is the process where the offspring (new organism) was created from a parent or parents. The two types of reproduction are asexual reproduction and sexual reproduction. **Asexual reproduction** only involves one parent, there are no gametes (sex cells) produced and the offspring are genetically identical to the parent. **Sexual reproduction** involves two parents, gametes are produced (one from the male and one from the female) and the offspring are genetically different from the parents.

Let us look at the different kinds of asexual reproduction. The first is binary fission. Bacteria, amoeba, paramecium, and some protozoa reproduce by binary fission. **Binary fission** is an asexual reproduction where a single parent divide into two. The results are two genetically identical daughter cells. Second is spore formation. **Spore formation** is a type asexual reproduction where organisms reproduce by forming spores. Examples of this are bread mold (fungi), fern (plant), and mosses (plant). The third is budding. In **budding**, a new organism is formed from a bud which is an outgrowth from the parent. When the bud is separated it becomes a new organism. Yeast and Hydra are examples of organism that reproduce from budding. Some bud remains attached to the parent forming colonies and others separate become free moving and live on its own. The fourth type is fragmentation. **Fragmentation** is physically splitting the organism into segments and these segments develop into new organisms. Examples of fragmentation are worms, echinoderms, sponges, and starfish.

Regeneration is similar to fragmentation wherein a cut part can regenerate into a full organism as exhibited by sea stars. Regrowth or regeneration of lost parts, such as in the case of in brittle star and lizard's tail, is not considered a type a reproduction since no new organism is formed. The fifth is **vegetative reproduction**. It reproduces offspring from its vegetative organs such as stem, roots and leave. Examples are the "eyes" or "dimples" of a potato, stems of strawberries, ginger root, and banana plant.

Sexual reproduction is different from asexual reproduction because it needs two organisms, a male and a female. Among animals, the male produces sperm cell and the female an egg cell. Sperm cell and egg cell are collectively called **gametes**. When these gametes unite the process is called fertilization. A **zygote** (fertilized egg) is the result of fertilization. The zygote then develops and becomes an embryo. It will continue to develop until it reaches maturity to be born.

Internal fertilization occurs when fertilization takes place inside the body of the female. After internal fertilization, there are three ways for the new organism (offspring) to develop. Have you ever wondered why chickens lay their egg? This method is called **oviparity**. After the rooster fertilized the egg of the hen, the hen will lay its eggs. The unborn offspring took its nourishment from the yolk which is part of the egg. The hen will take care of the egg giving body heat. After 21 days, the egg hatches and a chick is born. All birds lay eggs, snakes, spiders, platypus, crabs, butterflies are examples of oviparous animals. If the fertilized egg retained inside the female but the embryo gets its nourishment from the egg yolk this is called **ovoviviparity**.

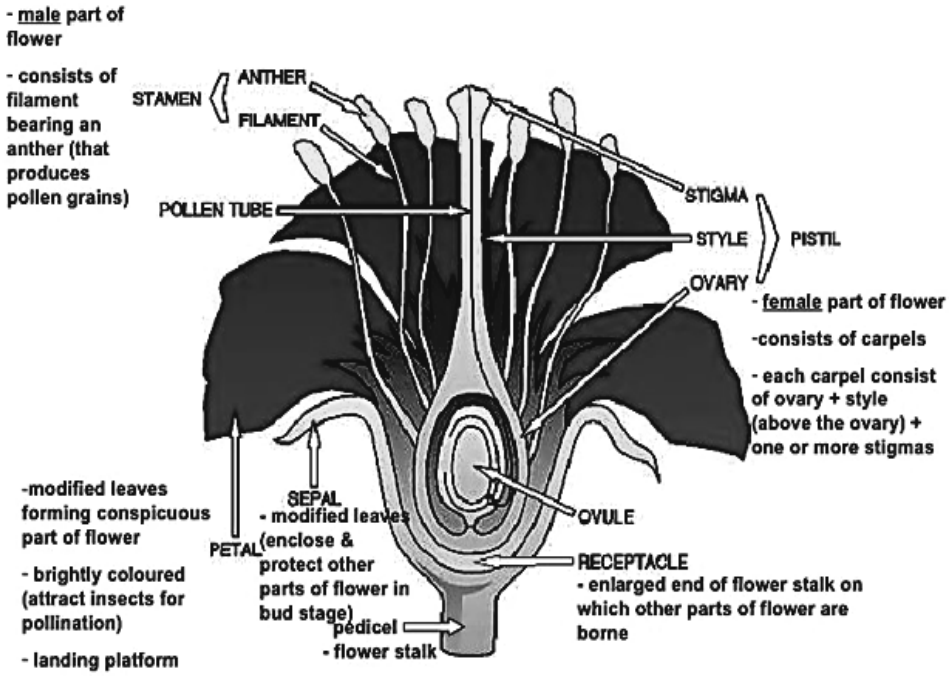
As the egg hatch, the offspring continues to live inside the mother's body. There is no placenta or umbilical cord. The offspring are fully developed when they are born. The rays (marine animals) are a classic example of ovoviviparous animal. Other examples are guppy and basking sharks. **Viviparity** is when the embryo develops inside the female body and receives nourishment through a placenta. For humans, the embryo develops into a human baby for an average of 280 days. Many familiar animals we know are viviparous like dogs, cats, pigs, and horses.

External fertilization happens when fertilization occurs outside the female body like most aquatic animals (fish), amphibians (frogs, salamanders, newts), crustaceans (crabs and shrimps) and some insects (mosquitos and mayflies).

The **advantage of internal fertilization** is that the survival rate is high though few offspring are produced. The mother protects the developing offspring from dehydration and predators. The **advantage of external fertilization** is many offspring are produced but susceptible to predators. Few mothers protect their young.

Sexual reproduction among plants also needs a male and female gamete. The **pollen** is the male gamete and the **ovum** is the female gamete. A fertilized egg or zygote is produced upon the union of these gametes. The zygote develops into an embryo and eventually into fruits which developed from the ovary that contain seeds which is formed from the ovum. The reproductive organ of the plant is the flower. The process of transferring pollen grains from the anther to the stigma is called **pollination**. Pollinators are animals that help carry these pollen grains. Examples of pollinators are bees, butterflies, wasps, and small birds.

Parts of a flower



For **asexual reproduction** since it only has one parent and produces identical offspring, it inherits the weaknesses of the parent. For instance, if the parent carry a disease or prone to certain diseases; then the offspring can be susceptible to that disease. The organism is less developed, but the rate of reproduction is faster. For **sexual reproduction** since it involves two parents the offspring is unique and carries half of the trait from the mother and half of the trait from the father. There is a genetic variation. The organism is more developed. But the rate of reproduction is slower.

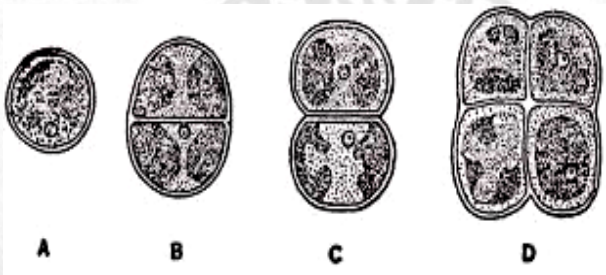
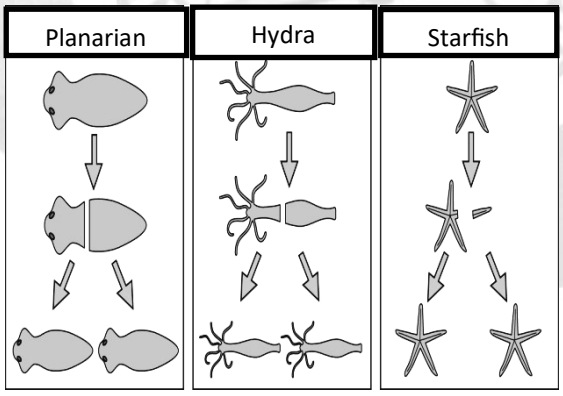
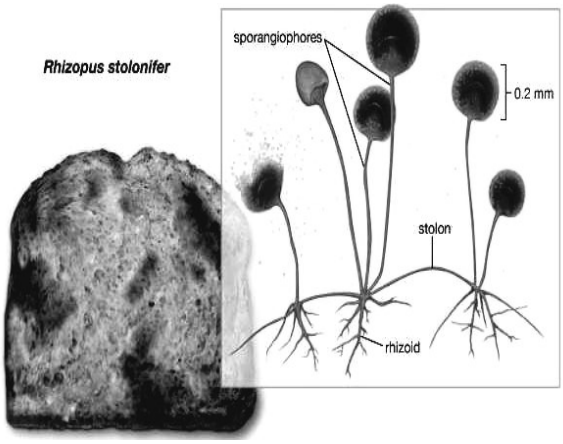
In order to deepen your understanding of the types of reproduction. Enjoy the journey through answering and performing the learning tasks presented on the next pages. TAKE PLEASURE IN LEARNING.

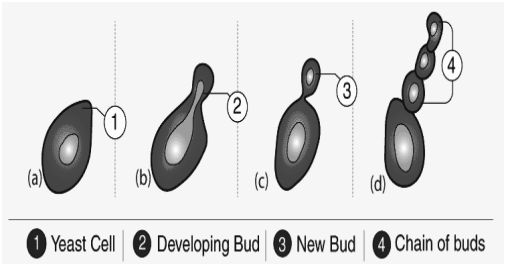
D

Learning Task No. 1: Match column A with column B. Write your answers in your answer sheet.

COLUMN A Microorganism	**COLUMN B** Harmful Effect
1. Amoeba	A. SARS-CoV-2
2. Algae	B. red tide
3. Fungi	C. malaria
4. Plasmodium	D. amoebiasis
5. Virus	E. Athlete's foot

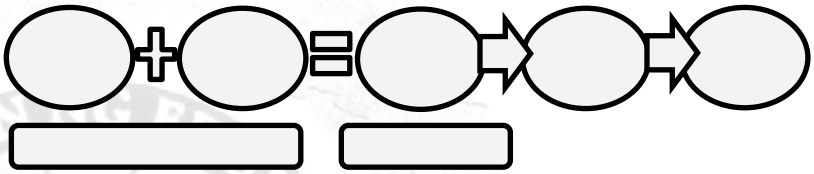
Learning Task 2: Identify the type of asexual reproduction shown on the picture. Write a brief explanation if their process using the pictures as an example. Do this in your answer sheet.

1. _____ _____ _____ _____	
2. _____ _____ _____ _____	 A B C D **Figure 32. Protococcus** A, A vegetative cell; B-D, Vegetative reproduction and formation of daughter cells
3. _____ _____ _____ _____	
4. _____ __ _____ __ _____ __ _____ __	

5. _____ _____ _____ _____	

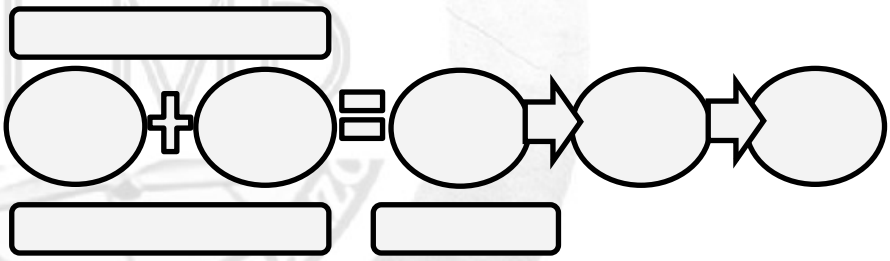
Learning Task 5: Complete the steps in sexual reproduction on animal and plants by arranging the words on the diagram.

A. Animal sexual reproduction



Egg cell Embryo Fetus Fertilized egg
Fertilization Sperm cell Zygote

B. Plant sexual reproduction



Embryo Fertilized egg Fertilization Fruit/Seed Ovum
Pollen Pollination Zygote

E

Learning Task No. 6: Do an investigation on the following. Be careful during the conduct of the experimentation. Ask help from your parent or siblings if and when necessary.

A. Bacteria colony

1. Get a potato or kamote and take a slice.
2. Drop-in boiling water for three minutes.
3. Get a cotton bud (Q tip) and swipe it against your tongue or inner cheek.
4. Streak it on the surface of the potato or kamote. You can write a big letter X, Y or Z.
5. Put the sliced potato or kamote in a clean see-through plastic bag or container and keep it in a dark cabinet for 2-3 days. Observe and write what you saw on the table provided below.

Observation Day	Observation of Bacterial Colony
Day 1	
Day 2	
Day 3	

B. Bread Mold and spore formation

1. Prepare a piece of freshly baked bread.
2. Use a cotton bud (Q tip) and collect dust from the ground.
3. Rub the cotton bud on the piece of bread.
4. Put 5 to 6 drops of water on the piece of bread.
5. Place the bread in a see-through plastic bag or container and seal it properly using adhesive tape.
6. Keep it in a dark cabinet and leave it undisturbed for 2 to 3 days. Observe and write what you saw on the table provided below.

Observation day	Observation of Bread Mold
Day 1	
Day 2	
Day 3	

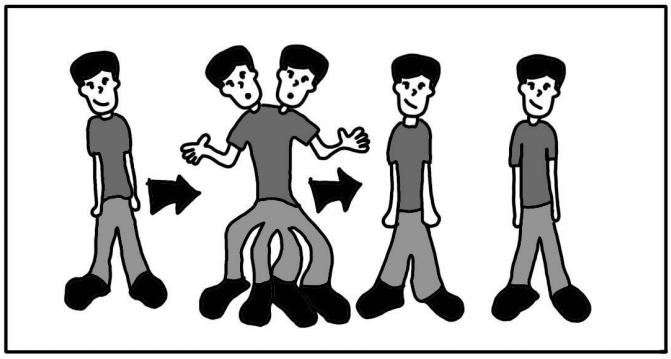
Guide question (answer the questions after three days)

1. In your experiment, did you notice white spots on the surface of potato or kamote? How about the greenish color on the bread? Draw what you have seen in your set-up.
2. What are the conditions for bacteria to grow and reproduce? How about the bread mold?
3. What can you say about the rate of reproduction of bacteria and molds after three days?
4. Why do you think food spoilage occur easily?

A

Learning Task No. 7 Make a comic strip of your favorite character that explains the advantages and disadvantages of sexual and asexual reproduction.

IMAGINE IF YOU WERE ABLE TO SPLIT AND FORM A CLONE OF YOURSELF



WEEKS 6-8

Factors Affecting Living Organism and Nonliving Components

I Lesson

Ecosystems have a natural balance of abiotic and biotic factors. Within a natural system, the transfer of energy drives the cycling of matter**.** All ecosystems consist of three basic components: **autotrophs, consumers, and abiotic matter.** The **producers or autotrophs** are largely green plants use the energy of the sun in photosynthesis to transform inorganic compounds into simpler organic compounds

The **consumers, or heterotrophs**, use the organic compounds produced by the autotrophs as a source of food. through the composition heterotrophs eventually transformed these complex organic compounds into simpler inorganic compounds that are used letter once used by the producers the heterotrophic component of the ecosystem is often subdivided into two subsystems consumers and decomposers the consumers feed largely on living tissues and other composers breakdown dead matter into inorganic substances no matter how it classified them only after a Tropic organisms are consumers and all in some way apt as that we concerns.

Non-living environment. The **non-living parts** of an organism's environment are the **abiotic factors**. Examples of **abiotic factors include air currents, temperature, moisture, light, and soil**. Ecology includes the study of features of the environment that are not living because these features are part of an organism's life. for example , a complete study of ecology of moles would include an examination of the types of soil in which these animals did their channels similarly a thorough investigation of the life cycle of trout would mean Chain clued whether they need to lay their eggs on rocky or sandy stream bottoms.

The Living environment includes the **biotic factors** which have obvious effects on living things and often determine which species survive in a particular environment. For example, extended lack of rainfall in the grassland can cause drought. Grasses would grow more slowly. it might produce fewer seeds, all the animals that depend on seeds for food would find it harder to survive.

All organisms depend on others directly or indirectly for food, shelter, reproduction, or protection. If you study an individual organism, such as a male white- tailed deer, you might find out what food it prefers, how often it eats, and how far it roams to search for food. However, studying a single individual will not tell you all there is to know about the deer. in fact, white-tailed deer are social animals. They live in small groups or a herd in which there is a strong social structure built around visual and vocal communications that keep the herd safe.

D

Learning Task 1: Study the pictures below. Mention at least **2 biotic** and **2 abiotic components** shown. **Describe** the functions of each identified abiotic components.Write your answers in a separate sheet of paper.

Pictures	COMPONENTS	
	BIOTIC	**ABIOTIC**
	1. 2.	1. 2. Functions:
	1. 2.	1. 2. Functions:

ECOLOGICAL RELATIONSHIPS WITHIN POPULATION

A **population** is a group of organisms, of the same species, which interbreed and live in the same area at the same time.

How do organisms in a population share the resources of their environment may determine how far apart the organisms live and how large the populations become. members of the same population may compete for food water, mate or other resources. **Competition** increases when resources are in short supply. Some species have adaptations that reduce competition within a population. An example is the life cycle of a frog. The juvenile stage of the frog called the tadpole, looks very different from adult and has different food requirements. Many species of insects, including butterflies and moths, also produce juveniles that differ from the adult in body form and food requirements.

INTERACTIONS WITHIN COMMUNITIES

No species lives independently. Just as a population is made up of individuals, several different populations make up a biological community. **Biological community** is made up of interacting populations in a certain area at a certain time. An example of a community is the community of flowers made up of different species of flowers in the grassland. Another example is, a forest of trees and undergrowth plants, inhabited by animals and rooted in soil containing bacteria and fungi, constitutes a biological community.

A change in one population in a community may cause changes in the other populations. Some of those changes can be minor, such as when a small increase in the number of individuals of one population causes a small decrease in the size of another population. For example, if the population of mouse- eating hawks increases slightly, the population of mice will, as a result, decrease slightly. Other changes might be more extreme, as when the size of one population grow so large it begins affecting the food supply for another species in the community.

ORGANISMS IN ECOSYSTEM

Some special birds make their homes in the fruit bearing tree. In these areas they find food, avoid enemies, and reproduce. A **habitat** is that place when organism lives out its life. A lawn, the bottom of a stream, and forests are examples of habitats. Other habitats could be a wetland, a specific species of tree, a city lot or park, a pond, or a specific area in the ocean. A **niche** is all strategies and adaptations a species uses in its environment - How it meets its specific needs for food and shelter how and where it survives and where it reproduces. A species' niche', therefore includes all its interactions with the biotic and abiotic parts of its habitat.

ECOLOGICAL RELATIONSHIPS

PREDATION

Predation is found in all ecosystems and includes organisms that eat plants and animals. Predators may be animals such as lions and insect eating birds. The animals that predators eat are called prey. Predator- prey relationships such as the one between cats and mice involve a fight for survival.

The relationship in which there is a close and permanent association between organisms of different species is called **symbiosis**. **Symbiosis** means living together. Three kinds of symbioses are recognized: **mutualism, commensalism, and parasitism.**

MUTUALISM

A symbiotic relationship in which both species benefit is called mutualism. **Ants** and **acacia** trees living in the subtropical region of the world illustrate mutualism. The ants protect the occasion tree by attacking any animal that tries to feed on the tree. The tree provides nectar and a home for the ants.

COMMENSALISM

Commensalism is a symbiotic relationship in which **one species benefit** and the **other species is neither harmed nor benefited**. Commensal relationships occur among animals and in plant species too. Spanish Moss is a kind of flowering plant that draped itself on the branches of trees. Orchids, ferns, mosses, and other plants sometimes grow on the branches of the larger plant. the larger plants are not harmed but the smaller plants benefit from the habitat.

PARASITISM

A symbiotic relationship in which a member of one species benefit at the expense of another species (the host) is called parasitism. **Parasites** have evolved in such a way that they harm, but usually do not kill the host species. if the host died, owner the parasite also would die unless it can quickly find another host. **Parasites** may be characterized as **ectoparasites** — including **ticks, fleas, leeches, and lice** — which live on the body surface of the host and do not themselves commonly cause disease in the host; or **endoparasites**, which may

be either **intercellular** (inhabiting spaces in the host's body) or **intracellular** (inhabiting cells in the host's body). Intracellular parasites such as **bacteria or viruses** often rely on a third organism, known as the carrier, or vector, to transmit them to the host. **Malaria,** which is caused by a protozoan of the genus ***Plasmodium*** transmitted to humans by the bite of an anopheline mosquito, is an example of this interaction. The plant ailment known as Dutch elm disease (caused by the fungus ***Ceratocystis ulmi***) can be spread by the European elm bark beetle.

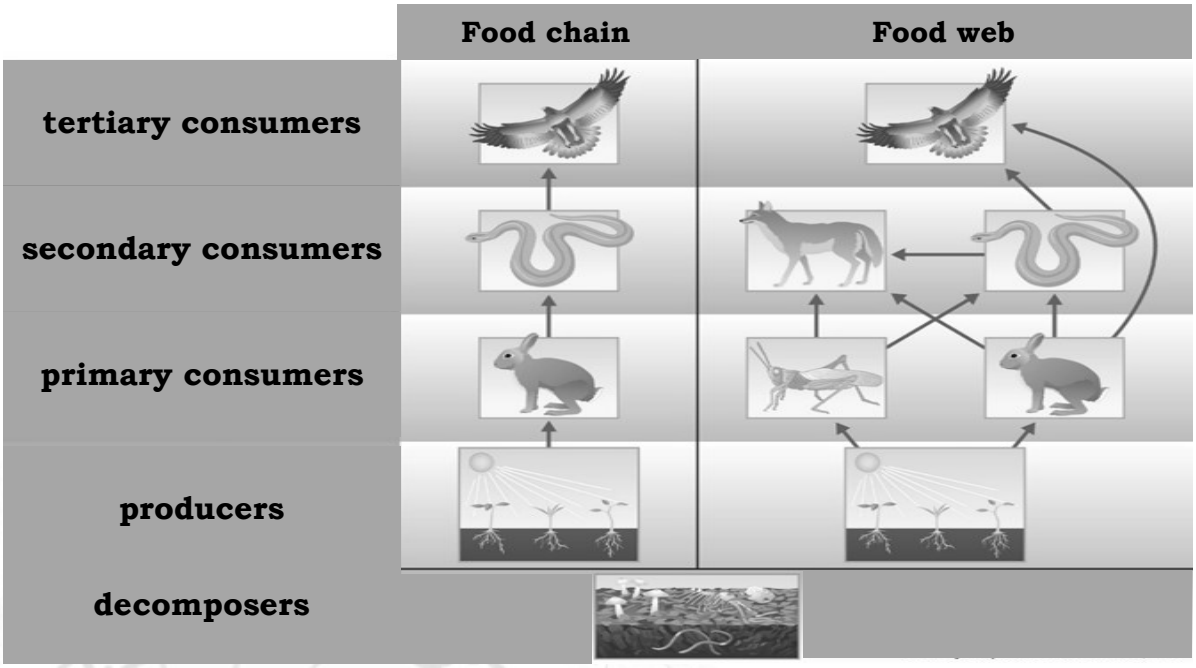
COMPETITION

Competition is a powerful form of interaction in the organization of communities, but it differs from other forms of antagonistic and mutualistic relationships in that no species benefits from the interaction. In **competitive interactions, species evolve either to avoid each other, to tolerate the presence of the other, or to aggressively exclude the other.**

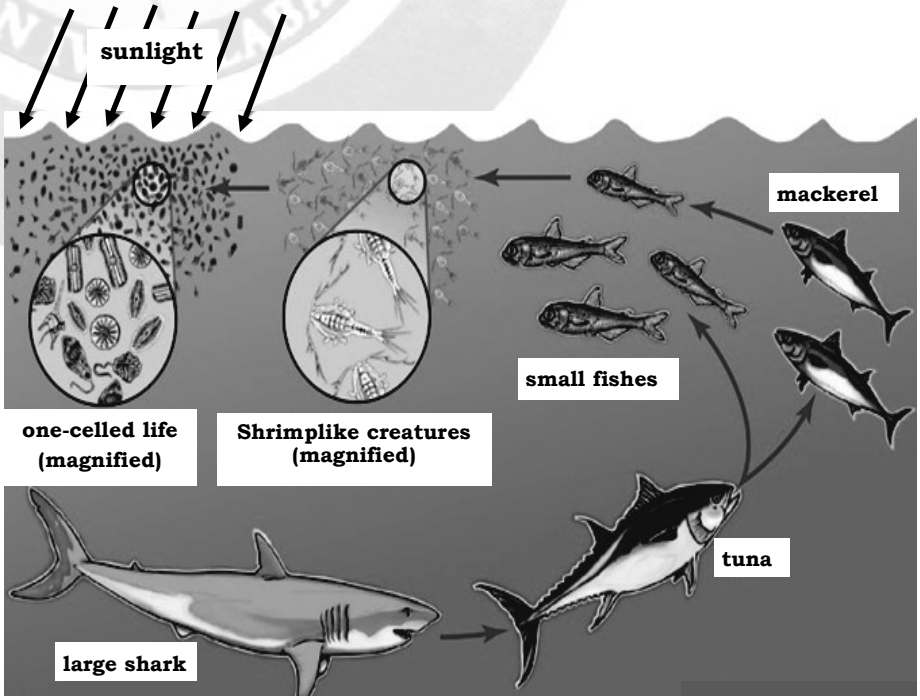
Species compete for almost every conceivable kind of resource, and the same two species may compete for different resources in different environments. Hole-nesting birds compete for tree holes, plant species compete for pollinators and seed dispersers, and male birds compete for preferred sites to defend as territories for attracting females. Species may compete for many resources simultaneously, but often one resource, called the limiting resource because it limits the population growth of each species, is the focus of competition. Moreover, the ways in which species compete vary with the resources. In some cases, species compete by capturing resources faster than their competitors (exploitation competition). Some plant species, for example, can extract water and nutrients from the soil faster than surrounding species. In other cases, the two species physically interfere with one another (interference competition) by aggressively attempting to exclude one another from their habitat.

FOOD CHAIN and FOOD WEB

The organisms within a community can be positioned along food chains by showing which eats which, and these positions are known as trophic levels. The first level includes the **producers (autotrophs)—the photosynthetic plants**—which convert the Sun's radiant energy into nutrients available to other organisms in the community. These plants are eaten by **herbivores (plant-eaters, or primary consumers)**, the second trophic level. Herbivores are, in turn, eaten by **carnivores (flesh-eaters)**, which are frequently eaten by larger carnivores **(secondary and tertiary consumers,** respectively). The food chain ends when the last link dies and is attacked by various bacteria and fungi, the **decomposers** that break down dead organic matter and thereby release essential nutrients back into the environment. A food chain is drawn using arrows to indicate the direction in which energy is transferred from one organism to the next.



Food chain, in ecology, the sequence of transfers of matter and energy in the form of food from organism to organism. Food chains intertwine locally into a **food web** because most organisms consume more than one type of animal or plant. Plants, the autotrophs, which convert solar energy to food by photosynthesis, are the primary food source. In a predator chain, a plant-eating animal is eaten by a flesh-eating animal. In a parasite chain, a smaller organism consumes part of a larger host and may itself be parasitized by even smaller organisms. In a saprophytic chain, microorganisms live on dead organic matter.



Learning Task 2: Study the words below. Match each to their correct descriptions presented in numbers 1 to 10. Write your answer in you're your answer sheet.

Competition	**Commensalism**	**Mutualism**	**Predation**	**Endoparasites**
Symbiosis	**Parasitism**	**Ectoparasites**	**Food Chain**	**Food web**

1. A relationship in which one species benefit while the other receives neither benefit nor harm.
2. One species benefits and individuals of the other species are harmed.
3. Both species benefit.
4. Parasite that finds on the internal organs of the host.
5. The pursuit, capture, and killing of animals for food.
6. A simple model used to show how matter and energy moved through an ecosystem.
7. Any closer personal association among organisms of different species.
8. A parasite that feeds on the external part of a host.
9. Interaction between organisms or species in which both the organisms or species are harmed or not benefitted.
10. Model that shows all the possible feeding relationships at each trophic level in a community.

E

Learning Task 3: Copy the table below and check the box if the following samples able to do the characteristics given in the table. Do this in your answer sheet.

	NARRA	**PENCIL**	**LIZARD**	**ROCK**	**CRABS**	**PAPER**	**FISH**
Moves from one place to another by means of							
Develops into a mature individual							
Take in food and excrete wastes							
Breathe							
Reproduce its own kind whether sexual or asexual							

A

I learn that _____.

I understand that _____.

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 in the second column up to the succeeding columns, i.e. 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.

Key to Correction

For inquiries or feedback, please write or call:

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