

<b>W1</b>	<b>Learning Area</b>	Science	<b>Grade Level</b>	8
	<b>Quarter</b>	Fourth	<b>Date</b>	4 DAYS

<b>I. LESSON TITLE</b>	THE DIGESTIVE SYSTEM
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	1. Explain ingestion, absorption, assimilation and excretion
<b>III. CONTENT/CORE CONTENT</b>	LIVING THINGS AND THEIR ENVIRONMENT

#### IV. LEARNING PHASES AND LEARNING ACTIVITIES

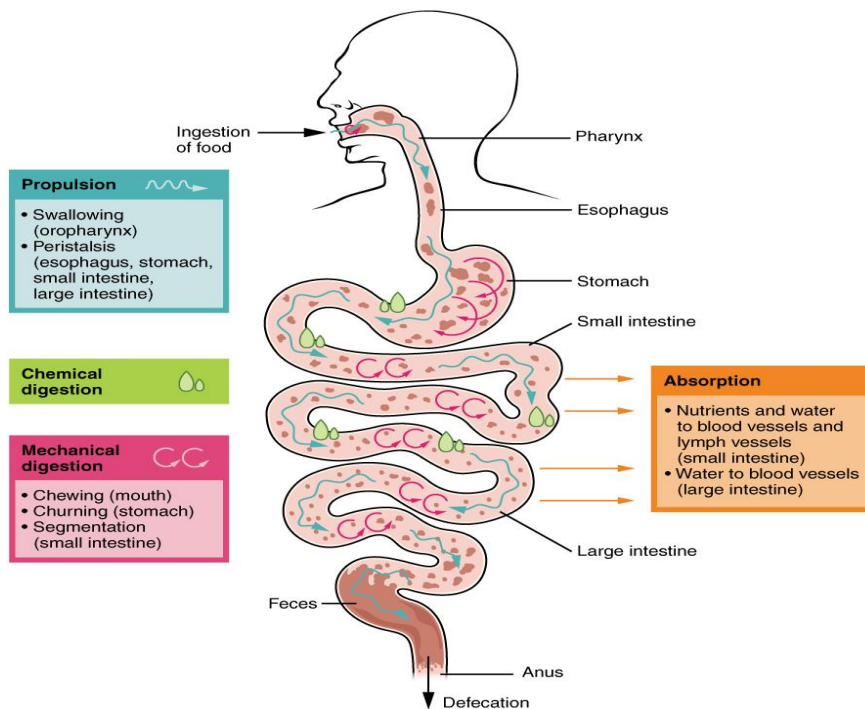
##### I. Introduction (Time Frame: DAY 1)

Food plays a central role in the survival of species. Food gives organisms energy that enables them to carry out the many activities they do each day; this includes predators chasing a prey or a prey escaping a predator, arboreal organisms climbing trees to gather fruits, or fish swimming in schools in search for food, to name a few. Organisms are able to obtain energy from the foods they eat through digestion.

Digestion of food is carried out by the organs and substances of the digestive system. During digestion, food is broken down to smaller parts -- a fraction of which is made up of nutrients. These nutrients are circulated to the different parts of the body through the bloodstream and assimilated by cells.

##### D. Development (Time Frame: DAY 1)

The processes of digestion include six activities: **ingestion, propulsion, mechanical or physical digestion, chemical digestion, absorption, and defecation.**



[https://upload.wikimedia.org/wikipedia/commons/6/6d/2405\\_Digestive\\_Process.jpg](https://upload.wikimedia.org/wikipedia/commons/6/6d/2405_Digestive_Process.jpg)

The first of these processes, **ingestion**, refers to the entry of food into the alimentary canal through the mouth. There, the food is chewed and mixed with saliva, which contains enzymes that begin breaking down the carbohydrates in the food plus some lipid digestion via lingual lipase. Chewing increases the surface area of the food and allows an appropriately sized bolus to be produced.

Food leaves the mouth when the tongue and pharyngeal muscles propel it into the esophagus. This act of swallowing, the last voluntary act until defecation, is an example of **propulsion**, which refers to the movement of food through the digestive tract. It includes both the voluntary process of swallowing and the involuntary process of peristalsis. **Peristalsis** consists of sequential, alternating waves of contraction and relaxation of alimentary wall smooth muscles, which act to propel food along. These waves also play a role in mixing food with digestive juices. Peristalsis is so powerful that foods and liquids you swallow enter your stomach even if you are standing on your head.

Digestion includes both mechanical and chemical processes. **Mechanical digestion** is a purely physical process that does not change the chemical nature of the food. Instead, it makes the food smaller to increase both surface area and mobility. It includes **mastication**, or chewing, as well as tongue movements that help break food into smaller bits and mix food with saliva. Although there may be a tendency to think that mechanical digestion is limited to the first steps of the digestive process, it occurs after the food leaves the mouth, as well. The mechanical churning of food in the stomach serves to further break it apart and expose more of its surface area to digestive juices, creating an acidic "soup" called **chyme**.

**Segmentation**, which occurs mainly in the small intestine, consists of localized contractions of circular muscle of the muscularis layer of the alimentary canal. These contractions isolate small sections of the intestine, moving their contents back and forth while continuously subdividing, breaking up, and mixing the contents. By moving food back and forth in the intestinal lumen, segmentation mixes food with digestive juices and facilitates absorption.

In **chemical digestion**, starting in the mouth, digestive secretions break down complex food molecules into their chemical building blocks (for example, proteins into separate amino acids). These secretions vary in composition, but typically contain water, various enzymes, acids, and salts. The process is completed in the small intestine.

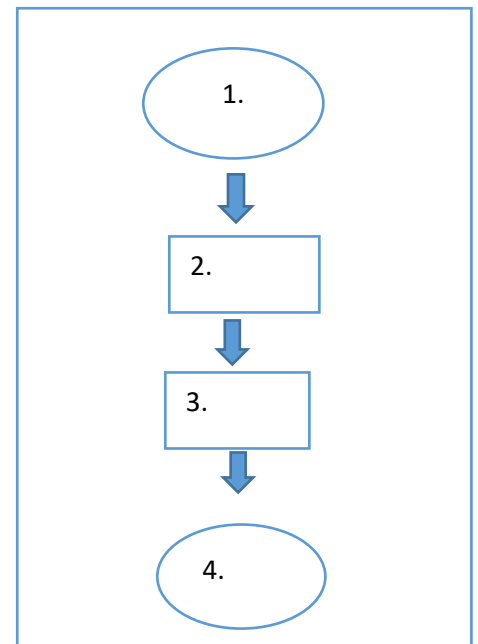
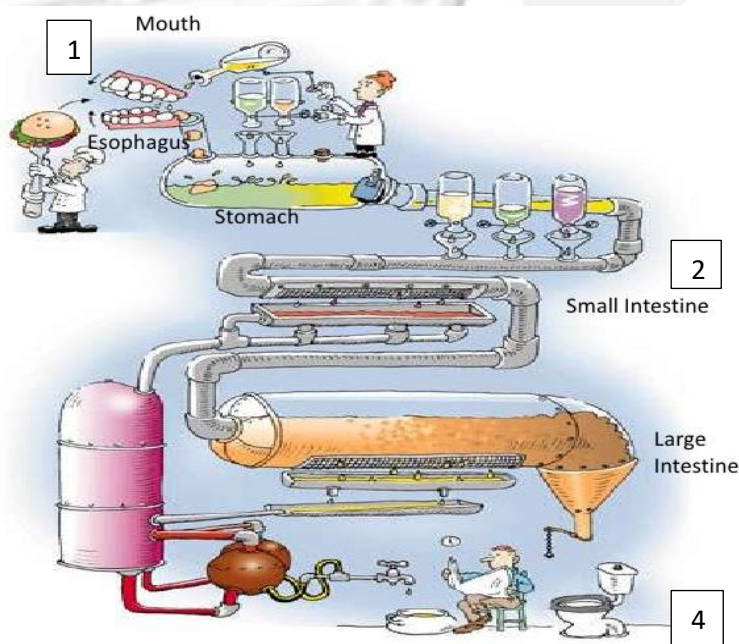
Food that has been broken down is of no value to the body unless it enters the bloodstream and its nutrients are put to work. This occurs through the process of **absorption**, which takes place primarily within the small intestine. There, most nutrients are absorbed from the lumen of the alimentary canal into the bloodstream through the epithelial cells that make up the mucosa. Lipids are absorbed into lacteals and are transported via the lymphatic vessels to the bloodstream (the subclavian veins near the heart). **Assimilation** or transport and used absorbed food by body cells. In **defecation**, the final step in digestion, undigested materials are removed from the body as feces.

## Learning Task 1

### Part 1A. Digestive Process Flowchart

Procedure:

1. Look at the given illustration.
2. Write the process of digestion using the Digestive
3. Answer the given guide questions



<https://www.slideshare.net/ismscience/digestive-system-flow-chart>

## IV. LEARNING PHASES AND LEARNING ACTIVITIES

### Questions:

1. What are the four main process of digestion?
2. What does the symbol  on the board game represent?
3. What do the directions of the arrows tell you about the process flow of digestion?

E. Engagement (Time Frame: DAY 2 )

### Learning Task 2

#### A Sweet Break!

#### Procedure:

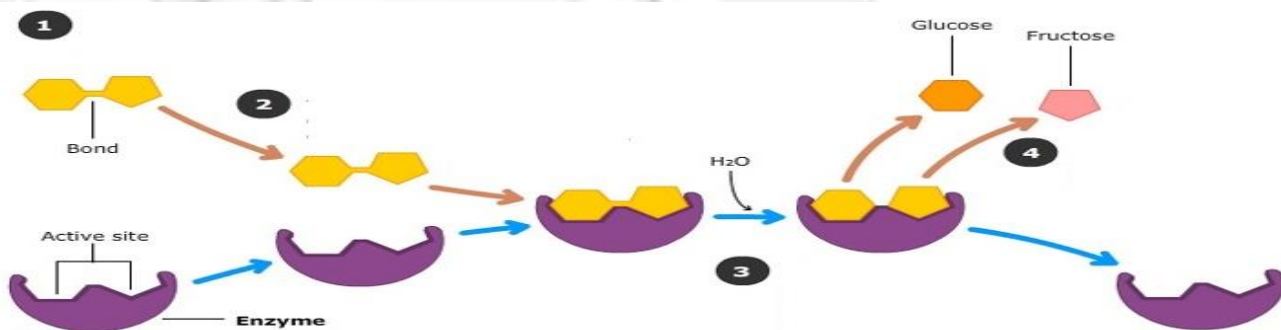
1. Fill the two glasses with warm water. Make sure that the amount of water placed in each glass is about the same. Label the glasses A and B.
2. Prepare two pieces of candies. Wrap a piece of candy in a paper towel and crush it using a mortar and pestle or any hard object like a piece of wood.
3. Place one piece of candy into the glass of warm water labeled A and place the crushed pieces of candy in the remaining glass of warm water labeled B.
4. Observe how long it takes for the whole candy in Glass A and the crushed pieces of candy in Glass B to dissolve.
5. Record your observation.

### Questions:

1. How does crushing the candy to smaller pieces affect its dissolution?
2. What does crushing the candy represent in the process of digestion?

### Learning Task 3

#### How do enzymes affect digestion?



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<https://www.sciencelearn.org.nz/resources/1840-digestive-enzymes>

#### Procedure:

1. Using colored papers, draw and cut the given shapes as illustrated above.
2. Follow the sequence and simulate the mechanism of digestive enzymes (Optional: You can take pictures or videos while doing the activity)

Food undergoes physical and chemical change as it moves from one part of the gastrointestinal tract to the other. Digestion makes the nutrients found in food available to the different parts of the body for the organism's nourishment and overall wellness. In Learning Task 2, an enzyme called bromelain which is present in fresh pineapple juice and in bromeliad plants is used to demonstrate digestion of proteins.

### Questions:

1. What will happen if the shapes do not match?
2. There are other kinds of enzymes in your digestive system. How do these enzymes affect digestion?



### IV. LEARNING PHASES AND LEARNING ACTIVITIES

A. Assimilation (Time Frame: DAY 3)

#### Learning Task 4

#### A journey into the digestive system The Human Digestive System

Use the words to fill in the blanks

stomach	chewed	food	energy	rectum	liver	mouth
small intestine	waste	saliva	large intestine	digestion	system	swallow
tongue	pharynx	acid	absorbed	liquids	esophagus	

All animals need to eat \_\_\_\_\_ to get \_\_\_\_\_ to live. But in order to use this food, they have to break it down in a process called \_\_\_\_\_. And so, all animals have a group of connected organs called the digestive \_\_\_\_\_. In humans the process of digestion begins in the \_\_\_\_\_ where food is \_\_\_\_\_ into small pieces by the teeth. The \_\_\_\_\_ helps by moving these pieces around. These pieces are covered by \_\_\_\_\_ or spit. The saliva makes the food slippery so that it is easier to \_\_\_\_\_. It also helps to break down the food. Once the food is swallowed, it passes through the \_\_\_\_\_, which is like a gate that sends food into the \_\_\_\_\_ and air into the lungs. The food travels down the esophagus and into the \_\_\_\_\_. Once the food is mixed with \_\_\_\_\_ and crushed some more. After spending some time in the stomach, the food is sent into the \_\_\_\_\_ where nutrients are \_\_\_\_\_. The \_\_\_\_\_ helps by producing some digestive juices called bile. Next, the remaining food goes into the \_\_\_\_\_ where the \_\_\_\_\_ are absorbed. The remaining food is called \_\_\_\_\_ and it is pushed into the \_\_\_\_\_ where it wait's before leaving the body.

2006 [www.bogglesworldesl.com](http://www.bogglesworldesl.com)

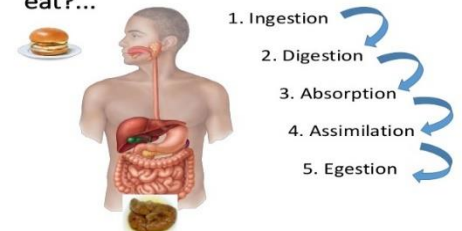
### V. ASSESSMENT (Time Frame: DAY 4)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

#### Learning Task 5

Briefly explain the digestive process flow such as ingestion, absorption, assimilation and excretion?

What happens to the food that we eat?...



<https://www.slideshare.net/chenghong03/nutrition-in-humans>

### VI. REFLECTION (Time Frame: \_\_\_\_\_)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

#### 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:

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### VII. REFERENCES

<https://www.slideshare.net/ismscience/digestive-system-flow-chart>  
<https://www.sciencelearn.org.nz/resources/1840-digestive-enzymes>  
 2006 [www.bogglesworldesl.com](http://www.bogglesworldesl.com)  
<https://www.slideshare.net/chenghong03/nutrition-in-humans>

Prepared by:

FELINA S. GAMBOA

Checked by:

ROLDAN SAYOTO  
SHEILAH MAY M. VILLAMOR

<b>W2</b>	<b>Learning Area</b>	SCIENCE	<b>Grade Level</b>	GRADE 8
	<b>Quarter</b>	FOUR	<b>Date</b>	4 DAYS

<b>I. LESSON TITLE</b>	STAGES OF MITOSIS AND MEIOSIS
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	1. Compare mitosis and meiosis, and their role in the cell-division cycle. S8LT-IVd16 2. Explain the significance of meiosis in maintaining the chromosome number. S8LT-IVd17
<b>III. CONTENT/CORE CONTENT</b>	Heredity: Inheritance and Variation of Traits

#### IV. LEARNING PHASES AND LEARNING ACTIVITIES

##### I. Introduction (Time Frame: DAY 1)

How much did you weigh when you were born? How long were you? Your body needed millions of new cells to become as large as you are now!

It's very likely that each time you go to the doctor, a nurse measures your height and weight. This activity gives the medical profession an idea of how people grow. Much of the growth happens because the number of cells in your body increases as you develop.

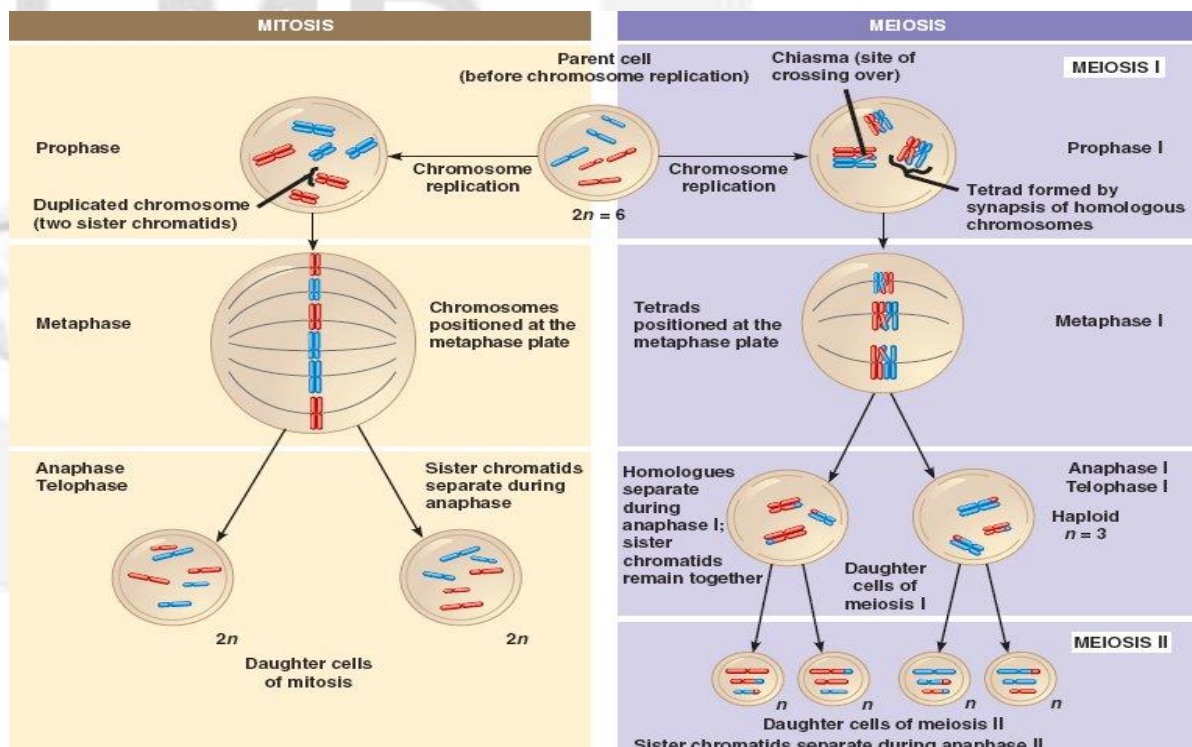
Most of the kinds of cells in your body are constantly replacing themselves. Bone cells make new bone cells. Muscle cells make new muscle cells. The fact is that you are constantly changing. You aren't the same now as you were a year ago or even a few hours ago.

At this very moment, as you read this module, groups of cells throughout your body are growing, dividing, and dying. Worn out cells on the palms of your hands are being replaced. Cuts and bruises are healing. Other organisms undergo similar processes.

##### How does this happen?

There are two ways by which cells increase in number:

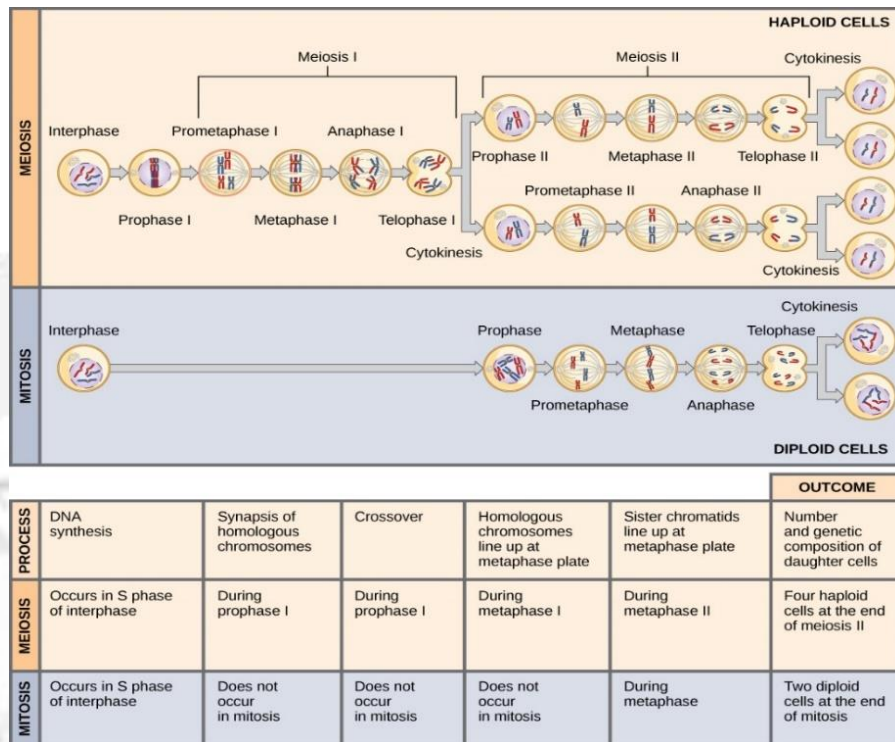
- **Mitosis** – is the process in which a cell nucleus divides into two new nuclei, each of which contains the same number of chromosomes as the parent cell. The parent cell is the cell that undergoes division. This process occurs on the body (somatic) cells.
- **Meiosis** – is a process where a single cell divides twice to produce four cells containing half the original amount of genetic information. These cells are our sex cells – sperm in males, eggs in females.



### IV. LEARNING PHASES AND LEARNING ACTIVITIES

D. Development (Time Frame: DAY 2)

#### Comparing Meiosis and Mitosis



<https://cnx.org/contents/1Q8z96mT@4/Me>

**Learning Task 1** Compare and contrast mitosis and meiosis by filling up the table below. Answer this on a separate sheet of paper.

COMPARISON	MITOSIS	MEIOSIS
Purpose		
Number of parent cells		
Number of divisions		
Number of cells produced		
Chromosome sets (=n)		
Type of cells that undergo cell division		



## IV. LEARNING PHASES AND LEARNING ACTIVITIES

E. Engagement (Time Frame: DAY 3)

**Learning Task 2 CRITICAL WRITING**

Read these passages from the text and answer the questions that follow. Write your answers on a separate sheet of paper.

**Meiosis**

The process that produces haploid gametes is meiosis. Meiosis is a type of cell division in which the number of chromosomes is reduced by half. It occurs only in certain special cells of the organisms. During meiosis, homologous chromosomes separate, and the haploid cells that form have only one chromosome from each pair. Two cell divisions occur during meiosis, and a total of four haploid cells are produced. The two cell divisions are called meiosis I and meiosis II.

**Phases of Meiosis**

Meiosis I begins after DNA replicates during interphase. In both meiosis I and meiosis II, cells go through the same four phases as mitosis. However, there are important differences between meiosis I and mitosis.

**Meiosis I**

1. **Prophase I:** The nuclear envelope begins to break down, and the chromosomes condense. Centrioles start moving to opposite poles of the cell, and a spindle begins to form. Importantly, homologous chromosomes pair up, which is unique to prophase I. In prophase of mitosis and meiosis II, homologous chromosomes do not form pairs in this way.
2. **Metaphase I:** Spindle fibers attach to the paired homologous chromosomes. The paired chromosomes line up along the equator of the cell. This occurs only in metaphase I. In metaphase of mitosis and meiosis II, it is sister chromatids that line up along the equator of the cell.
3. **Anaphase I:** Spindle fibers shorten, and the chromosomes of each homologous pair start to separate from each other. One chromosome of each pair moves toward one pole of the cell, and the other chromosome moves toward the opposite pole.
4. **Telophase I and Cytokinesis:** The spindle breaks down, and new nuclear membranes form. The cytoplasm of the cell divides, and two haploid daughter cells result. The daughter cells each have a random assortment of chromosomes, with one from each homologous pair. Both daughter cells go on to meiosis II.

**Meiosis II**

1. **Prophase II:** The nuclear envelope breaks down and the spindle begins to form in each haploid daughter cell from meiosis I. The centrioles also start to separate.
2. **Metaphase II:** Spindle fibers line up the sister chromatids of each chromosome along the equator of the cell.
3. **Anaphase II:** Sister chromatids separate and move to opposite poles.
4. **Telophase II and Cytokinesis:** The spindle breaks down, and new nuclear membranes form. The cytoplasm of each cell divides, and four haploid cells result. Each cell has a unique combination of chromosomes.

**Questions**

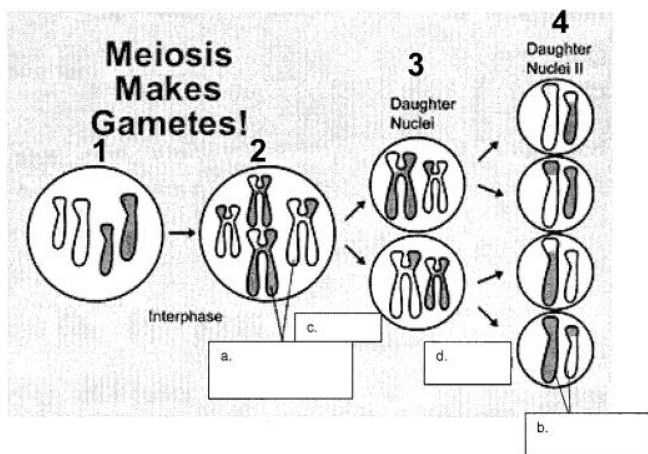
1. Define meiosis.
2. Is the DNA replicated after meiosis I? Why or why not?
3. Describe the main difference between metaphase I and metaphase II.
4. State the phase where each of the following processes occurs: (a) sister chromatids separate, (b) homologous chromosomes form pairs, (c) two haploid cells form.
5. What is final product of meiosis?

### IV. LEARNING PHASES AND LEARNING ACTIVITIES

A. Assimilation (Time Frame: DAY 4)

#### Learning Task 3

Fill in the boxes below with the following words: **meiosis I**, **meiosis II**, **sister chromatids**, **homologous chromosomes**.



<https://www.chegg.com/homework-help/questions-and-answers/fill-boxes-following-words-meiosis-meiosis-ii-sister-chromatids-homologous-chromosomes-des-q21980991>

### VI. REFLECTION (Time Frame: DAY 4)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

#### Personal Assessment on Learner's Level of Performance

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### VII. REFERENCES

Prepared by:

HAZEL P. FRONDA

Checked by:

ROLDAN C. SAYOTO  
SHEILAH MAY M. VILLAMOR



<b>W3</b>	<b>Learning Area</b>	SCIENCE	<b>Grade Level</b>	GRADE 8
	<b>Quarter</b>	FOUR	<b>Date</b>	4 DAYS

<b>I. LESSON TITLE</b>	MENDELIAN GENETICS
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Predict phenotypic expressions of traits following simple patterns of inheritance
<b>III. CONTENT/CORE CONTENT</b>	HEREDITY: INHERITANCE AND VARIATION OF TRAITS

#### IV. LEARNING PHASES AND LEARNING ACTIVITIES

##### I. Introduction (Time Frame: DAY 1)

How is the behavior of the chromosomes during meiosis related to heredity? In order to answer this question, we must first look back at the experiments of Gregor Mendel. The results of his garden experiments laid down the foundations of Modern Genetics.

##### Mendel and His Peas

For thousands of years, farmers and herders have been selectively breeding their plants and animals to produce more useful hybrids. It was somewhat of a hit or miss process since the actual mechanisms governing inheritance were unknown. Knowledge of these genetic mechanisms finally came as a result of careful laboratory breeding experiments carried out over the last century and a half.

By the 1890's, the invention of better microscopes allowed biologists to discover the basic facts of cell division and sexual reproduction. The focus of genetics research then shifted to understanding what really happens in the transmission of hereditary traits from parents to children. A number of hypotheses were suggested to explain heredity, but Gregor Mendel, a little known Central European monk, was the only one who got it more or less right. His ideas had been published in 1866 but largely went unrecognized until 1900, which was long after his death. His early adult life was spent in relative obscurity doing basic genetics research and teaching high school mathematics, physics, and Greek in Brno (now in the Czech Republic). In his later years, he became the abbot of his monastery and put aside his scientific work.

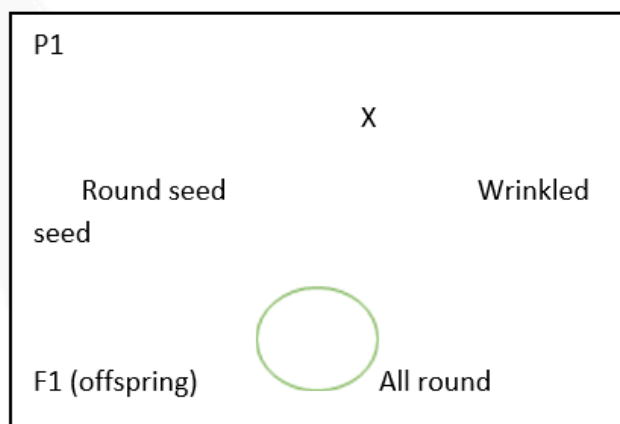
While Mendel's research was with plants, the basic underlying principles of heredity pronounced that he discovered also apply to people and other animals because the mechanisms of heredity are essentially the same for all complex life forms.

##### Mendel's Crosses

###### Monohybrid Cross

Monohybrid cross involves a cross using a single factor or character trait. How did Mendel execute this? Well, after producing a pure breeding stock, he started crossing or mating the pea plants. In our discussion we will use X to represent crossing or mating. The peas that he crossed had different expressions of a given trait like for example, round or wrinkled seeds, green and yellow pods, etc. He accomplished this by carefully cross pollinating the peas by covering the flowers to avoid accidental pollination from other peas.

At first, he used only one trait like the seed shape. So, he crossed a pure breed of round seeds with the pure wrinkled seeds. He did this several times and from each cross he got the same result.



Mendel's cross using pure-breed round and wrinkled seed

## IV. LEARNING PHASES AND LEARNING ACTIVITIES

The P1 in the cross stands for the first parents (the pure breeds). The F1 stands for the first filial generation or first offspring. Notice that all the offspring are peas with round seeds. These are also called as the hybrids because they are the result of a cross between two pure-breeding plants. They resemble one another and one of the parents. Mendel got similar results for all the seven pairs of traits he investigated.

### Dihybrid Crosses

Mendel did not only study the inheritance of one pair of factors or alleles. He also studied the inheritance of two pairs of alleles. The cross that involves two pairs of alleles is called dihybrid.

An easy way to do this cross is through the use of Punnett square. What is a Punnett square? It is a diagram named after Reginald C. Punnett, the man who devised it. The Punnett square can help you predict the outcome of a given cross with ease. It allows us to determine the possible combinations of genes in a given cross.

Definition of Terms:

1. **Allele**-a pair of factors that control the appearance of a particular trait.
2. **Dominant**- a trait that is always expressed whenever present.
3. **Recessive**-trait that is weak or unexpressed.
4. **Hybrid**-offspring of a mixed trait.
5. **Genotype**-the genetic composition of a trait.
6. **Phenotype** -the physical appearance or feature of a trait.
7. **Homozygous**-having identical alleles for a single trait. (RR;rr)
8. **Heterozygous**- having different alleles for a single trait (Rr)
9. **P<sub>1</sub>**- first parental generation.
10. **F<sub>1</sub>** – first filial generation.

D. Development (Time Frame: DAY 1)

### Learning Task 1 Monohybrid Crosses

Answer the following monohybrid crosses:

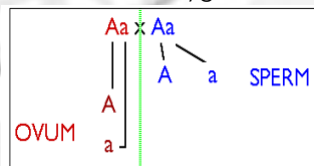
1. A plant can produce either a white flower or a purple flower, with the purple flower allele being dominant. If a heterozygous purple flower producing plant is matched with a white flower, what are the possible offspring?
2. Blue eyes are recessive in humans, while brown eyes are dominant. What is the probability that a child of a blue-eyed father and homozygous brown-eyed mother can have blue eyes?
3. Dimples in a child are a dominant trait. If a mother with no dimples had a child with a father who was heterozygous for dimples, what is the probability that the child would have dimples?

E. Engagement (Time Frame: DAY 2)

### A Simplified Punnett Square

The basic step for a cross between two heterozygous axial flowers will be: Aa X Aa

1. Next, figure out the possible gamete genotype, and try to separate the alleles, just like in the diagram below.



2. Place the possible gamete genotypes on the outside of a square.

	A	a
A		
a		

3. Simulate fertilization by moving the gametes into each of the internal boxes (which simulate possible offspring); interpret.

	A	a
A	AA	Aa
a	Aa	aa

## IV. LEARNING PHASES AND LEARNING ACTIVITIES

### Learning Task # 2. Punnett Square

a. Given the cross  $AaBb \times AaBb$ , construct a Punnett square and determine the genotypic ratio (the probability that a particular genotype will occur) of the resulting cross


b. Given this cross,  $TtGg \times TtGg$ , fill-up the squares with the correct answer.


A. Assimilation (Time Frame: DAY 3)

What I Have Learned?

- Monohybrid cross involves a cross using a single factor or character trait.
- Dihybrid cross involves a cross using two factors or character traits.

In Genetics, the two factors mentioned by Mendel are called alleles. These alleles could be dominant or recessive.

- Alleles can be represented by paired letters and referred to as the individual genotype.
- The genotype refers to the genetic composition of the person.
- The phenotype is the physical appearance or feature of the person.

Identical alleles are called homozygous while dissimilar alleles are called heterozygous.

- The Law of Segregation states that during gamete formation, the pair of factors segregate or separate from each other.
- The Law of Recombination states that during fertilization, the genes come together again to form new combinations.

The Punnett Square is a diagram that allows us to determine the possible combinations of genes in a given cross.

V. ASSESSMENT (Time Frame: DAY 4)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

Solve the following crosses. Show your solutions by writing it on a sheet of paper.

1. When a plant homozygous for tall is crossed with a plant homozygous for dwarf, what will be the appearance of the offspring of a cross of F1 with its dwarf parent?
2. In summer squash, white fruit color (W) is dominant over yellow fruit color (w) and disk-shaped fruit (D) is dominant over sphere-shaped fruit (d). If a squash plant true-breeding for white, disk-shaped fruit is crossed with a plant true-breeding for yellow, sphere-shaped fruit, what will the phenotypic and genotypic ratios be?
3. In Mendel's experiments, if the gene for tall (T) plants was incompletely dominant over the gene for short (t) plants, what would be the result of crossing two Tt plants?



### IV. LEARNING PHASES AND LEARNING ACTIVITIES

#### VI. REFLECTION (Time Frame: DAY 4)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

#### Personal Assessment on Learner's Level of Performance

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HAZEL P. FRONDA

Checked by:

ROLDAN C. SAYOTO  
SHEILAH MAY M. VILLAMOR

<b>W4</b>	<b>Learning Area</b>	SCIENCE	<b>Grade Level</b>	GRADE 8
	<b>Quarter</b>	FOUR	<b>Date</b>	4 Days

<b>I. LESSON TITLE</b>	BIODIVERSITY
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Explain the concept of a species. Classify organisms using the hierarchical taxonomic system.
<b>III. CONTENT/CORE CONTENT</b>	<b>LIVING THINGS AND THEIR ENVIRONMENT</b>

#### IV. LEARNING PHASES AND LEARNING ACTIVITIES

##### I. Introduction (Time Frame: DAY 1)

From your Grades 3 to 7 you have studied some of the different organisms and their easily observable characteristics. You learned about those organisms that you find just around you and other places in the country.

This packet will introduce you to the concept of **Biodiversity**, specifically the variety of organisms living on Earth. This will discuss how are they classified and named. It will also show the similarities and differences of these organisms. It will describe the different groups to which these organisms belong.

Biodiversity is coined from the words, biological diversity. Usually, scientists would refer to three levels of biodiversity namely: **Species diversity** (different kinds of organisms), **genetic diversity** (genetic information that organisms contain) and **ecosystem diversity** (different kinds of places where organisms live and the interconnections that bind these organisms together.)

If there are a lot more of the organisms in the world that you can count, how will you be able to know about them? Do organisms have to be classified? Why?

##### Learning Tasks 1: WORD SEARCH PUZZLE

**Direction:** Find and circle the vocabulary words in the grid. Look for them in all directions, including backwards and diagonally.

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

Taxonomy  
Domain  
Plants  
Species  
Nomenclature  
Genus  
Common name  
Animals  
Order  
Fungi  
Reptiles  
Linnaeus  
Latin  
Mammalia  
Aves  
Family  
Chordate  
Phylum  
Structural

##### D. Development (Time Frame:         )

##### The Levels of Classification

Taxonomy (which literally means "arrangement law") is the science of classifying organisms to construct internationally-shared classification systems with each organism placed into more and more inclusive groupings. Think about how a grocery store is organized. One large space is divided into departments, such as produce, dairy, and meats. Then each department further divides into aisles, then each aisle into categories and brands, and then, finally, a single product. This organization from larger to smaller, more-specific categories is called a hierarchical system.

## IV. LEARNING PHASES AND LEARNING ACTIVITIES

### Taxonomy and Carolus Linnaeus

**Taxonomy** is the part of science that focuses on naming and classifying or grouping organisms. A Swedish naturalist named **Carolus Linnaeus** is considered the 'Father of Taxonomy' because, in the 1700s, he developed a way to name and organize species that we still use today. His two most important contributions to taxonomy were:

1. A hierarchical classification system
2. The system of **binomial nomenclature** (a 2-part naming method)

The modern taxonomic classification system has eight main levels (from most inclusive to most exclusive): **Domain**, Kingdom, Phylum, Class, Order, Family, Genus, Species Identifier



By using scientific names, confusion among scientists is avoided which can happen if common names are used. Because common names of organisms vary according to the language spoken in each country, scientific names allow the use of universal names which helps scientists clarify the particular organism they are referring to. Scientific names also provide the identity of organisms and indicate their true nature.

### E. Engagement (Time Frame: DAY 2)

#### Learning Tasks 2. Classify ME!

Directions: Below are lists of organisms that inhabit our planet. Classify the following based on their physical characteristics. Write them in the proper column in the table. Tell what Kingdom they belong.

Cattle	Jellyfish	Bacilli	Moss Plant	Mushroom	Frog	Bacteria
Duhat	Coconut	Gumamela	Narra	Crocodile	Protozoan	Fern
Algae	Moss	Coral	Yeast			

Plant	Animal	Protists	Fungi	Bacteria
Kingdom	Kingdom	Kingdom	Kingdom	Kingdom

#### Learning Tasks 3. Can you classify the type of plant I Am?

Direction: Classify the given list of plants below and write it in the proper column to which it belong.

Okra	Fern	Bougainvillea	Raddish
Garlic	Potato	Mango	Eggplant
Ginger	Grass	Carrot	
Gymnosperms	Sunflower	Onion	



### IV. LEARNING PHASES AND LEARNING ACTIVITIES

Plants		
Flowering		Non - Flowering
Reproduced by seeds	Reproduced by reproductive parts	Reproduced by spores

A. Assimilation (Time Frame: DAY 3)

#### Learning Tasks 4. Similarities and Differences of Vascular and Non-Vascular Plants

Using a Venn Diagram: Compare and contrast the characteristics of a vascular and non-vascular plants. Using the Venn diagram, write the correct characteristics in the given set words or phrases below.

Has Roots	Fern Plant	Moss Plant	Has chlorophyll	No Roots	No stems	Has xylem
Has phloem	No leaves	Has leaves	Has stems	Make food for self	Large in size	Small in size

#### Learning Tasks 5. Classify the following animals under its correct group.

Duck	Ant	Lizard	Salmon Shark	Dog	Giraffe	Butterfly
Snake	Alligator	Mosquito	Milkfish(Bangus)	Cat	Chicken	

MAMMAL	REPTILE	BIRDS	FISH	INSECT

#### Questions:

- 1.What are mammals?
- 2.Why are reptiles known as cold-blooded animals?
3. How does a reptile differ from an amphibian?
4. Is shark a fish or a mammal? Why?
5. What is the most distinguishing characteristics of mammal?

#### V. ASSESSMENT (Time Frame: DAY 4)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

#### The Six Kingdom Classification System

The studies made by Carl Woese led to the emergence of the six - kingdom classification scheme. Today, scientists are increasingly using the three - domain system and the six - kingdom classification system.

#### Learning Tasks 6. WORD UP

Direction: Use the given clues to form the correct word(s) in each number. Then identify a famous scientist by arranging and writing the shaded letter in the boxes below.

1. Two – part system of naming organisms using the generic and the specific name

B				M			L
---	--	--	--	---	--	--	---

	O				C				U	
--	---	--	--	--	---	--	--	--	---	--

### IV. LEARNING PHASES AND LEARNING ACTIVITIES

2. Science of classifying and naming organisms.

A       O  M

3. Method of grouping organisms based on their similarities.

S      A  T    N

4. Scientific study of the diversity of organisms and their evolutionary relationships.

S     T    A

5. Kingdom of organisms which are heterotrophic and have chitin cell walls.

I

Identify the famous scientist by arranging and writing the letters in the shaded boxes above.

Famous Scientist:

### VI. REFLECTION (Time Frame: DAY 4)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

#### 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.

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

### VII. REFERENCES

Prepared by:

NOVA S. CATIPON

Checked by:

ROLDAN SAYOTO  
SHEILAH MAY M. VILLAMOR

<b>W5</b>	<b>Learning Area</b>	SCIENCE	<b>Grade Level</b>	GRADE 8
	<b>Quarter</b>	FOUR	<b>Date</b>	4 DAYS

<b>I. LESSON TITLE</b>	BIODIVERSITY
<b>II. MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)</b>	Explain the advantage of high biodiversity in maintaining the stability of an ecosystem Describe the transfer of energy through the trophic levels
<b>III. CONTENT/CORE CONTENT</b>	LIVING THINGS AND THEIR ENVIRONMENT

#### IV. LEARNING PHASES AND LEARNING ACTIVITIES

##### I. Introduction (Time Frame: DAY 1)

Biodiversity may be defined as the totality of different organisms, the genes they contain, and the ecosystems they form. It refers to the number of biological species that exist in a given region. High biodiversity means that a region supports a wide variety of species, while low biodiversity implies that an area supports only a few. The reasons for variances in biodiversity are complex, but they include both natural and man-made causes.

The flow of energy is the most important factor that controls what kinds of organisms live in an ecosystem. In this packet, you will learn the importance of high biodiversity in maintaining the stability of ecosystem and how organisms obtain energy and how energy become transferred from one organism to another.

#### Learning Tasks 1: WORD UP!

**Procedure:** Identify the word(s) being described. Choose from the words given in the box.

Food chain	Energy pyramid	Food Web	Ecosystem	Producers
Carnivores	Decomposers	Low diversity	High biodiversity	Trophic level

- \_\_\_\_\_ 1. Feeding relationship that exists among organisms.
- \_\_\_\_\_ 2. Refers to each step in the transfer of energy and matter in a community
- \_\_\_\_\_ 3. A community or group of living organisms that live in and interact with each other in a specific environment.
- \_\_\_\_\_ 4. A diagram that compares the energy used by producers, primary consumers, and other trophic levels.
- \_\_\_\_\_ 5. Has high number of species living in an ecosystem.
- \_\_\_\_\_ 6. When there are a few prominent species and a low number of other species within the habitat.
- \_\_\_\_\_ 7. Organisms that feed on and break down organic matter.
- \_\_\_\_\_ 8. Organisms that can make their own food in the ecosystem.
- \_\_\_\_\_ 9. Animals that feed on flesh.
- \_\_\_\_\_ 10. A system of interlocking and interdependent food chains.

##### D. Development (Time Frame: DAY 1)

When an ecosystem has a high number of species present it means that it has a **high biodiversity**. The high number of species ensures the stability of an ecosystem because it has a better chance of coping with environmental stressors such as floods, droughts, and diseases. The variety of species means that when there is a decrease in the population of one species, other species can compensate for their loss, thus minimizing the effects on the environment.

#### Learning Tasks 2. What is the Importance of Biodiversity to Ecosystem?

**Procedure:** Compare and Contrast the pictures of the ecosystem below



"Banana Plantation" by [melalouise](#) is licensed under [CC BY 2.0](#)

"Coral Reef (Community)" by [The Open University \(OU\)](#) is licensed under [CC BY-NC-ND 2.0](#)



## IV. LEARNING PHASES AND LEARNING ACTIVITIES

### Guide Questions:

1. What type of ecosystem is in the picture?
2. Which ecosystem/s have high biodiversity? Low biodiversity?
3. What makes an ecosystem with high biodiversity, low biodiversity?
4. Why is high biodiversity advantageous over low biodiversity?
5. What are the biotic components present in high biodiversity? Low biodiversity?
6. What is advantage of high biodiversity in maintaining the stability of the ecosystem?
7. What is the importance of biodiversity to ecosystem?

### E. Engagement (Time Frame: DAY 2)

A **food chain** shows the sequence of how energy is transferred from one organism to another. Organisms in a food chain observe a feeding position called **trophic level**. Trophic level is a step in nutritive series of an ecosystem. The organisms at each level are classified into based on their feeding behavior. The amount of energy at each trophic level decreases as it moves through an ecosystem.

**Learning Tasks 3.** Given the lists of living and non-living things below construct/complete the food chain in its proper series of eating and being eaten relationship.

Sun    Shrew    Owl    Grasshopper    Grass

Energy	Producer	Primary	Secondary	Tertiary
		Consumer	Consumer	Consumer



Sun → \_\_\_\_\_ ⇒ \_\_\_\_\_ ⇒ Shrew ⇒ \_\_\_\_\_

### Questions:

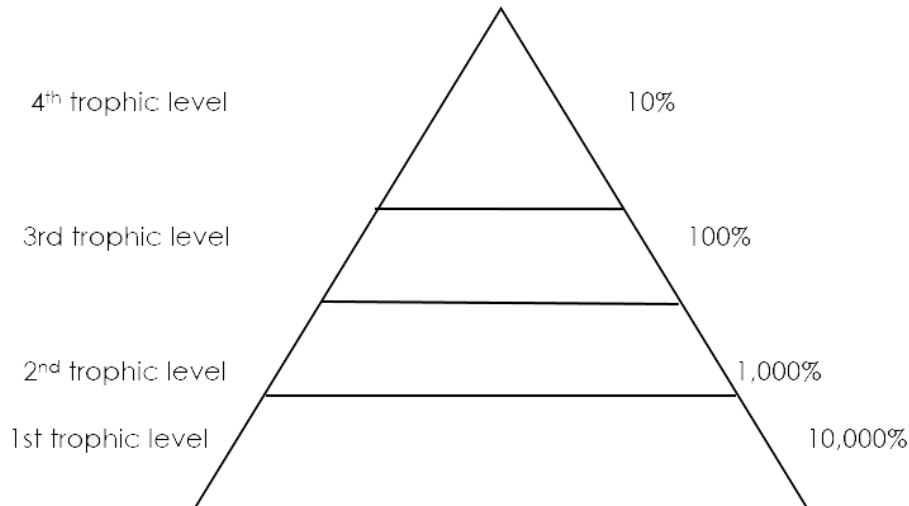
1. Which organism in the food chain can manufacture their own food?
2. Which consumer feeds directly on plant?
3. Which consumer receives the greatest amount of energy?
4. Why are secondary consumers called as carnivores?
5. Which organism receives the least amount of energy and why?

### A. Assimilation (Time Frame: DAY 2)

### Learning Tasks 4. Build Me Up, an Energy Pyramid!

**Procedure:** Use the following lists of organisms in building up an energy pyramid and place them in their proper trophic level. Explain the flow of energy in each trophic level in the ecosystem.

Carrot	trees	snake
Eagle	grass	rabbit



**Questions:**

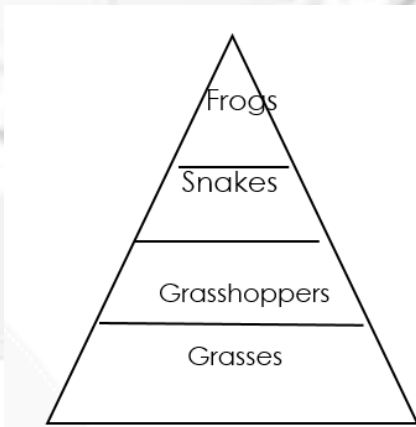
1. What do you observe with the flow of energy in the pyramid?
2. Which level has the most energy?
3. Which level has the least energy?
4. What is an energy pyramid?
5. How will you explain the transfer of energy from one trophic level to another?

The diversity of plants and animals ensures a steady supply of food that can be consumed by other organisms in a food chain. Imagine if all organisms depend only on one organism for food and this organism becomes extinct. All organisms that depend on it will not be able to survive. The diversity of organisms also plays an important part in the reproduction of many plants. The high biodiversity of organisms provides many different benefits. Thus, maintaining this very essential to ensure security of future generations.

The energy pyramid indicates the total amount of energy present in each trophic level. It also shows the loss of energy from one trophic level to the next. An energy pyramid shows clearly that the energy transfer from one trophic level to the next is accompanied by a decrease due to waste and the conversion of potential energy into kinetic energy and heat energy.

**Learning Tasks 5.** Write the letter of the correct answer on the blank.

\_\_\_\_\_ 1. Which of the given organisms in the energy pyramid are misplaced?



- |                             |                           |
|-----------------------------|---------------------------|
| a. Grasses and grasshoppers | c. frogs and grasshoppers |
| b. Grasshoppers and snake   | d. snakes and frogs       |

\_\_\_\_\_ 2. What will happen if the grasses are removed from an ecosystem?

- a. Herbivores will not be able to survive
- b. Less energy will become available for organisms at higher trophic levels.
- c. The primary consumers will increase in number.
- d. More energy will be stored in the tissues of consumers and other organisms.

### IV. LEARNING PHASES AND LEARNING ACTIVITIES

- \_\_\_\_\_ 3. How much energy is usually transferred from one trophic level to another?  
a. 10%      b. 20%      c. 50%      d. 100%
- \_\_\_\_\_ 4. Which of the following is **not** true about energy flow in the ecosystem?  
a. Only 10% of the energy is transferred to the next trophic level.  
b. The decomposers absorb majority of the energy in the ecosystem.  
c. The sun is the ultimate source of energy in the ecosystem.  
d. The energy in the ecosystem flows in a one-way direction.
- \_\_\_\_\_ 5. The organisms in the food chain that can make their own food.  
a. Producers      b. Consumers      c. Decomposers      d. Herbivores

### V. ASSESSMENT (Time Frame: DAY 3)

(Learning Activity Sheets for Enrichment, Remediation, or Assessment to be given on Weeks 3 and 6)

#### TRY IT OUT! High Biodiversity vs. Low Biodiversity

Analyze the following situation: Mang Juan owns a property of 4 hectares of land which are planted with trees and various plants. He plans to convert his land into a coconut plantation.

#### QUESTIONS:

1. Would you advise him to convert all his land into a coconut plantation? Why?
2. What suggestions will you give him to support biodiversity?

### VI. REFLECTION (Time Frame: DAY 4)

- Communicate your personal assessment as indicated in the Learner's Assessment Card.

#### Personal Assessment on Learner's Level of Performance

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