



PIVOT 4A

LEARNER'S MATERIAL

QUARTER 2
Science

G5



DepEd CALABARZON
Curriculum and Learning Management Division

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The Editors

PIVOT 4A Learner's Material
Quarter 2
First Edition, 2020

Science

Grade 5

Job S. Zape, Jr.
PIVOT 4A Instructional Design & Development Lead

Dennis B. Masangcay
Content Creator & Writer

Jhonathan S. Cadavido & Job S. Zape Jr.
Internal Reviewer & Editor

Ephraim L. Gibas & Sonny Bhoy Flores
Layout Artist & Illustrator

John Albert A. Rico & Melanie Mae N. Moreno
Graphic Artist & Cover Designer

Ephraim L. Gibas
IT & Logistics

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Assistant Regional Director: Ruth L. Fuentes

PIVOT 4A CALABARZON Science G5

Guide in Using PIVOT 4A Learner's Material

For the Parents/Guardians

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

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

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

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

For the Learners

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

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

- a. answer all activities on separate sheets of paper;
- b. accomplish the **PIVOT Assessment Card for Learners on page 38** by providing the appropriate symbols that correspond to your personal assessment of your performance; and
- c. submit the outputs to your respective teachers on the time and date agreed upon.

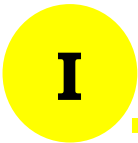
Parts of PIVOT 4A Learner's Material

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

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

Human Reproductive System

Lesson



This lesson will help you become aware of your role. It targets to describe the parts of the reproductive system and find out their functions. Having knowledge about the reproductive system will give you more sense of responsibility of taking care of yourself and grow according to the words of your parents and other members of the family. who take good care of you.

Opening Activity

Encircle the appropriate word and describe the role of your father and mother in the family.

Paste the picture of your mother (Draw a mother figure and paste it here.)

My mother is (male, female). She _____

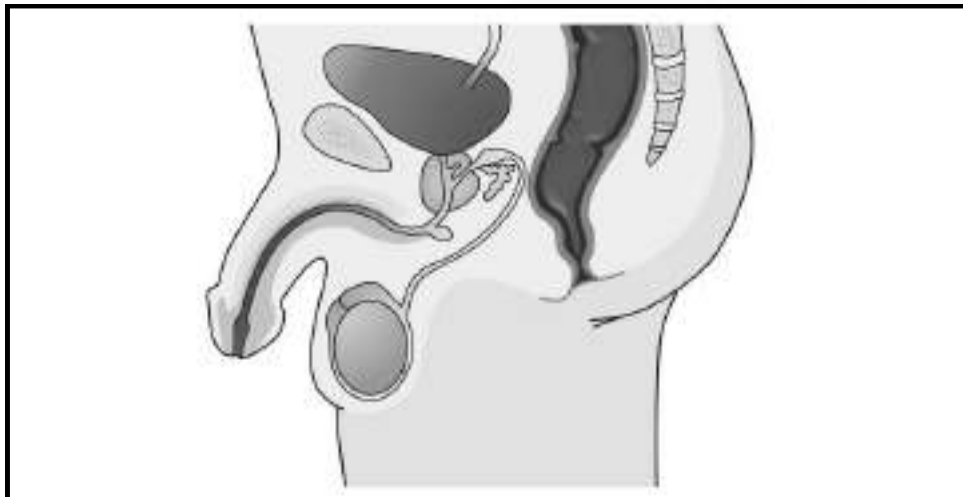
Paste the picture of your farther (Draw a mother figure and paste it here.)

My father is (male, female). He _____

D

Males and females have unique reproductive system to perform reproduction. **Reproduction** is a process in which organisms produce new organisms to avoid species extinction. In humans, **sexual reproduction** happens, meaning the process needs male and female parent. Therefore, it is important to study our reproductive system for us to be aware and responsible on how to take good care of it.

Learning Task 1: Study the two pictures below. Identify if it is a male or female reproductive system. Write your answer on a separate answer sheet.



1.



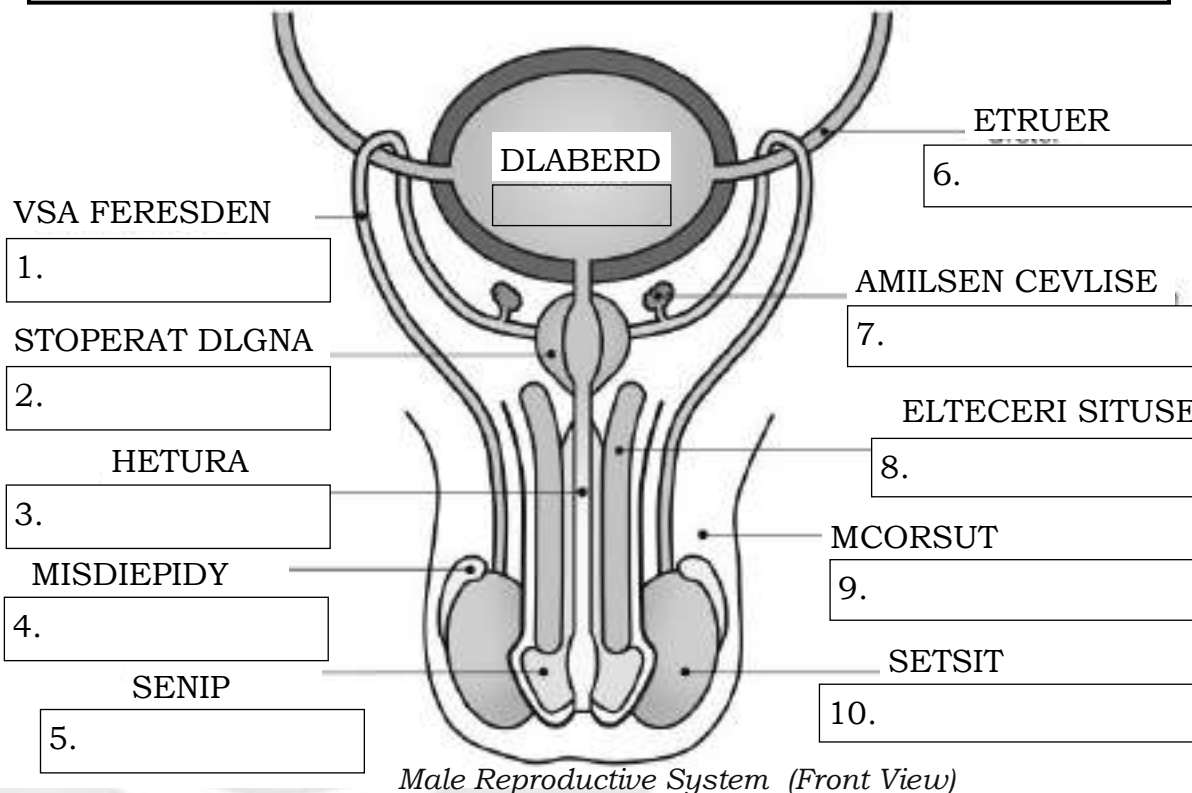
2.

What is the male reproductive organ? _____

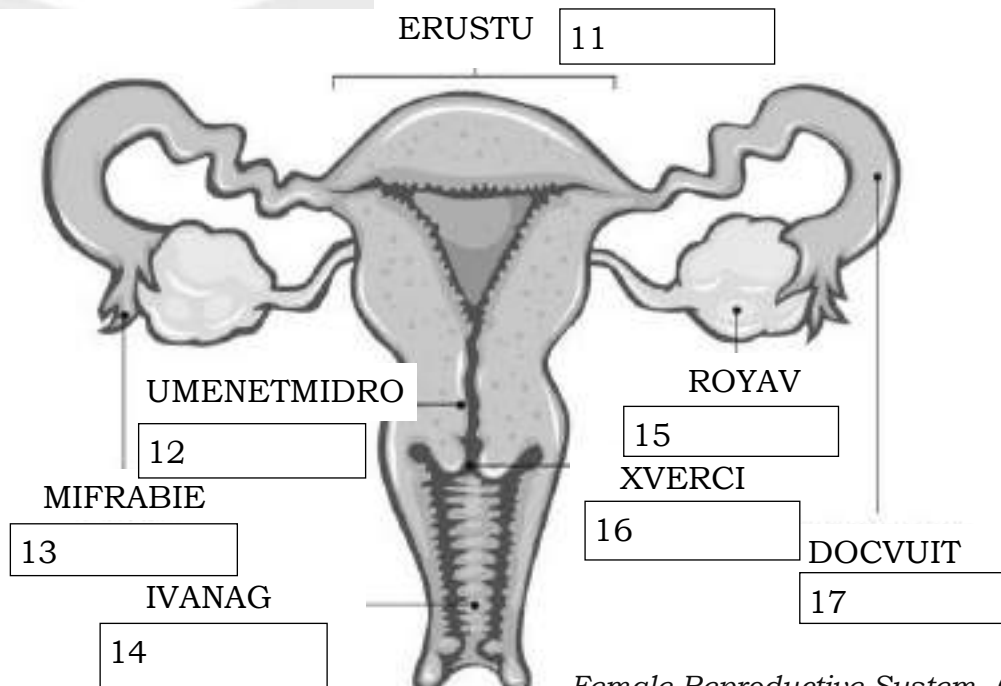
What about the primary reproductive organ in female? _____

Learning Task 2: Identify the parts of a male reproductive organ based on the jumbled letters. You can also choose the word from the box. Before choosing the word, encircle all the parts of male & female reproductive system.

<u>Urethra</u>	<u>uterus</u>	<u>Erectile Tissue</u>	<u>ovary</u>	<u>Vas Deferens</u>
<u>Epididymis</u>	<u>Endometrium</u>	<u>Ureter</u>	<u>Scrotum</u>	<u>uterus</u>
<u>Penis</u>	<u>cervix</u>	<u>Testis</u>	<u>oviduct</u>	<u>Seminal Vesicle</u>
	<u>vagina</u>	<u>Prostate Gland</u>	<u>fimbriae</u>	<u>bladder</u>



Male Reproductive System (Front View)

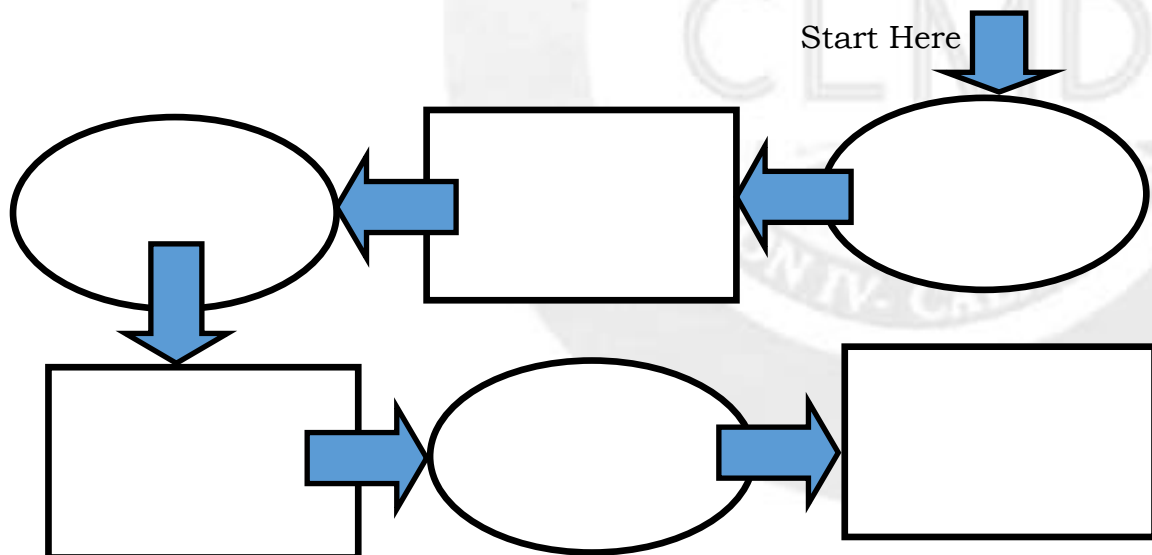


Female Reproductive System (Front View)

Parts of the Male Reproductive Organ

The male reproductive system is composed of different organs working together to perform reproduction. The **testis** (plural: testes) as the primary organ is tasked to make sperm cell that is used to reproduce new organism. **Epididymis** is the site for maturation of the sperm cell to develop swimming ability. The **vas deferens** is a long tube that connects the testis and the prostate gland for the pathway of the sperm during ejaculation. Ejaculation is the process of releasing sperm out of the system. **Seminal vesicle** is the organ responsible for the secretion of fluids containing fructose, mucus and prostaglandins. **Fructose** content nourishes the sperm to stay healthy. The **mucus** content is for cell protection while **prostaglandin** content triggers uterine contraction. **Prostate gland** is the reason of the smell of the semen which is due to **alkaline fluid** that neutralizes vaginal acids. **Urethra** is the part of the system that conducts semen (sperm with other fluids) to go outside the body through the penis. Penis has erectile tissues that are used during mating (sex).

Learning Task 3: Fill in the boxes of the flowchart with correct word showing how the semen is released from the male reproductive system.



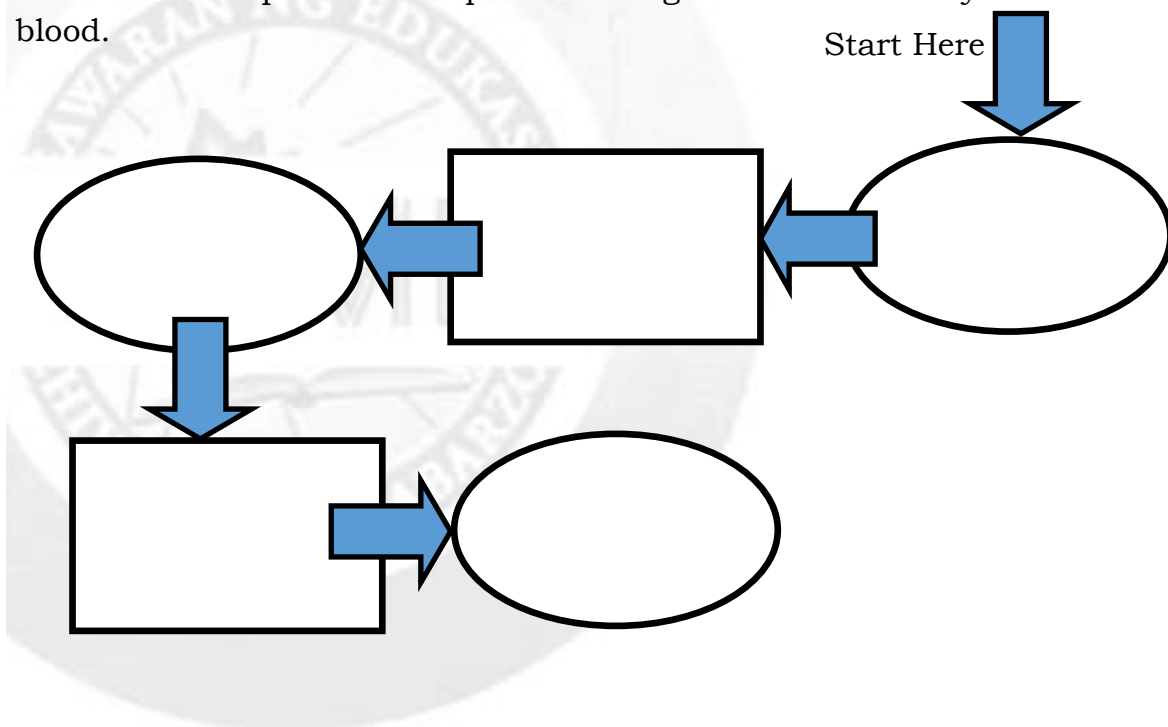
Based on what you have read, connect the words that are strongly related to each other through a line. Copy these words in your notebook.

- | | |
|--------------------|------------------|
| 1. Prostate Gland | • penis |
| 2. Testis | • sperm |
| 3. Seminal Vesicle | • tube |
| 4. Vas Deferens | • mucus |
| 5. Urethra | • Alkaline fluid |
| 6. Epididymis | • storage |

Parts of the Female Reproductive Organ

The female reproductive organ is primarily responsible for the production, maintenance, implantation and elimination of egg cells. The **ovary** is where the egg cells (oocytes) get matured and is released. **Fimbria** sweeps the matured eggs to the **fallopian tube** or oviduct. The egg goes to the **uterus** wherein eggs may be either fertilized in the presence of sperm cell or eliminated by means of menstruation. During implantation, the part called **endometrium**, a lining in the uterus thickens to do the process. **Vagina** is the passage going to the uterus. It is where penis is inserted and menstrual blood goes out.

Learning Task 4: Fill in the boxes of flow chart with correct word (part of the female reproductive system) showing how egg matures and being fertilized in the presence of sperm cell or goes out of the body in the form of blood.



Based on what you have read on parts of female reproductive system, connect the words that are strongly related by connecting them by a line.

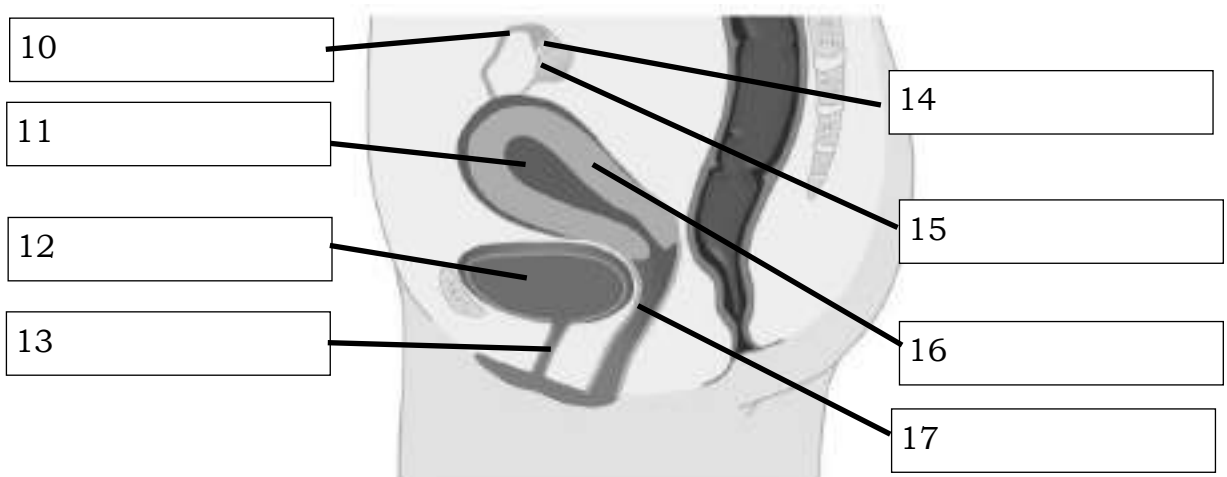
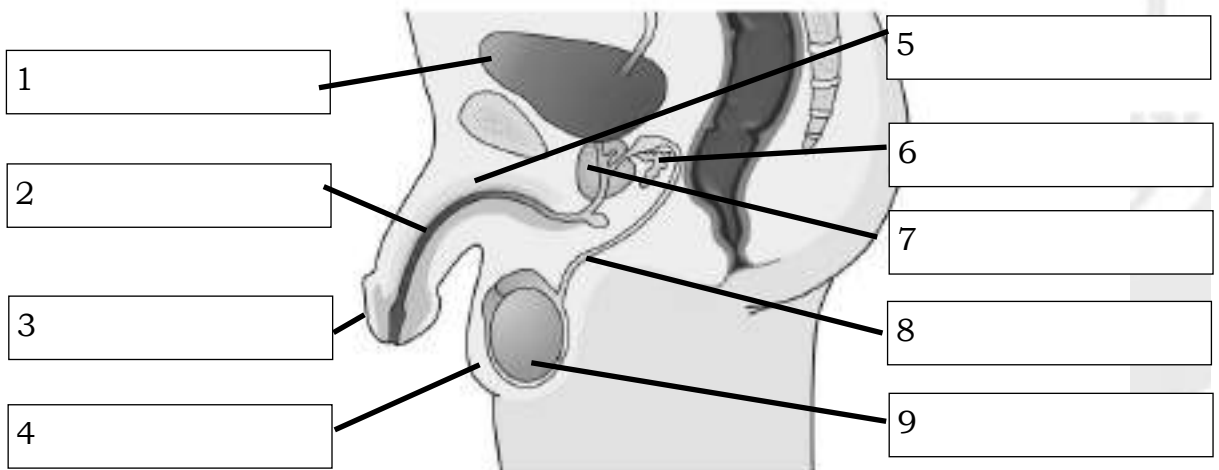
- | | |
|-------------------|-------------------------------|
| 1. Vagina | ☉ sweeping the eggs |
| 2. Uterus | ☉ path towards uterus |
| 3. Endometrium | ☉ lining for egg implantation |
| 4. Fimbria | ☉ penis insertion |
| 5. Fallopian Tube | ☉ egg development |

E

Learning Task 5: Write **MR** if the given word is a part of the male reproductive system. Otherwise, write **FR**. In case the part can be found in both system, write **BOTH**.

- _____ 1. Urethra _____ 2. Uterus _____ 3. Erectile Tissue _____ 4. Ovary
 _____ 5. Vas Deferens _____ 6. Epididymis _____ 7. Endometrium
 _____ 8. Ureter _____ 9. Scrotum _____ 10. Uterus _____ 11. Penis
 _____ 12. Cervix _____ 13. Testis _____ 14. oviduct _____ 15. vagina
 _____ 16. Prostate Gland _____ 17. Seminal Vesicle _____ 18. fimbria
 _____ 19. Urinary bladder _____ 20. Ureter

Learning Task 6: Label the parts of the male and female reproductive system. Draw both pictures in your notebook.



A

Learning Task 7: Both males and females have roles in the community. These roles are observable in your parents especially in your father and your mother. Complete the boxes below to describe the roles of your parents in your family.

My Father's Role in the Family (Male)

My Mother's Role in the Family (Female)

What do you think is the importance of knowing your sexuality?

Menstrual Cycle

Lesson

I

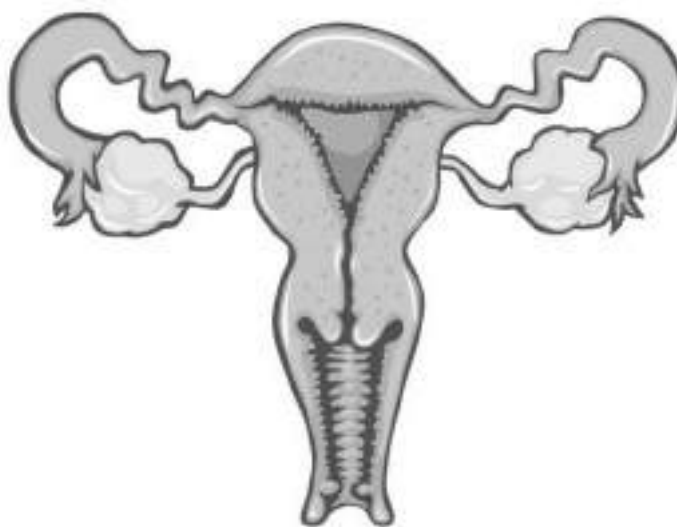
As boys and girls grow, there are many changes that occur in terms of physical, social and emotional aspects. During puberty stage, boys grow faster than girls. They develop low pitched voice, broader shoulder and Adams apple. Hair begins to grow under arms, on the face and genitals. The testes starts to produce sperm. On the other hand, girls grow taller. They develop bigger breast and hips. Also, pubic hairs start to grow. At this stage, ovaries begin to produce egg cells that becomes the reason of having menstruation monthly.

In this lesson , you will learn how eggs are produced and mature and what happens to them during menstrual cycle. Menstrual cycle only happens among girls and begins during puberty or menarche. It is a monthly period of egg maturation and pregnancy preparation along with the production of different hormones.

D

Menstruation is the stage of the menstrual cycle usually lasting from three to five days when fertilization does not occur. During this process, blood, some uterine tissue, and the unfertilized egg are eliminated from the uterus through vagina.

At the right side is a figure of a female reproductive organ. Can you draw a line showing the path of the egg from starting point to end undergoing menstrual cycle?



Generally, menstrual cycle has four major stages. These are:

1. **Follicular Stage.** In this stage, hormones are produced to stimulate the growth of ovarian follicles and the thickening of endometrium.
2. **Ovulation.** In the process, another hormone causes the follicle to rupture and release an egg (also called as oocyte).
3. **Luteal Stage.** In this stage, hormones act on the uterus for the preparation for pregnancy.
4. **Menstruation.** In this stage, the thick lining of the uterus will slough off and will be eliminated from the body as menstrual blood.

Based on the different stages of menstrual cycle, why do you think girls have their monthly period?

E

If an egg is not fertilized, the uterus comes off its lining in the form of blood. This is typically called “monthly period”. Girls can count the days in their cycle to help them know when to expect their next period. This is useful so that they can prepare some pads in their bag.

To be reminded about the occurrence of menstruation, counting the days is important. For instance, girls may mark the first day of bleeding on the calendar. It takes five days to complete menstruation.

Learning Task 1: Conduct an interview with your older sisters or mother about their menstruation. Be guided with the interview questions below:

At what age did you first experience to have menstruation or period?

For this month, at what exact date do you usually start experiencing bleeding?

Based on your observation, at what exact date your bleeding stops?

From the day the bleeding stops, at what date on the next month you start your period? _____

Learning Task 2: Pick a date in a calendar. Consider that date as the first day of the menstrual cycle. Indicate also in the calendar the last day of the menstrual cycle. Accomplish the calendar in your notebook.

Month of _____

Month One						
Sun	Mon	Tues	Wed	Thurs	Fri	Sat

Date where period (bleeding) stops:

Month of _____

Month One						
Sun	Mon	Tues	Wed	Thurs	Fri	Sat

Date where period (bleeding) starts:

Date where period stops:

How many days a woman bleeds or experience menstruation? _____

Based on the markings in the calendar, how many days a woman takes to complete the menstrual cycle? _____

Do you think all woman have the days of same menstrual cycle? Why or why not? _____

Normally, girls bleed in five days during menstruation. Woman have different menstrual cycle period. For instance , most women have 29 days to complete the cycle. In general , menstrual cycle maybe as short as 21 days and may last up to 36 days. Going below or beyond this number of days mean that a woman is experiencing irregular menstruation.

The first menstruation is called menarche and occurred during puberty stage. At the age of 40 and beyond, menstrual cycle stops. This stage is called menopause. When woman gets its menopausal stage, she is no longer capable of conceiving a baby.

Learning Task 3: Determine whether the statement is TRUE or FALSE.

Write **WOMAN** if the statement expressed true idea. Otherwise, write MAN if it is false.

- _____ 1. Menstrual cycle period may change every month.
- _____ 2. The blood from menstruation is filthy.
- _____ 3. The blood during menstruation is due to crashed egg cells.
- _____ 4. When woman get pregnant, they still experience monthly period.
- _____ 5. The number of days of menstrual cycle may be shorter or longer.
- _____ 6. Menarche signals the possibility to become pregnant in the presence of sperm cell.
- _____ 7. After menopause, woman can still get pregnant.
- _____ 8. Hormones are important in the menstrual cycle.
- _____ 9. Stress can be a factor of changing menstrual cycle.
- _____ 10. It takes five days for a woman to complete menstrual cycle.

A

I understand that

Modes of Reproduction in Animals

I

Lesson

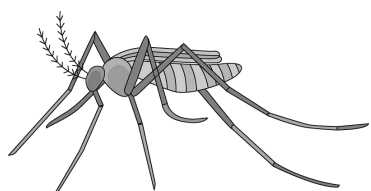
Animals cannot live forever. Like humans, animals also need to reproduce. They have also their own reproductive system that makes them able to do such life process. Most of them performs sexual reproduction involving male and female animal. In this way, extinction is prevented and diversity is maintained in nature. Producing new animals may mean food supply to other organisms. It may also signal the continuous existence of certain species.

This lesson will help you understand how animals produce their offspring (new young). Doing the different activities of this lesson will direct you to describe the reproduction depending on the level and type of animals.

D

Animals have the means to increase their number through reproduction. This is to preserve their species and to help in keeping the nature balance as they interact with other animals. Different animals have unique modes of reproduction. It can be noticed that some animals can reproduce in large numbers like insects, pigs, dogs and frogs while some animals can not. On the other hand, those big animals generally reproduce in fewer numbers.

Learning Task 1: Encircle the animals that can reproduce in large number.



What are the animals that can reproduce in large number? _____

Why do you think they can reproduce in large number? _____

What are the animals that reproduce in fewer number? _____

Most of the animals like cats, dogs, butterflies, frogs and the like need a male and a female to reproduce. This is called sexual reproduction. Sexual reproduction is a process of creating offspring with the participation of sperm cell from male parent and egg cell from the female parent.

Learning Task 2: Identify whether the following animals are reproducing sexually. Write **TWO PARENTS** if the animal shows sexual reproduction. Otherwise, write **SINGLE PARENT**.

_____ 1. dolphin	_____ 6. horse
_____ 2. sea anemone	_____ 7. clownfish
_____ 3. housefly	_____ 8. panda
_____ 4. earthworm	_____ 9. sponges
_____ 5. starfish	_____ 10. cow

Learning Task 3: Study the figures below. The first picture shows a frog in its natural environment. The second picture shows a pregnant dog.

Figure 1

Describe how a frog grows. Why do you think the eggs are found in the water? Where do you think fertilization happens?

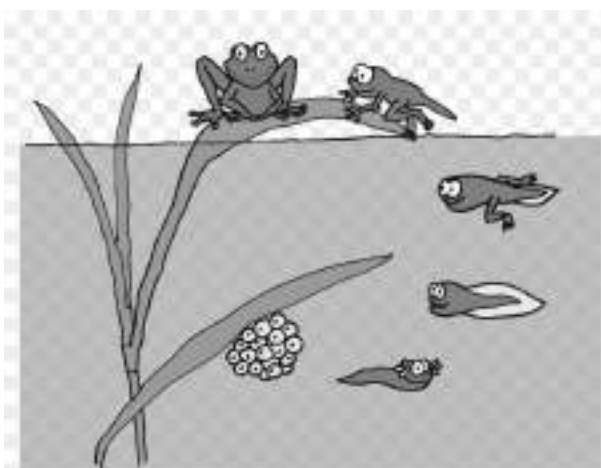


Figure 2

Describe how a dog grows. Describe their mode of reproduction.



Reproduction involves the transfer of characteristics of parents to their offspring or young. During fertilization (meeting of egg and sperm cell), genetic materials like DNA (deoxyribonucleic acid) are shared by the parents to produce new organism that may either be possessing unique characteristics or having an exact copy of what the parent has.

In sexual reproduction, new animal with a set of unique characteristics is produced. This means that the offspring is quite different from its parents. Sexual reproduction always involve the presence of sperm cell and egg cell. These two cells carry the genetic materials from the father and mother respectively.

Dogs, cats, mosquitoes and butterflies reproduce sexually. Among these animals, sperm and egg cells meet inside the body. This called internal fertilization. Unlike among frogs, they also reproduce sexually but fertilization occurs in the water or outside the body. External fertilization happens when both male and female frog release sperm and egg in the water to form fertilized eggs.

Learning Task 4: Think of two animals that can reproduce sexually. In the first box, draw an example of an animal that exhibits internal fertilization (fertilization occurs inside the body) . In the second box, draw an animal that exhibits external fertilization (fertilization occurs outside the body or in the outside environment).

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Animals may also reproduce asexually. Asexual reproduction only needs one parent. Most common activities under asexual reproduction are budding and binary fission. Budding happens when a new animal is produced through outgrowth parts of the parent. Aquatic animals like hydra and jellyfish are doing this process. On the other hand, binary fission which is performed by sea anemone occurs when the parent animal divides into two. It means one animal (parent) results into two new individuals.



Hydra

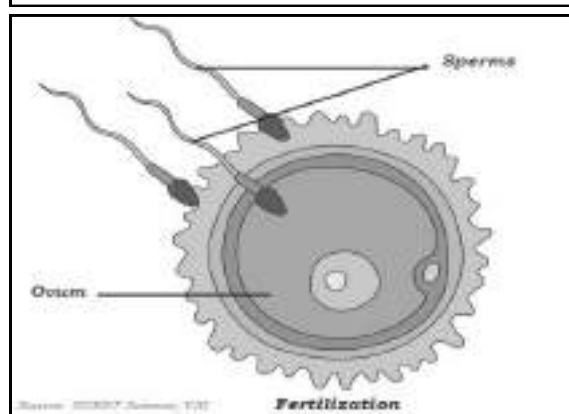
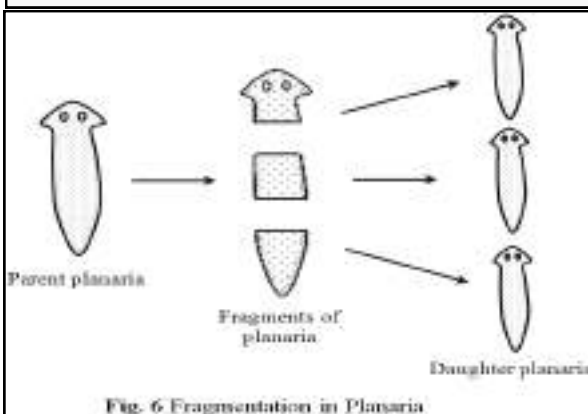
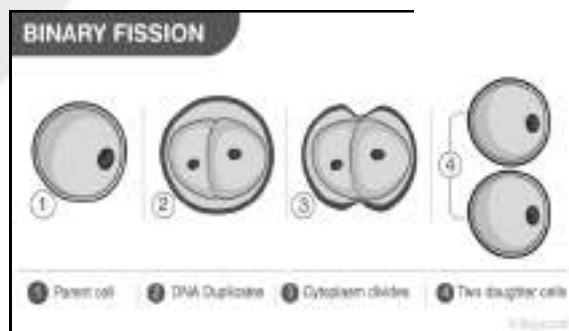
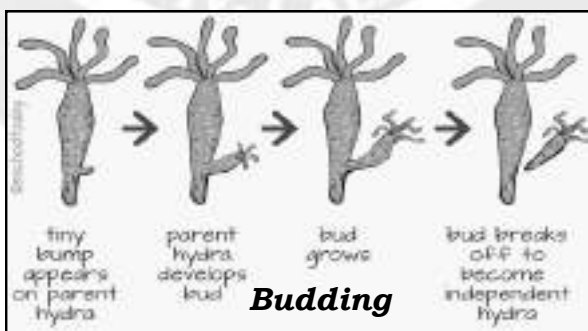


Sea Anemone



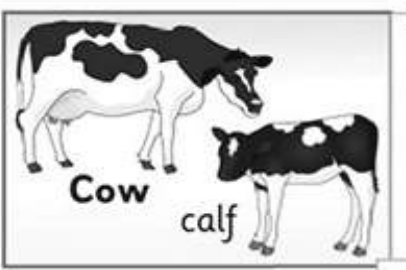
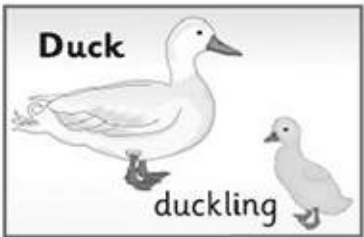
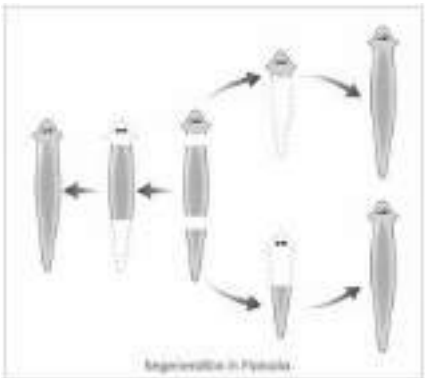

Jellyfish

In general, animals may reproduce sexually and asexually depending on the species. Generally, higher species (complex organism) performs sexual reproduction while those lower species (simple organism) shows asexual reproduction. Different modes of asexual reproduction are budding, binary fission, fragmentation and parthenogenesis. Parthenogenesis is a form of asexual reproduction in which an egg develops into an individual without being fertilized. Fragmentation is the breaking of an individual into parts followed by regeneration.

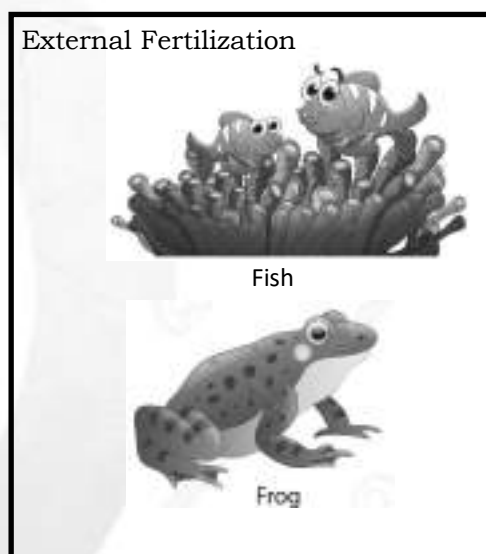




Learning Task 5: Study each picture in Column 1 . Each picture shows the parent animal and its offspring. Complete Column 2 by comparing the parent animal and its young and Column 3 by describing their mode and type of reproduction. Copy the chart in your notebook.

Parent/Parents Animal	Comparison of the parent and their young	Reproduction
		Mode: Type:
		Mode: Type:
		Mode: Type:
		Mode: Type:

Fertilization inside and outside the body are the two general modes of sexual reproduction. The expected offspring may have separate (single) sex or combined sexes depending on the species. Unique individual possessing different characteristics is produced in sexual reproduction because the genetic materials of the parents are blended (combined). Through the process, the offspring is thought to give sexually reproducing individuals with greater fitness to be mechanism to survive and reproduce in an unpredictable or changing environment. On the other hand, asexual reproduction produces offspring that are genetically identical to the parent because the offspring are all clones of the original parent. A single individual can produce offspring asexually and large numbers of offspring can be produced quickly.



A

Learning Task 6: Based from what you have learned in this lesson, indicate the advantages and disadvantages of sexual and asexual reproduction in animals. You may use books and other references for your answers.

Type of Reproduction	Advantages	Disadvantages
Sexual Reproduction		
Asexual Reproduction		

Reproductive System in Plants

I

Lesson




Like animals, plants are also capable of reproduction. They reproduce in many ways. In general, plants exhibit both sexual and asexual reproduction. New plants can be produced through seeds and different parts (e.g. stem, leaves, roots, etc.). These are the reasons why you can see plants anywhere, especially in the forest where they get good physical condition.

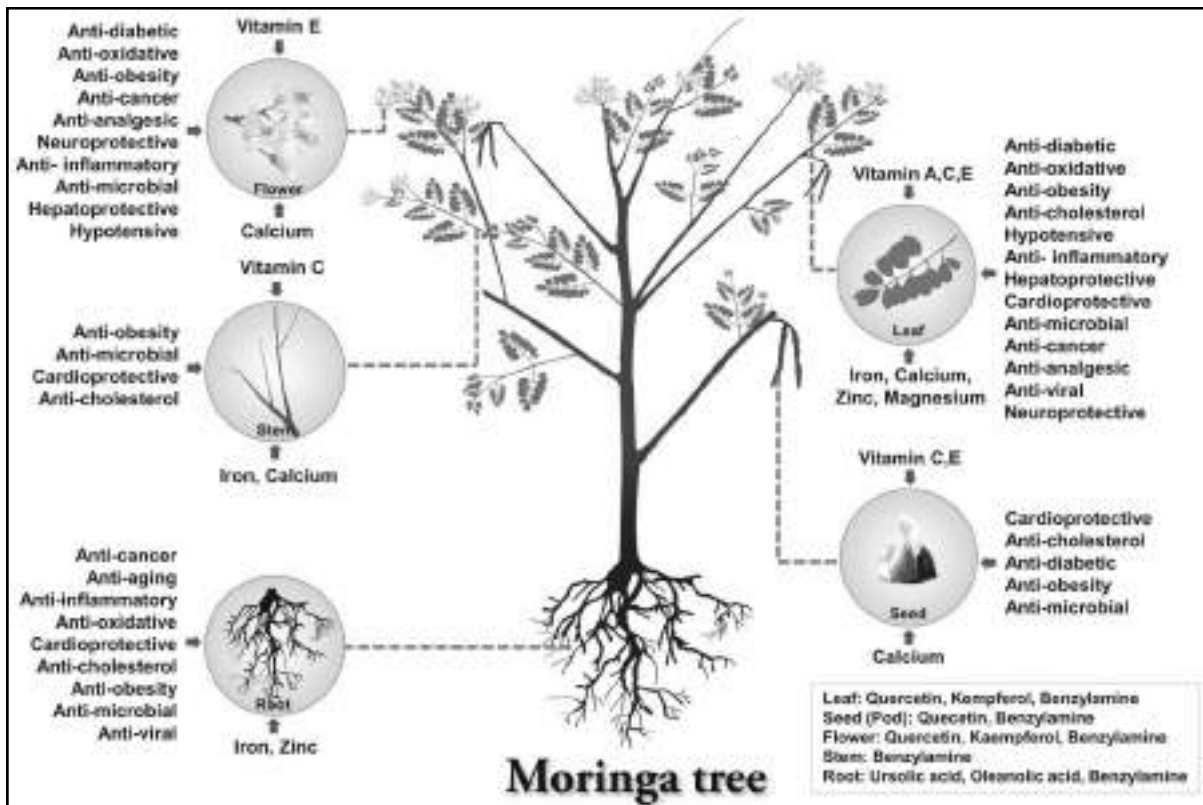
This lesson is intended for you to describe the plant reproductive system responsible for the process, specifically, sexual reproduction. The different activities that you will encounter in this lesson will lead you to understand how different parts of the plants function in producing their own kind.

D

Plants have many ways on how to reproduce. Some of their parts are used to produce their own kind. Do you know of any plant in your community that grows another new young plant through their leaves or stalk?

Learning Task 1: Study the pictures. Name the plant. Identify the part of the plants used for reproduction.

Picture	Plant Name	Part used for reproduction
	P_____	
	_____O	
	_____t p_____	



<http://moringathemiraclecure.weebly.com/>

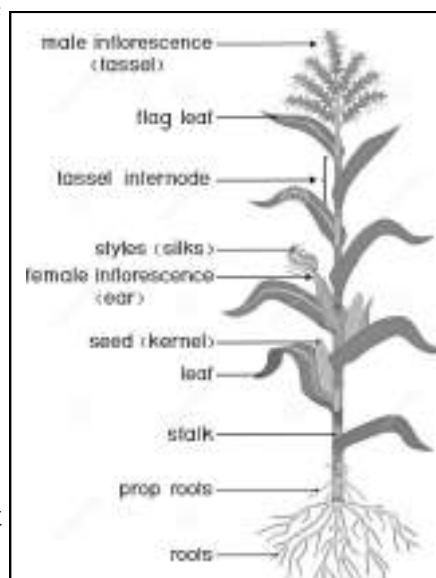
Malunggay (Horseradish) is a common plant found anywhere in the community. It has a lot of health benefits. Based on different studies, its parts are used for medicinal purposes.

Which part of the Malunggay plant is used to reproduce its kind ?

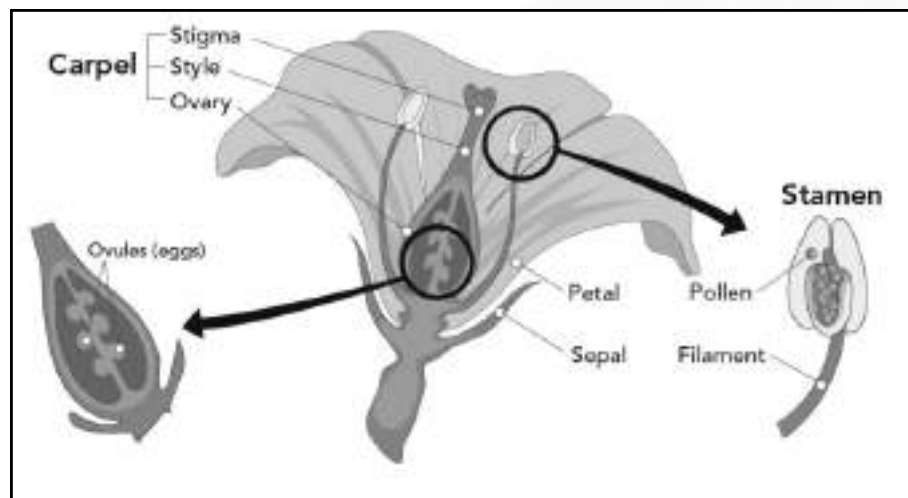
What part of plant seeds are developed? _____

Flower is an accessory organ of the plants used in sexual reproduction. Flowers can be classified as complete and incomplete. A flower is said to be 'complete' when it has both male and female reproductive parts. On the other hand, it is incomplete when it has only one reproductive part, either male or female. Most plants important to agriculture like corn, rice, wheat and soybeans are flowering which means that they undergo sexual reproduction.

Now, look at your surrounding. What do you think are the plants that shows sexual reproduction?

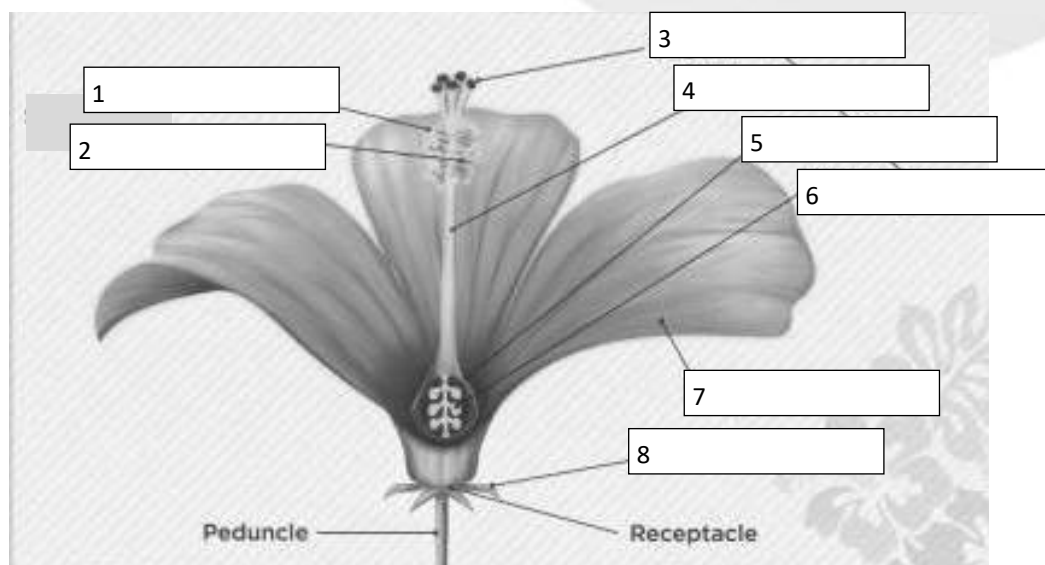


Flowers are parts that indicate a plant is producing seeds. When seeds are produced, it means the plant performs sexual reproduction. Different parts of the flower are involved to do such process. **Peduncle**, also called as *pedicel* is the stalk of the flower that is important to hold the fruit. **Receptacle** is the thickened stem part attached to the peduncle and it is where the flower or group of flowers grows. Sepals (pronounced as 'sipals') encloses and protects the upper parts of the flower, especially when the flower is still a bud. Sepals are considered modified leaves which means they have special function. A flower has always a collection of sepal called calyx.

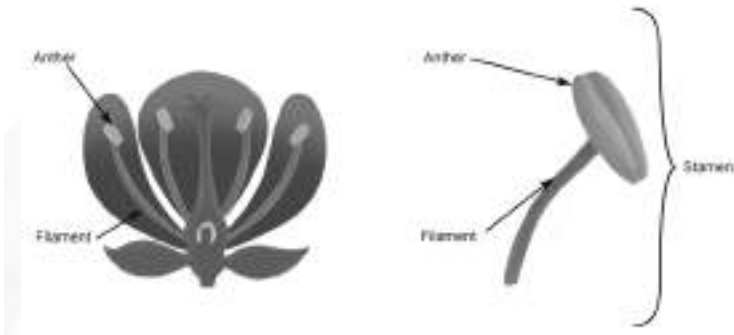


Learning Task 2: All plants that bear flowers are called flowering plants. Flowers are useful in the process of fertilization among plants. Below is a figure showing the parts of a flower involve in fertilization. Study the figure and label the parts of a flower. Copy this in your notebook.

Figure: Parts of a Flower



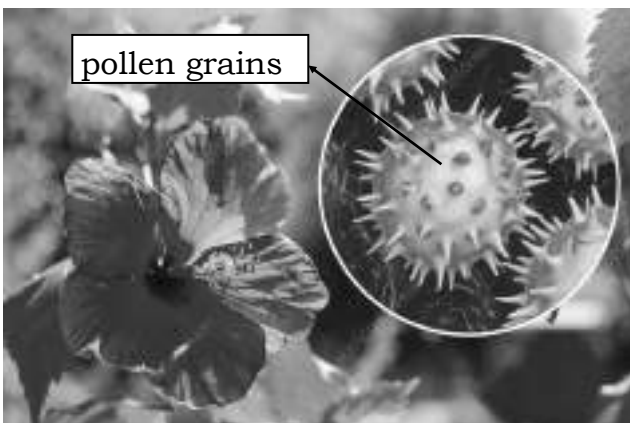
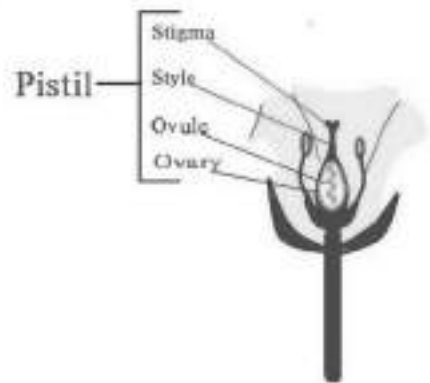
The most observable part of the flower in which people normally appreciate is **petal**. Petals normally have different colors depending on the type and species of plant. For instance, Gumamela plants produce flowers in varying colors. Petals accommodate all insects for **pollination**. Some flowers have three petals while others have five or more petals. When petals are in group or by set, they are called **corolla**.



To perform sexual reproduction, a flower has **stamen and pistil** that serve as male and female reproductive organ respectively. Stamen (male organ) is composed of filament and the anther. The filament is hair-like

structure that holds the anther bringing the pollen grains to the position where it can be released effectively. The anther has two major lobes with pollen sacs that carries all the pollen. Pollen grains are released by the anther when they are already matured.

On the other hand, pistil is the female reproductive part of the flower. It is consist of several parts such as style and stigma. The style is an elongated part of the flower that supports and connects the stigma to the ovary. It extends to the height where the stigma can collect and trap pollen grains. The stigma, the one that receives the pollen grains, is a sticky and swollen structure at the tip of the style. The fluids that is secreted by the stigma enabling the pollen grains to mature continuously until they germinates.



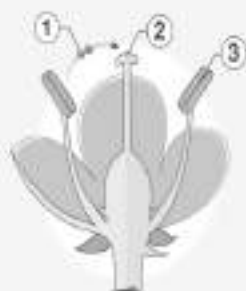
If both pistil and stamen are present, the flower is considered 'complete' or bisexual like rose and gumamela. On the other hand, a flower with either stamen or pistil is considered as 'incomplete' or unisexual. Plants like papaya and cucumber produce only unisexual flowers.

E

Sexual reproduction among plants happens through the transfer of pollen grains from the anther into the stigma. The anther serves as the male part while the stigma functions as the female part. This process is called **pollination**. There are two types of pollination, **self-pollination** and **cross-pollination**.

Learning Task 3: Compare and contrast the two types of pollination . Use the illustrations to answer the questions found in the boxes .

SELF POLLINATION

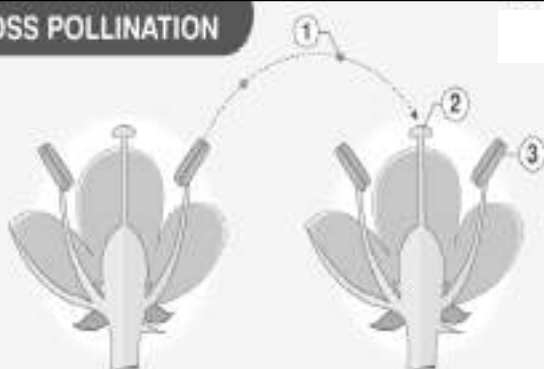


In what part of the flower are pollen grains located?

In what part of the flower pollen grains are transferred during pollination?

How many plants are involved in the process?

CROSS POLLINATION

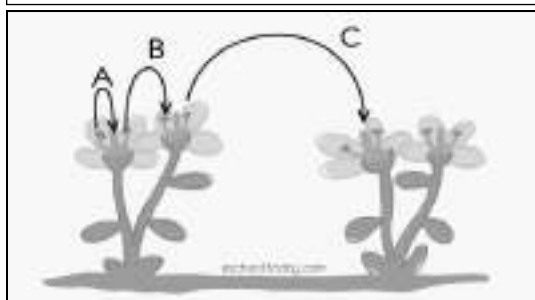


In what part of the flower are pollen grains located?

In what part of the flower pollen grains are transferred during pollination?

How many flowers are involved in the process?

Self-pollination is _____
 _____ while cross-pollination is



The transfer of pollen grains from flower A to B is called _____

The transfer of pollen grains from from Flower B to Flower C is called _____

Self-pollination happens when the pollen grain are transferred from the anther of a flower to the stigma of another flower in the same plant. Cross-pollination is a process that requires two individual plants of the same species. Self-pollination and cross pollination are examples of pollen grain transfer through insects. When pollination is caused by wind and other non-living factors, it is called abiotic pollination.

Fertilization occurs when swelling tube-like pollen grains goes into the stigma through the style to reach the ovary. The process is completed at the moment the sperm is released from the tube to fertilize the egg cell in the ovule. Fertilized ovules get matured to develop into seeds. On the other hand, the ovary enlarges and develop to become the fruit. Ripening of fruits signals that the seeds are already prepared to be planted and produce new plants.

A

Sexual reproduction through pollination is possible with the help of pollinators. Pollinators are agents for the transfer of pollen grains from a flower to another flower of either same plant or different plants of the same species.

Learning Task 4: Name 3 plants . Identify the pollinators by completing the chart below. Illustrate how pollination takes place in each flower. Draw this in your notebook.

Agent of Pollination / Pollinator	Drawing

Modes of Reproduction in Plants

I

Lesson

Like other organisms, plants can also reproduce using different ways. In the previous lesson, you learned about how plants undergo sexual reproduction. At this point, you will recognize other means of plant reproduction, specifically, through vegetative propagation. Vegetative propagation is an asexual reproduction in plants using different parts like stem, roots, and leaves to produce new plants. Asexual reproduction does not involve the use of seeds to propagate.

This lesson will give you an understanding on the different modes of reproduction among flowering and non-flowering plants. Doing the different activities/tasks in this lesson will help you identify the different parts that can be used to produce new plants aside from seeds.

Preliminary Activity: Are you familiar with horse raddish, fiddlehead fern and mosses ? If you know them, have you tried looking at their parts? Below is a chart for you to complete. Try to draw each plant.



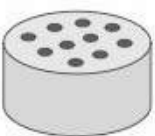






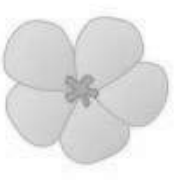
Name of Plant	Drawing	Classification With flowers or without flower
Horse Radish (<i>Malunggay</i>)		
Fiddlehead Fern (<i>Pako</i>)		
Mosses (<i>Lumot</i>)		

D

The previous lesson provides you the understanding about flowers as reproductive organ of fruit-bearing plants to produce seeds to grow new plants. In general, plants are classified into two major groups, flowering and non-flowering plants.

Flowering plants are those that have an obvious flower as accessory organ. In botany (branch of science that deals with the study of plants), they are called as 'angiosperms'. Plants that belong to angiosperm family reproduce by sexually by means of their flowers. The presence of flowers may give clue that the plant produce seeds that mature within the fruits. There are two groups of angiosperms, dicotyledonous and monocotyledonous plants. Dicotyledonous plants are plants with netted veins and with two cotyledons in its embryo. Some examples of dicotyledonous plants are beans, peas, daisies while monocotyledonous plants are bamboos, bananas and lilies.

Learning Task 1: Observe your surrounding. List down the plants that possess the given description below on monocot and dicot.

	Seed	Root	Vascular	Leaf	Flower
Monocot					
	One cotyledon	Fibrous roots	Scattered	Parallel veins	Multiples of 3
Dicot					
	Two cotyledon	Tap roots	Ringed	Net-like veins	4 or 5

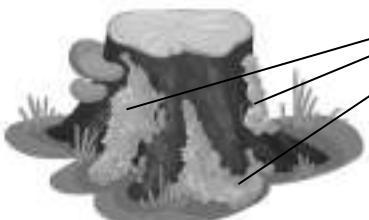
Monocotyledonous Plants	Dicotyledonous Plants
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____

Flowers are important for plants to bear fruits and produce seeds. However, there are also plants that do not use flowers for reproduction. These plants are called **non-flowering plants**.

Learning Task 2: There are nonflowering plants that do not produce flowers and seeds. There are plants that produce spores. There are plants where seeds are not developed inside the parts of the flowers. In this activity, try to rearrange the jumbled letters to know these plants.


N E G O S Y S M P R M	<i>They are plants that use cones to house their seeds. They are woody plants and most of them are trees.</i>	(one word)
O B E P R H Y S T	<i>They are the simplest plants and are not well adapted to terrestrial life.</i>	(one word)
1. EDSLESES 2. RACUVASL 3. TAPNL	<i>They have specialized stem that moves water and nutrients from the roots. Some use spores to grow new plants.</i>	(three words)

Learning Task 3: Based on the given description, identify the classification of the plants found on the left side of each description.



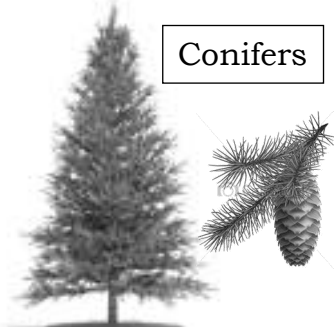
Mosses

They are small plants that produce spores for reproduction instead of seeds and don't grow flowers, wood or true roots.
 Classification: _____



Ferns

Ferns generally reproduce by producing spores. Similar to flowering plants, ferns have roots, stems and leaves.
 Classification: _____



Conifers

They produce cone-bearing seeds. All living conifers are woody plants, and most are trees. Pines are typical examples of conifers.
 Classification: _____

E

In general, non-flowering plants may be also classified into two main groups. The first group produces **spores** while the second group makes **seeds** to reproduce in the absence of flower as accessory organ.

Learning Task 4: Given the chart , put a check mark if each characteristic is true to each group of plants.

Characteristics	Flowering Plants	Non-flowering Plants
Flowers		
Seeds		
Spores		
Vascular system (transport of water and nutrients)		
Pollination		
Seed Dispersion through wind and water		
Fruit		

A

Learning Task 5: A herbarium is an album or scrapbook of compressed flowering non flowering plants. It may contain all parts or some parts of plants. To make a herbarium, follow the following steps :

1. Collect plants or plant parts. Compress using an old book or any material where you can platten the parts.
2. Paste or glue them on each page.
3. Indicate the name of the plants and its classification.

Interactions in Estuaries and Intertidal Zones

WEEK

7

I

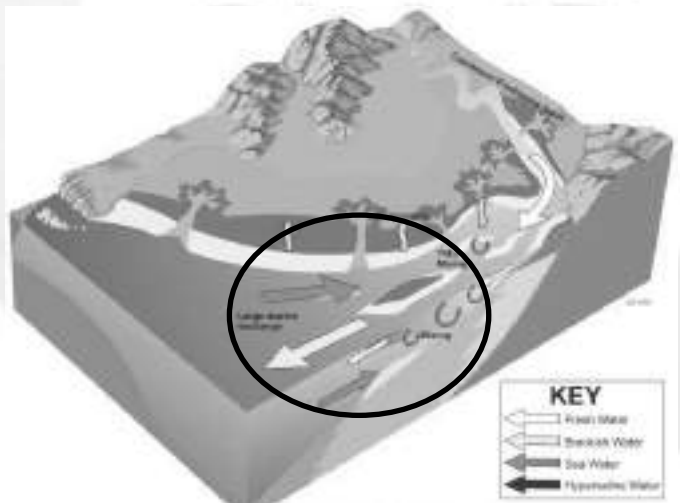
Lesson

Life on earth is a product of different interactions in a region or geographic area where both biotic factor such as plants, animals and other organisms and abiotic factor like weather (temperature and humidity) and landscape (rocks, soil, etc.) work together. This area is called ecosystem. Living things cannot sustain life without non-living things. For instance, a mangrove tree needs water and muddy soil to survive together with other life forms.

This lesson will discuss the interactions of organisms to their physical environment. Specifically, this part of the module will give you different activities that will describe such interactions in estuaries and intertidal zones.

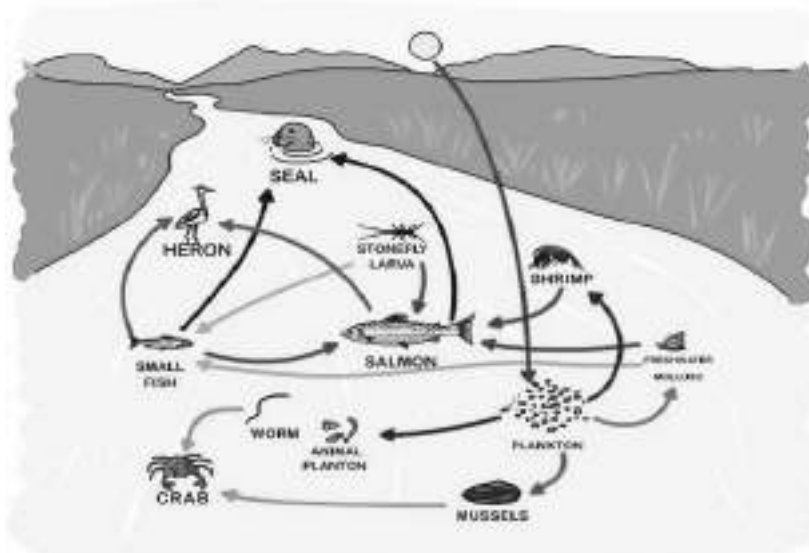
D

Estuaries are areas where salt water and fresh water meets (brackish water). Normally, running water in rivers goes into the sea. Water in estuaries is less salty. The measure of salt in water is called salinity. Thus, the estuaries have low salinity. The level of salt content of water affects the ability of the organism to survive.

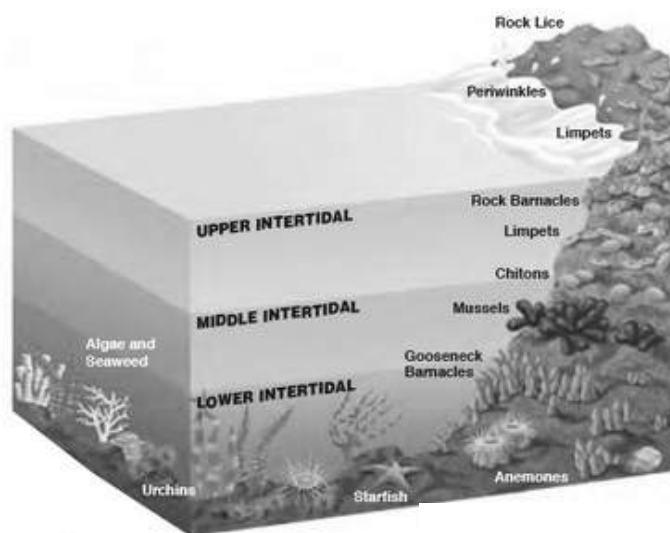


Learning Task 1:

Organisms require energy to perform life activities. In this case, they need to eat food. Analyze the figure (left side). Observe the pattern how organisms interact and get energy (eating). Fill in the blanks below based on the figure.

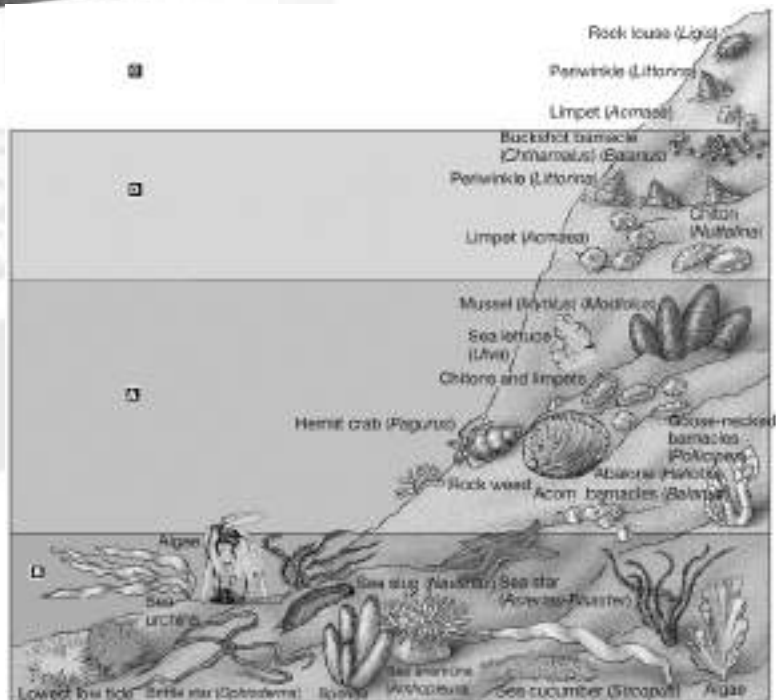


1. Plankton may be eaten by _____.
2. Heron eats _____.
3. Salmon eats _____.
4. Shrimp may be eaten by _____.
5. Fresh water mollusk (e.g. snail) may be eaten by _____.



Intertidal zones are area where the presence of water depends on the tides. During high tide, these are covered with water. During low tide, the water diminishes and expose the part of sea bed area. This part of the sea can be sandy, rocky or muddy depending on the presence of different materials.

Learning Task 2: Just like in estuaries, organisms in intertidal zones need energy to live through eating food. Analyze the figure (right side). Observe the different organisms and imagine how they interact and get energy (eating). Fill in the blanks below based on the figure. *Note: answer may not be in the illustration.*



1. Hermit crab eats _____.
2. Limpet may be eaten by _____.
3. Algae may be eaten by _____.
4. Sea urchin eats _____.
5. Chitons and limpets may be eaten by _____.

E

Learning Task 3: In both estuary and intertidal zone, organisms have different roles to perform. In this task, identify the organisms that perform the given roles. Choose the word/ group of words in the box.

<u>Salt marsh grasses</u>	<u>algae</u>	<u>phytoplankton</u>	<u>lichens</u>	<u>cyanobacteria</u>
<u>sea urchins</u>	<u>green crabs</u>	<u>mollusk</u>	<u>anemone</u>	<u>fish</u>
<u>marine snail</u>	<u>small crab</u>	<u>sand fleas</u>	<u>diatoms</u>	<u>fungi</u>
<u>tube worms</u>	<u>fiddlers</u>	<u>detritus feeders</u>	<u>seaweeds</u>	<u>bacteria</u>

Role	Description	Organism
Producers	<i>They are organisms that produce food from sunlight and inorganic substances.</i>	_____

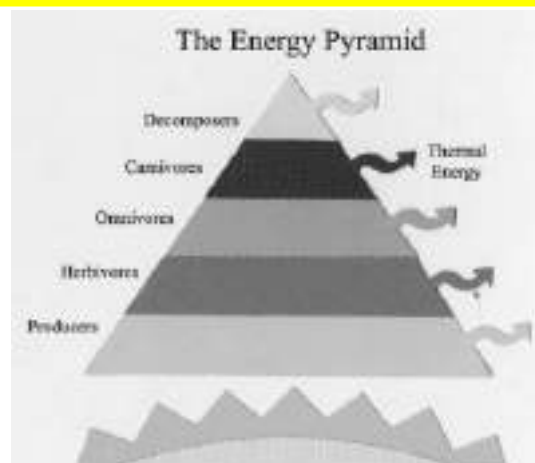
Consumers	<i>They are organisms that eat other organisms.</i>	_____

Scavengers	<i>They are organisms that eat food scraps and left-overs.</i>	_____

Decomposers	<i>They are organisms that breakdown into simpler materials the remains of dead organisms.</i>	_____

A

Learning Task 4. Make a model of ecological (energy) pyramid showing the arrangement of producers, consumers, scavengers and decomposers. You may include the organisms that you answer in Learning Task 3. You may use scrap materials in making the 3D model of ecological pyramid. The figure below gives you the idea of the content of the pyramid. You may ask your teacher for the rubric of the activity.



The Need to Protect and Conserve Estuaries and Intertidal Zones

Lesson

Like other ecosystems, estuaries and intertidal zones need to be protected because of the presence of organisms that are dependent on their unique conditions. Our country is rich in different forms of ecosystem because of the presence of so many rivers and long shorelines. Like the Manila Bay which has both intertidal zones and estuaries, human should do actions that will not destroy but support the interactions of the organisms living in the area. There are a lot of ways of taking good care the environment.

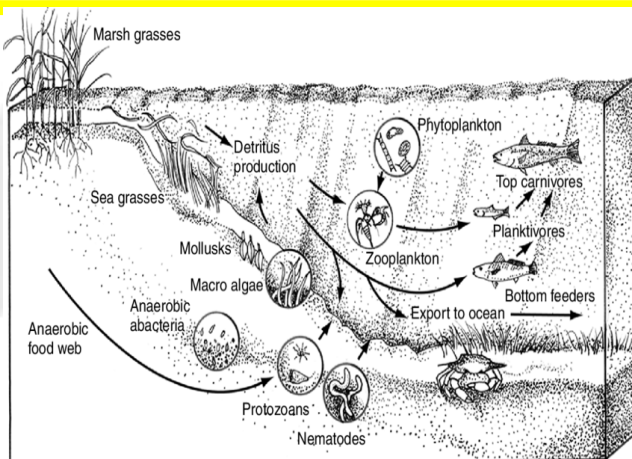
D

Learning Task 1: Draw a smiley face on the action or activity that helps protect and conserve the estuaries and intertidal zones.

- | | |
|---|-------------------------------------|
| _____ 1. planting trees | _____ 6. feeding the fish |
| _____ 2. disposing garbage properly | _____ 7. taking a bath with shampoo |
| _____ 3. restricting fishing activities | _____ 8. collecting starfish |
| _____ 4. banning recreational birding | _____ 9. removing sea urchin |
| _____ 5. avoiding oil leaks | _____ 10. cleaning up the rivers |

E

Learning Task 2: The diagram shows both food chain and food web in estuaries. Food chain is a series of transfer of energy as the algae can be eaten by small fish and small fish may be eaten by a carnivorous fish. A food web is composed of different food chains. What do you think are the activities that may negatively affect the process of energy transfer?



A



Learning Task 4: Now that you know the importance of estuaries and intertidal zones, as student you can do your part in protecting and conserving them. To show your support to the program entitled "Save Manila Bay", in a bond paper, make a poster in indicating your proposed actions in cooperation and collaboration with your classmates.

References

Regional Memorandum No. 306 s. 2020, Guidelines on the Implementation of MELC PIVOT 4A Budget of Work in All Learning Areas for Key Stages 1-4

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Puberty: Mt Period. Retrieved at: <https://teachingsexualhealth.ca/app/uploads/sites/4/5-DA-My-Period-2015.pdf>

Male and Female Reproductive System. Link: <https://ib.bioninja.com.au/welcome-to-the-bioninja/>

Key to Correction

<p>Lesson 1</p> <p>Opening Activity -Answers may vary.</p> <p>Learning Task 1 1. male reproductive system 2. female reproductive system 3. testis/testes 4. ovary/ovaries</p> <p>Learning Task 2 1. vas deferens 10. testis 2. prostate gland 11. uterus 3. urethra 12. endometrium 4. epididymis 13. fimbriae 5. penis 14. vagina 6. ureter 15. ovary 7. seminal vesicle 16. cervix 8. erectile tissue 17. oviduct 9. Scrotum</p> <p>Learning Task 3 Testis - epididymis - vas deferens - seminal vesicle - prostate gland - urethra 1. Prostate Gland - Alkaline Fluid 2. Testis - Sperm 5. Urethra - penis 3. Seminal Vesicle - mucus 4. Vas deferens - tube 6. Epididymis - storage</p> <p>Learning Task 4 Ovary - fimbriae - fallopian tube - uterus - vagina 1. Vagina - penis insertion 2. uterus - egg development 3. endometrium - lining for egg implantation 4. Fimbria - sweeping the eggs</p>	<p>Lesson 2</p> <p>Learning Task 1 Answer may vary depending on the answers of the interviewee. Learning Task 2 -Answers may vary depending on the answers of the interviewee. - To answer the questions, refer to the discussion on page 16</p> <p>Learning Task 7 Answer may vary</p> <p>1. bladder 2. urethra 3. penis 4. scrotum 5. erectile tissue 6. seminal vesicle 7. prostate gland 8. vas deferens 9. testis</p> <p>Learning Task 6 1. bladder 2. fallopian tube 3. uterus 4. bladder 5. penis 6. urethra 7. bladder 8. uterus 9. fallopian tube 10. Fallopian tube</p> <p>Learning Task 5 1. MR 6. MR 2. FR 7. FR 3. MR 8. MR/FR 4. FR 9. MR 5. MR 10. FR 11. MR 16. MR 12. FR 17. MR 13. MR 18. FR 14. FR 19. MR/FR 15. FR 20. MR/FR</p>
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Lesson 4

Learning Task 1

Pechay – seeds, taro – roots, sweet potato – roots

Malunggay used stem and seeds to reproduce.

The seeds develop from the flower.

Learning Task 2

1. Anther, 2. Filament, 3. Stigma, 4. Style, 5. Ovary, 6. Ovule, 7. Petal, 8. Sepal

Learning Task 3

Self-Pollination – anther, stigma, one plant

Cross – pollination – anther (first flower), stigma (second flower), two plants

To answer the question, refer to the discussion on page 28

-Self-pollination, cross-pollination

Learning Task 4

Agent of pollinator – insects/ water/ wind

Lesson 5

Preliminary Activity.

Flowering, non-flowering, non-flowering

Learning Task 1

Answers may vary.

Learning Task 2

Gymnosperms, bryophytes, seedless vascular plant

Learning Task 3

Bryophyte, seedless vascular plant, gymnosperm

Learning Task 4

See the previous activity for the answer.

Lesson 6

Learning Task 1

1. small fish, crab, mussel, etc. 2. salmon, small fish 3. Small fish, stone fly larva, etc. 4. Salmon, 5. Salmon

Learning Task 2

1. seaweeds, algae, rock weed, etc. 2. Sea anemone, 3. Bird (herring gull), 4. Pertwinkle, limpet, crab, etc. 5. Bird (herring gull, sea gull)

Learning Task 3

Producers: Salt marsh grasses algae

plankton lichens cyanobacteria

seaweeds

Consumers: sea urchins green crabs mollusk anemone fish shellfish sand

Scavengers: marine snail small crab sand

Decomposers: diatoms fungi bacteria

tube worms fiddlers detritus

feeders seaweeds

Lesson 7

Learning Task 1

Smiley: Item no 1, 2, 3, 4, 5, 10

Learning Task 2

The answer may be the items that have sad face in learning task 1 / Answer may vary.

Lesson 3

Learning Task 1

Mosquito, frog, butterfly

1. Mosquito, frog, butterfly

2. They reproduce through production of eggs.

3. Cat, dog

4. They reproduce sexually, and the organism develops in the body of the parents.

Learning Task 2

1. Two parents 2. single parent 3. two parents 4. single parent 5. single parent

6. Two parents 7. Two parents 8. Two parents 9. Single parent 10. Two parents

Learning Task 3

Figure 1. The fertilization happens outside (external fertilization)

Figure 2. The fertilization happens inside the mother's body. (internal fertilization)

Learning Task 4

Drawings may vary.

Learning Task 5

Cow

Comparison- calf with unique characteristics

Mode- Internal Fertilization

Type- Sexual Reproduction

Duck

Comparison- duckling with unique characteristics

Mode- Internal Fertilization

Type- Sexual Reproduction

Planaria

Comparison- planaria with same characteristics

Mode- fragmentation

Type- Asexual Reproduction

Tapeworm

Comparison- planaria with same characteristics

Mode- internal fertilization

Type- Sexual Reproduction

Answers may vary.

Learning Task 6:

Answers may vary.

Lesson 4

Learning Task 1

Pechay – seeds, taro – roots, sweet potato – roots

Malunggay used stem and seeds to reproduce.

The seeds develop from the flower.

Learning Task 2

1. Anther, 2. Filament, 3. Stigma, 4. Style, 5. Ovary, 6. Ovule, 7. Petal, 8. Sepal

Learning Task 3

Self-Pollination – anther, stigma, one plant

Cross – pollination – anther (first flower), stigma (second flower), two plants

To answer the question, refer to the discussion on page 28

-Self-pollination, cross-pollination

Learning Task 4

Agent of pollinator – insects/ water/ wind

Lesson 5

Preliminary Activity.

Flowering, non-flowering, non-flowering

Learning Task 1

Answers may vary.

Learning Task 2

Gymnosperms, bryophytes, seedless vascular plant

Learning Task 3

Bryophyte, seedless vascular plant, gymnosperm

Learning Task 4

See the previous activity for the answer.

Lesson 6

Learning Task 1

1. small fish, crab, mussel, etc. 2. salmon, small fish 3. Small fish, stone fly larva, etc. 4. Salmon, 5. Salmon

Learning Task 2

1. seaweeds, algae, rock weed, etc. 2. Sea anemone, 3. Bird (herring gull), 4. Pertwinkle, limpet, crab, etc. 5. Bird (herring gull, sea gull)

Learning Task 3

Producers: Salt marsh grasses algae

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tube worms fiddlers detritus

feeders seaweeds

Lesson 7

Learning Task 1

Smiley: Item no 1, 2, 3, 4, 5, 10

Learning Task 2

The answer may be the items that have sad face in learning task 1 / Answer may vary.

PIVOT Assessment Card for Learners

Personal Assessment on Learner's Level of Performance

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



- ☆ - I was able to do/perform the task without any difficulty. The task helped me in understanding the target content/lesson.
- ✓ - I was able to do/perform the task. It was quite challenging but it still helped me in understanding the target content/lesson.
- ? - I was not able to do/perform the task. It was extremely difficult. I need additional enrichment activities to be able to do/perform this task.

Distribution of Learning Tasks Per Week for Quarter 2

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

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

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

For inquiries or feedback, please write or call:

Department of Education Region 4A CALABARZON

Office Address: Gate 2, Karangalan Village, Cainta, Rizal

Landline: 02-8682-5773, locals 420/421

Email Address: lrmd.calabarzon@deped.gov.ph

