

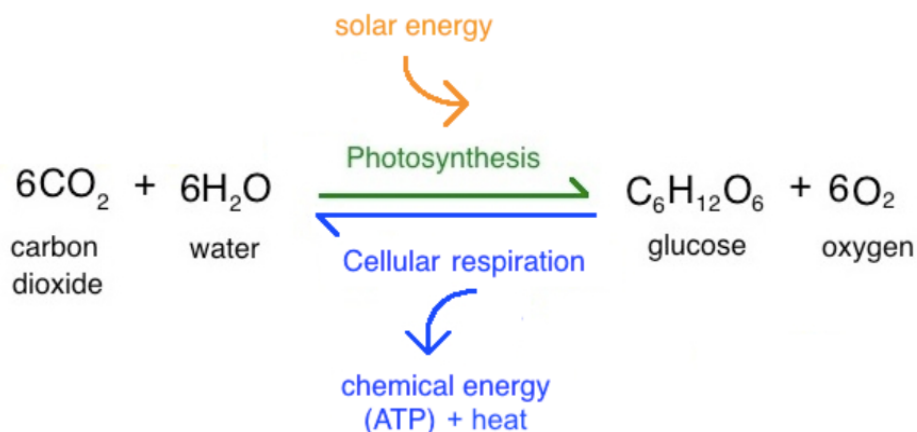
I

This lesson will lead you to differentiate basic features and importance of photosynthesis and respiration. Try to read and understand some concepts in some activities to know more on these.

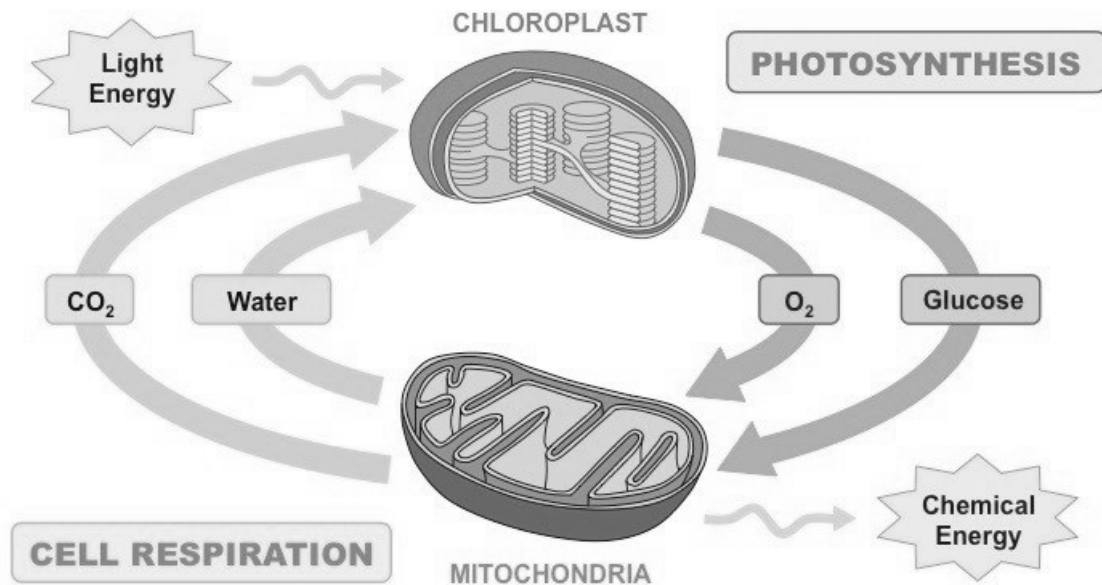
The bi-product of photosynthesis is oxygen being release by plants. Breathing in oxygen is necessary so that our cells can carry out cellular respiration and generate ATP.

The two biological reactions that complement each other in the environment are photosynthesis and respiration that occur in a reverse manner. In the process of respiration, oxygen and glucose yield water and carbon dioxide, while carbon dioxide and water yields glucose and oxygen in photosynthesis. Both photosynthesis and respiration can function enough as living organisms provide carbon dioxide for plants that undergo photosynthesis and produces glucose. Bacteria and plants release oxygen that is required for all living organisms for respiration.

The equation of cellular respiration and photosynthesis are almost opposite processes, meaning the interchange of oxygen and carbon dioxide by cellular respiration and photosynthesis helps in maintaining both atmospheric oxygen and carbon dioxide and differ in the form of energy that is being absorbed or released as shown by the figure below:



Learning Task 1: Observe the diagram showing the exchange of materials during photosynthesis and cellular respiration. Answer the guide question based on the diagram.



Guide Question:

1. In which part of the cell does photosynthesis happen?
2. In which part of the cell does respiration happen?
3. What energy is needed by photosynthetic organisms during the process of photosynthesis?
4. What energy is needed by organisms during cell respiration?
5. What are the materials needed during photosynthesis?
6. What are the materials produced after the process of photosynthesis?
7. What are the materials needed during cell respiration?
8. What are the materials produced after the process of cell respiration?
9. Describe the materials needed during photosynthesis, where does they come from?
10. Describe the materials needed during cell respiration, where does they come from?

D

Learning Task 2: Read the paragraph below. Perform the task in each part. Write your answer in your notebook.

PHOTOSYNTHESIS EQUATION

This activity will help you explore the photosynthesis equation.

Photosynthesis is the process used by plants and some bacteria to create energy from sunlight. Chlorophyll is the green pigment in plants that is responsible for this conversion process. During photosynthesis, photoautotrophs use energy from the sun, along with carbon dioxide and water, to form glucose and oxygen.

1. **Illustrate the photosynthesis equation and label properly.**



2. Fill in the table below to describe the stages of photosynthesis. There are two stages of photosynthesis, the light-dependent reactions and the Calvin cycle.

STAGE	LOCATION	EVENTS	REQUIRES LIGHT?	SUN-

3. Draw a sample plant and animal. Illustrate how photosynthesis and respiration exist between these two organisms. Write a simple story about photosynthesis and respiration.

My Plant and Animal:

The story of photosynthesis and respiration .

Learning Task 3: Read the paragraph below. Perform the task in each part. Write your answer in your notebook.

RESPIRATION PROCESS AND EQUATION

Respiration is the process of taking oxygen from the air and cycling it through the lungs, which then gives oxygen to blood to be used in the body. The carbon dioxide waste is expelled out of the lungs. Cellular respiration uses glucose, or sugars, from food molecules and turns them into carbon dioxide, water, and ATP a nucleotide essential to the body.

Cellular respiration can occur both aerobically (using oxygen), or anaerobically (without oxygen). During aerobic cellular respiration, glucose reacts with oxygen, forming ATP that can be used by the cell. Carbon dioxide and water are created as byproducts

A. Illustrate the cellular respiration equation and label properly.



TERM	MEANING
1.	The process happening inside the cells of organisms
2.	The primary energy carrier in living things
3.	It is where cellular respiration occurs
4.	The jelly-like substance that fills the space between
5.	Process that requires oxygen
6.	Process that does not require oxygen
7.	An anaerobic pathway for breaking down glucose

WORD POOL		
Aerobic	Mitochondria	Cytoplasm
Adenosine triphosphate	Fermentation	Cellular respiration
	Anaerobic	

E

Learning Task 4: Answer the following questions after performing the activity. Write your answers in your notebook.

PLANTITO AND PLANTITA

In this activity, you prove the effect of photosynthesis in plants. Get the needed materials as listed below and follow the steps on how to prepare the experiment.

Materials:

2 garden pots or any empty container of the same size

Garden soil to fill your pots or container

10 pcs mongo seeds

Procedure:

1. Prepare garden pots / container.
2. Fill the garden pots / container with same amount of soil.
3. Water the soil, then put 5 mongo seeds in each pot / container.
4. Put one pot / container outside the house where sunlight is available and the other pot inside the house where there is no sunlight.
5. Water the

OUTSIDE

INSIDE

	Day 5	Day 8	Day 10	Day 15	Day 5	Day 8	Day 10	Day 15
Number of seeds grown								
Color of stem and leaves								
Length of stem and leaves								

plants daily. Observe the growth of seeds.

6. Fill in the table below for your observation.

Guide Questions:

1. Which location can the plants grow faster? Why?
2. Which leaves and stems are greener in color? Why?
3. What contributes in the difference in the appearance of plants?

A

Learning Task 5 : Study the table before answering the question below. Write your answer in your notebook.

Differentiating Cellular Respiration and Photosynthesis

The table below are the comparison between cellular respiration and photosynthesis. Fill in the number in each space to differentiate the two.

Cellular Respiration	Photosynthesis
1. _____	Occurs only in all green plants, algae, and in some bacteria.
The entire process occurs in Mitochondria.	2. _____
3. _____	Carbon dioxide, water, and light energy are the reactants of this process.
Carbon dioxide, water, and energy (ATP) are the products.	4. _____
5. _____	Undergoes Anabolic Process.
Oxygen is taken in and carbon dioxide is liberated out.	6. _____
7. _____	In this process, food is synthesis by capturing the energy.
It is an exergonic reaction as energy is released.	8. _____
9. _____	This process requires sunlight since photosynthesis occurs only in the presence of sunlight.
The chemical reaction of cellular Respiration is $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$	10. _____

- How will you describe cellular respiration in your own words? What about photosynthesis?



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Answer Key

Weeks 1-2

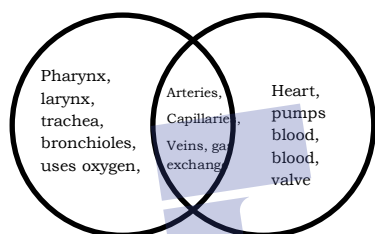
Lecture Task No. 1:

- nose
- Mouth
- Trachea
- Bronchi
- Branching tubes
- Air sacs
- Lungs

Lecture Task No. 2:

- aorta
- Right atrium
- Right ventricle
- Pulmonary artery
- Left ventricle
-

Lecture Task No. 3. A:



Learning Task No. 3B.

INHALING	EXHALING
/	/
/	/
/	/
/	/
/	/
/	/

Learning Task No. 4

- pulmonary and systemic circuit
- Blood
- The **pulmonary circuit** transports blood to and from the lungs, where it picks up oxygen and delivers carbon by circulation dioxide for exhalation.

4.The **systemic circuit** transports oxygenated blood to virtually all of the tissues of the body and returns relatively deoxygenated blood and carbon dioxide to the heart to be sent back to the pulmonary circulation.

5. Carbon dioxide exits the blood and oxygen enters in pulmonary capillaries

Learning Task No. 5:

- | | |
|-----------------------------|---|
| 5 Tricuspid valve | 4 Right atrium |
| 10 Pulmonary veins | 6 Right ventricle |
| 13 Left ventricle | 18 Capillaries |
| 9 Lungs | 14 Aortic semilunar valve |
| 12 Mitral Valve | 16 Arteries |
| 1 Venules | 3 Inferior vena cava & superior vena cava |
| 7 Pulmonary semilunar valve | 11 Left atrium |
| 8 Pulmonary arteries | 17 Arterioles |
| 2 Veins | 15 Aorta |

Learning Task No. 6:

Answers in the guide questions

- varies according to your personal lifestyle and other factors
- To avoid being infected by Covid-19
- Wearing of face mask will filter the entry of virus and unwanted foreign materials in the mouth that will affect the blood circulation and the coordinated function of the respiratory and circulatory system.

Week 3

Learning Task No. 1:

- Signature of the parent with date

Learning Task No. 2: Answers will vary

Learning Task No. 3: Answers will vary but must include concepts in keeping a healthy lifestyle.

Learning Task No. 4: Answers will vary

Learning Task No. 5: Answers will vary based on your lifestyle

Weeks 4-5**Learning Task No.1:**

1.

	X^b	Y
X^b	X^bX^b	X^bY
X^b	X^bX^b	X^bY

Genotypes : X^bX^b , and X^bY **Phenotypes**: female bald, male bald**Genotypic ratio**: 50% X^bX^b , and 50% X^bY **Phenotypic ratio**: 50%female bald and 50% male bald**Learning Task No. 2:**

1. A pattern of inheritance in which traits do not segregate in accordance to Mendel's laws.
2. R and W

Learning Task No. 3: FRR - 25% - red FRW - 50% - pink FWW - 25% - white

Because the alleles of the two different colors of genes can be segregated to interact with one another.

	FR	FW
FR	FRR	FRW
FW	FRW	FWW

Week 6**Learning Task No.1.**

Answer vary depending on your own personal experience of changes in the new normal. This may include wearing of face mask, PPE, sanitizing with alcohol, studying at home, and many others.

Learning Task No.2

1. Asian elephant/*Elephas maximus*-Holocene
2. *Stegodon luzonensis* /Pleistocene
3. Palawan fossil sirenian-Miocene
4. Fossil marines- Pleistocene
5. Tiger-Panthera tigris sp
6. Philippine Rhinoceros-Pleistocene
7. Cebu Warty Pig- Holocene
8. Cebu Tamaraw- Pleistocene or Holocene

Week 6**Learning Task No. 3**

1. A
2. H
3. G
4. F
5. D
6. E
7. I
8. B
9. C

Learning Task No. 4

Answers may vary

Week 7-8**Learning Task No. 1:**

1. chloroplast
2. Mitochondria
3. Light energy
4. Chemical energy
5. CO_2 , H_2O
6. O_2 , glucose
7. O_2 , , glucose
8. CO_2 , H_2O
9. The materials needed are products of cellular respiration, **CO_2 , H_2O**
10. The materials needed are products of photosynthesis

Learning Task No. 2:

Light Dependent-thylakoid-uses light energy—ATP and NADPH

Light Independent or Dark Reaction- stroma- fixation, reduction—no sunlight needed
Concepts include Photosynthesis and respiration

Learning Task No. 3:

1. cellular respiration
2. Adenosine Triphosphate
3. Mitochondria
4. Cytoplasm
5. Aerobic
6. Anaerobic
7. fermentation

Learning Task No. 4.

1. outside w/ light
2. Outside
3. Presence of sunlight

Learning Task No. 5.

1. all organisms
2. Grana
3. O_2 , , glucose
4. O_2 , , glucose
5. Catabolic process
6. CO_2 taken in and O_2 released
7. Releases energy
8. Endergonic
9. Proceed w/o sunlight
- 10.. $6CO + H_2O \longrightarrow C_6H_{12}O_6 + 6CO$

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