

# Science

## Quarter 2 – Module 7:

### Biotic and Abiotic Components of an Ecosystem



CO\_Q2\_Science 7\_ Module 7

**Science – Grade 7**  
**Alternative Delivery Mode**  
**Quarter 2 – Module 7: Biotic and Abiotic Components of an Ecosystem**  
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## **Introductory Message**

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



## ***What I Need to Know***

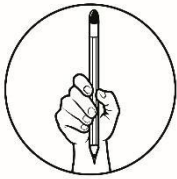
Environment is a collection of living and nonliving things. Mosses growing on rocks, garden snails gliding on fences, and fish swimming in bodies of water are just few examples of how living and nonliving things interact. The living components of the environment are called organisms. The nonliving components make up the physical environment of these organisms. In this lesson, you will discover more about ecosystems, the components that make them up, and the interactions that take place among and between them.

### **Most Essential Learning Competency:**

Demonstrate an understanding of organisms interacting with each other and with their environment; and the biotic and abiotic components of an ecosystem.

After going through this lesson, you are expected to:

1. define abiotic and biotic components of ecosystem;
2. identify abiotic and biotic components of ecosystem; and
3. cite the importance of abiotic and biotic components of an ecosystem.



## ***What I Know***

**Directions:** Read each item carefully. Write only the letter of the correct answer for each question. Use a separate sheet of paper for your answers.

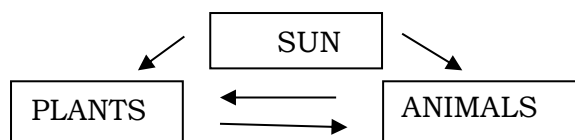
1. Which of the following refers to the living parts of the environment such as humans, animals, and plants?
  - A. Biosphere
  - B. Ecosystem
  - C. Biotic factors
  - D. Abiotic factors
2. Which of the following examples are completely non-living things?
  - A. Air, chair, chicken
  - B. Duck, cat, frog, tree, wood
  - C. Oxygen, rock, sunlight, water
  - D. Dog, dinosaur, leaves, temperature

For items 3 and 4, choose your answer from the given choices inside the box.

- |   |
|---|
| <ol style="list-style-type: none"><li>I. snail, algae, and plants</li><li>II. fish, crabs, bird, and snake</li><li>III. sunlight, soil, temperature and oxygen</li><li>IV. rocks, temperature, sunlight, air, and water</li></ol> |
|---|

3. From the items in the box, which factors are purely abiotic?
  - A. I and II only
  - B. II and III only
  - C. I, only III only
  - D. III and IV only
4. Which statement is **NOT** true about the choices in the box?
  - A. I and II contain biotic factors
  - B. II and III include all abiotic factors
  - C. III and IV comprise abiotic factors
  - D. I and IV contains biotic and abiotic factors
5. Which of the following circumstances will **NOT** illustrates an ecosystem?
  - A. An empty aquarium
  - B. A growing flower in a pot
  - C. Mountains surrounded by trees
  - D. Large bodies of oceans and lakes
6. In which place do biotic and abiotic factors interact?
  - A. Ecosystem
  - B. House
  - C. Niche
  - D. Shelter
7. The following are considered biotic factors **EXCEPT**
  - A. Butterfly
  - B. Panda
  - C. Sunlight
  - D. Turtle
8. Which of the following is another term that refers to non living things?
  - A. Biotic factor
  - B. Abiotic factor
  - C. Limiting factor
  - D. Carrying capacity
9. How will you classify certain factors such as temperature, light, air, and soil?
  - A. Abiotic
  - B. Biotic
  - C. Living
  - D. Static
10. Which of the following choices below are abiotic factors?
  - A. Crabs, fish, and oxygen
  - B. Oxygen, soil, and sunlight
  - C. Algae, dog, and temperature
  - D. Mushroom, sunlight, and temperature
11. Which of the following statements is true?
  - A. All living things are biotic factors.
  - B. Most living things are abiotic factors.
  - C. Some non-living things are biotic factors.
  - D. Living things can either be biotic or abiotic.
12. All of the items below are abiotic **EXCEPT**
  - A. Grass
  - B. Soil
  - C. Sun
  - D. Temperature
13. One of the following statements describes biotic factors correctly. Which set of factors is it?
  - A. Living things in an environment
  - B. Non living thing in an organism's environment
  - C. Living and non-living things found in an ecosystem
  - D. Solid materials such as rock and soil in an organism's environment

For items 14 and 15; Study the illustration



14. Based on the given figure, which of the following statements narrate the role of plants correctly?

- A. Plants give off energy for the sun.
- B. Plants release gas for the animals and sun.
- C. Plants provide food and energy for the sun and animals.
- D. Plants get energy from the sun and release oxygen needed by animals.

15. In the above illustration, what do you think will happen to plants and animals if the sun is **NOT** present?

- I. The plants will die and it will cause lack of oxygen in our environment.
- II. The plants and animals will die because the plants have no source of energy in making their food that serve as food for the animals too.
- III. The plants will die but the animals will continue to live because the animals and plants are not dependent on each other.

- A. I & II only
- B. I, II and III

- C. II & III only
- D. II & III only

## Lesson

# 1

## Biotic and Abiotic Components of Ecosystem








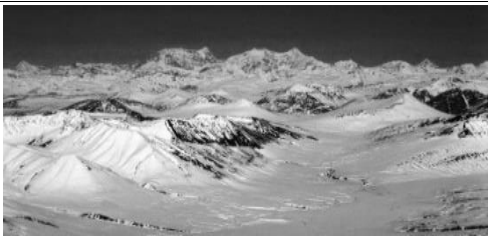


### *What's In*

In your previous lessons, you have been introduced to the concept of levels of organization in organisms, plant and animal cells, and reproduction. This lesson will introduce you to the habitat of organisms and components of an ecosystem.

Part I: Study the pictures below. Identify the place/area where each of the organisms in column A can survive. Place the letter/s corresponding to your answer on a separate sheet of paper. Choose all possible answers.

### Activity 1: Fit me In!

A		B	
1.____		A	
2.____		B	
3.____		C	
4.____		D	

Q1. What is the place where living organisms live and survive called?

---

Q2. Why do different animals live in different places?

---

Part II. Study the picture below.

## Activity 2: What makes me grow?



Q1. What do you think are the non living things needed by this plant in order to grow?

---

Q2. What conditions are needed by the plant to grow healthy?

---

Q3. Are plants considered living organisms? Why?

---



## ***What's New***

### **Activity 3: Observing Living and Non-living things in a Quadrant**

Materials:

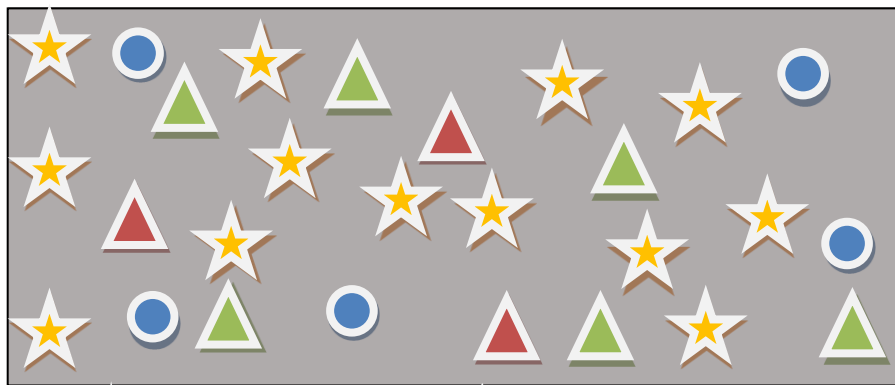
- Ball pen/ pencil
- Paper
- Illustration

Procedures:

1. Study the illustration below.

The illustration below represents a quadrant in a garden and the living and nonliving things in it.





Legend: paragrass Bug Ant Earthworm

Color of soil ( Brown color)



2. Use the given illustration as your guide to complete the table and answer the following questions on a separate sheet of paper.

3. List down/ identify living organisms found in an illustration. Make a table similar to one given below in a separate sheet of paper.

Organism	Number of Population
1	
2	
3	
4	

4. Based on your table, answer the following questions;

Q1. What living organisms found in the illustration?

Q2. What organism has the most number?

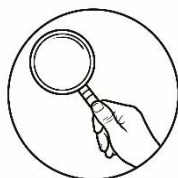
Q3. What organism has the least number?

5. Observe the soil within the quadrant.

Q4. How will you describe the color of the soil?

Q5. Does the color and type of soil in a quadrant affect the number of plants and animals/insects living in that area?

Q6. What non living things affect the number of organisms living in a certain place?



## What Is It

**Ecosystems** are made up of living things (biotic components) and non-living things (abiotic components). An Ecosystem may contain many **habitats** where organisms obtain their foods, water, shelter and other things in order to live, grow, and reproduce.

**Biotic components** are the living parts of an ecosystem. The term “biotic” is formed by the combination of two terms, “**bio**” meaning *life* and “**ic**” meaning *like*. The term means life like and is related to all the living entities present in an ecosystem.

The presence of Biotic Components and their biological by products affect the composition of an ecosystem. Biotic resources include all living organisms from animals and humans, to plants, fungi, and bacteria.

Biotic factors comprising the ecosystem include:

1. Humans
2. Animals (Dogs, Cats, Lions, Monkeys, Bears, etc.)
3. Insects (Flies, Mosquitoes, Bugs, Ants, etc.)
4. Birds
5. Plants (Trees, Flowers, and Grasses)
6. Worms
7. Bacteria and Viruses

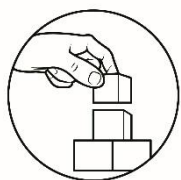
The interactions between various biotic factors are necessary for the survival and reproduction of each species.

**Abiotic Components** are the non- living parts of an ecosystem. The term abiotic refers to the non-living entities in the ecosystem. Sunlight, water, land, temperature- all constitutes the abiotic factors.

Other abiotic factors comprising the ecosystem include:

- |                  |                            |
|------------------|----------------------------|
| 1. Climate       | 6. Type of soil            |
| 2. Humidity      | 7. Light                   |
| 3. Precipitation | 8. Water                   |
| 4. Wind          | 9. Oxygen / Carbon dioxide |
| 5. Altitude      |                            |

Abiotic factors are the non-living, physical and chemical factors that influence an ecosystem.



## What's More

Try to enhance your knowledge on the interdependence among biotic and abiotic components within an ecosystem. Complete the table below by giving three examples of abiotic and three biotic components for each ecosystem. Answer the questions that follow.

Place your answer on a separate sheet of paper.

#### Activity 4: Break it down!

Ecosystem	Abiotic components	Biotic Components
FOREST		
OCEAN		
RIVER		
FISH POND		
VEGETABLE GARDEN		

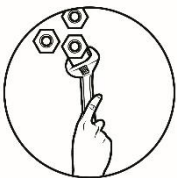
Q1. Are the living things found in one ecosystem the same with what you found in other ecosystems? Cite an example.

Q2. What can be found in an ecosystem?

---

Q3. Can you consider a flower pot as an ecosystem? Why?

---



### ***What I Have Learned***

**Directions:** Below are metacognition starters which you will copy and complete on a separate sheet of paper. You can use the words in the box. Items 2-4 need some explanation to show what you learned from your lessons.

ABIOTIC COMPONENT

BIOTIC COMPONENT

ECOSYSTEM

HABITAT

1. I choose the word \_\_\_\_\_

2. This word refers to \_\_\_\_\_

3. It is different from \_\_\_\_\_ because \_\_\_\_\_

4 In addition, I learned that \_\_\_\_\_

5. Finally, the most important learning for me is about \_\_\_\_\_



## ***What I Can Do***

### **Activity 5: Collage-making Activity**

Materials:

- Used Newspapers/ Magazine
- Scissors
- Glue/Paste
- Manila paper / old Calendar

Procedures:

1. Cut out pictures of biotic and abiotic components from newspapers or magazines.
2. Make a collage of an ecosystem out of the cut pictures.
3. Cover using a clear transparent plastic to preserve your output.

Q1. Is it important to reuse, reduce, and recycle?

Q2. Which of the 3R's have you applied in this activity?

Rubric Scoring for Collage

<b>Criteria</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>Score</b>
Organization	Are arranged in a planned manner	Are partly arranged in an organized way	Are partly arranged in unorganized way	
Selected Photos/images	Uses recycled clear images	Uses recycled and unclear images	Uses not recycled and unclear images	
Relevance	Has suitable relevance to the topic	Has limited relevance to the topic	Has a slight relevance to the topic	
Content	Shows very good ideas	Shows good ideas	Shows very limited ideas	



## ***Assessment***

**Directions:** Read each item carefully. Write only the letter of the correct answer for each question. Use a separate sheet of paper for your answers.

1. What do you call the living organisms that inhabit an environment?  
A. Survivors  
B. Community  
C. Biotic factors  
D. Abiotic factors
2. Which of the following choices are abiotic factors?  
A. Crabs, fish, and oxygen  
B. Oxygen, soil, and sunlight,  
C. Algae, dog, and temperature,  
D. Mushroom, sunlight, and temperature

3. Which of the following statements is true?
- A. All living things are biotic factors
  - B. Most living things are abiotic factors
  - C. Some non living things are biotic factors
  - D. Living things can either be biotic or abiotic
4. All of the items below are abiotic **EXCEPT**
- A. Grasses
  - B. Soil
  - C. Sun
  - D. Temperature

For items 5 and 6 choose your answer from the given choices inside the box.

- I. frog, algae, and plants
- II. horse, crabs, bird, and snake
- III. sunlight, water, temperature and oxygen
- IV. mushroom, temperature, sunlight, air, and dog

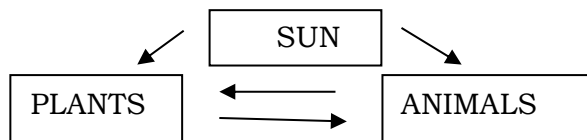
5. From the items in the box, which factors are purely biotic?
- A. I and II only
  - B. I, II and III only
  - C. I, II, III and IV
  - D. II, III and IV only
6. Which statement is true about the choices in the box?
- A. I, II and III contain abiotic factors
  - B. I, II and III include biotic factors
  - C. I, II and III include biotic factors
  - D. I, II, III, and IV contains biotic and abiotic factors
7. Which of the following conditions is **NOT** an ecosystem?
- A. An empty aquarium
  - B. A growing flower in a pot
  - C. Mountains surrounded by trees
  - D. Large bodies of oceans and lakes
8. Outdoor plants need water and sunlight in order to grow. Which statements will distinguish plants from water and sunlight correctly?

- I. Sunlight, water, and plants are all components of an ecosystem.
- II. Plants are biotic components however water and sunlight are both abiotic components of an ecosystem.
- III. Water and sunlight are both biotic and abiotic while plants are biotic components of an ecosystem.

- A. I & II only
  - B. II & III only
  - C. I & III only
  - D. I, II, and III
9. What do you call the living parts of the environment, such as humans, animals, and plants?
- A. Biosphere
  - B. Ecosystem
  - C. Biotic factors
  - D. Abiotic factors
10. In which place do biotic and abiotic factors interact?
- A. Ecosystem
  - B. House
  - C. Niche
  - D. Shelter
11. Which of the following is an example of an abiotic factor?
- A. Bugs
  - B. Ferns
  - C. Minerals
  - D. Zebra

12. Which of the following is another term for non living things?  
 A. Biotic factor C. Limiting factor  
 B. Abiotic factor D. Carrying capacity
13. How will you classify the factors such as sunlight, oxygen, air, and rocks?  
 A. Abiotic C. Biotic  
 B. Alive D. Living

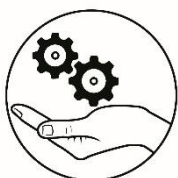
For items 14 and 15; Study the illustration



14. Which of the following statements narrate the role of the plants **CORRECTLY**?  
 A. Plants give off energy for the sun.  
 B. Plants release gas for the animals and sun.  
 C. Plants provide food and energy for the sun and animals.  
 D. Plants get energy from the sun and release oxygen needed by animals.
15. Which of the following statements are **NOT** true?

- I. The plants and animals can still survive without the presence of sun.  
 II. The plants will die without the presence of sun because the plants have no source of energy in making their food.  
 III. The plants will grow without the presence of sun but the animals will continue to live because the two are not dependent to each other.

- A. I, and II only C. II and III only  
 B. I and III only D. I, II and III only



## Additional Activities

### Activity 6: What does it mean to be Alive?

Materials Needed:

- Pencil/ Ball pen
- Ruler
- Long Bond paper
- Crayons/colors

Procedures:

1. Visit a garden near your house. Draw in a bond paper the things found in the garden. You can add color on your drawings for a better result (Optional).
2. Answer the questions on a separate sheet of paper.

Q1. What are the things found in the garden?

Q2. Which of these are living things? Which of these are non-living?

Q3. Observe the things that you identified as living. What do they have in common?

Q4. Observe the things that you identified as non-living. What do they have in common?

---

Q5. Do you think that living and non-living things depend on each other in order to survive? Why do you think so?

---

Q6. What makes living things different from non-living?

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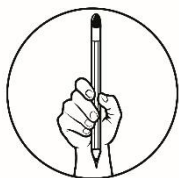
Rubric Scoring for Drawing

Criteria	5	3	1	Score
Application	All concepts expressed in the illustration.	Expressed some concepts in the illustration.	There is minimal expression of concepts in the illustration.	
Creativity	Very Creative	Shows creativity	Lack of creativity	

## Lesson

# 2

## The Difference Between Biotic and Abiotic Components of Ecosystem



### *What I Know*

**Directions:** Read each item carefully. Write only the letter of the correct answer for each question. Use a separate sheet of paper for your answers.

1. A plant needs water, radiant energy, minerals, oxygen, and carbon dioxide in order to live. How are these requirements needed by plants categorized?

A. Abiotic

C. Climate

B. Biotic

D. Minerals

2. Which of the following represents an abiotic component of the environment?
  - A. Flowing lava
  - B. Cat nursing its young
  - C. Sprouting mongo seeds
  - D. Growing grasses on mountain
3. Which of the following are needed in setting up an aquarium as a mini-ecosystem?
  - A. A number of fish and water only
  - B. Population of fish, snails, and plants only
  - C. Combinations of water, sand, soil and light
  - D. Communities of different species of organisms, water, soil, and sunlight
4. Which of the following characteristics regarding biotic factors is true?
  - A. It stands and rolls down.
  - B. It lays down flat and hanging.
  - C. It grows, reproduces and dies.
  - D. It does nothing to its environment.
5. Which of the following organisms are biotic factors capable of making their own food?
  - A. Zebra
  - B. Python
  - C. Mahogany
  - D. Monkey-eating eagle
6. There are physical and chemical substances in the ecosystem. Which of the following refers to the non living things found in it?
  - A. Abiotic
  - B. Biology
  - C. Biotic
  - D. Ecology
7. How will you describe biotic factors?
  - A. Living things in an environment.
  - B. Non-living thing in an organism's environment.
  - C. Living and non living things found in an ecosystem.
  - D. Solid materials such as rock and soil in an organism's environment.
8. Which of the following choices illustrates purely abiotic factors inhabit ecosystem and sustain the needs of other living things?
  - A. Snail, algae, and plants
  - B. Fish, crabs, oxygen and minerals
  - C. Sunlight, soil, temperature and oxygen
  - D. Algae, temperature, sunlight, air, and dog
9. Your aquarium contains greater number of fish and few hydrilla plants. You feed the fish regularly but after few days you noticed that an increased number of fish died. Which of the following most likely caused this?
  - A. More food intake by the fish
  - B. Less energy is absorb from the environment
  - C. Lack of food and water for the fish to survive
  - D. Shortage of oxygen as life support for the fish to live



10. The distribution of the different types of organisms in an ecosystem is affected by environmental changes. Verify which of these factors inside the box likely affect the distribution of oxygen?

I. Amount of sunlight	III. Availability of nutrients from soil
II. Amount of precipitation	IV. Number of different kinds of plants

A. I & II only

B. I, II & III only

C. II, III, & IV only

D. I, II, III, & IV



## What's In

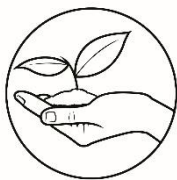
Earth is a distinct place where humans and other living organisms survive due to the diversity and interactions with varied life forms. Knowing the differences among the components of the ecosystem will help us determine what we contribute to sustain its stability, manage and control limiting factors, and mitigate adverse impacts of imbalances in the environment.

Identify the following as biotic component or abiotic component. Write your answers on a separate sheet of paper.

Table 1

Thing	Biotic or Abiotic component
1. Air	
2. Birds	
3. Earthworm	
4. Fire	
5. Grass	
6. Heat	
7. Lightning	
8. Rocks	
9. Soil	
10. Water	

Q1. How do biotic factors differ from abiotic factors in terms of function or influence in an ecosystem?



## What's New

### Activity 1: "Life within a small world"

Procedures:

1. Look at the picture carefully (Figure 1).
2. Identify the components that make up the ecosystem inside the jar.
3. Decide whether each thing inside the jar is living or non-living
4. Describe how each thing or condition influences one another.
5. Make and complete a similar table below on a separate sheet of paper.



Figure 1(Source: Science Explorer Focus on Earth Science)

<b>COMPONENT</b>	<b>FUNCTION ON ENVIRONMENT</b> (ex. <i>Produce important gas, Habitat for aquatic organisms, etc. </i> )	<b>BIOTIC OR ABIOTIC</b>

Q1. Do you think life is possible within the jar? Explain your answer.

Q2. What might happen to the fish if plants are not present? Why?

Q3. If the animals are not around, what might happen to the plants? Why do you think so?

Q4. Are there factors outside the aquarium that influence the growth of the organisms inside it? Cite at least one if any.

#### Rubric Scoring for Explanation

Criteria	5	3	1	Score
Knowledge	Provides detailed explanation and complete response to the question	Provides clear explanation but incomplete response to the question	Provides unclear explanation and incomplete response to the question	



## ***What is It***

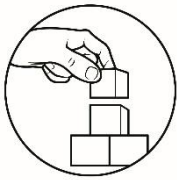
A. **Biotic component** refers to all the living organisms in a habitat. This includes organisms such as human, animal, plants, bacteria, and decomposers.

- Human beings are one of the biotic components of an ecosystem and they depend from plants for food because they are not capable of producing own.
- Animals and human beings are alike in many ways. They are also biotic components that compose the ecosystem and help sustain the needs of other living organisms. Animals get food from the ecosystem such as plants, insects and mammals alike as well as the other forms of prey.
- Plants and grasses are also part of the biotic components of an ecosystem. They provide food and other important elements like oxygen to humans and animals. They also become source of shelter and other materials in the ecosystem.
- Bacteria and decomposers are also biotic components that help break down the remains of other living organisms by converting them into nutrients found in soil.

B. **Abiotic component** of an ecosystem refers to its non-living or physical environment. The physical environment is influenced by different factors such as water, sunlight, oxygen, temperature, soil, air, minerals and nutrients.

- **Water** is one of the most important abiotic factors that carry life to all living things. It covers the largest part of the world such as the ocean, rivers, lakes and other bodies of water which are considered the habitats of marine organisms. It is a component that completes the process of food making in plants which is known as **photosynthesis**.
- **Sunlight** is another necessary abiotic factor in an ecosystem. It plays a vital role in photosynthesis in order for the plants to sustain the production of food for other living organisms. Without this factor, few organisms will be able to survive.
- **Oxygen** is also an abiotic factor produced by plants that support breathing among humans and animals. It helps decompose decaying matters around us.
- **Temperature** a measure of the degree of hotness or coldness. It affects the kind of living organisms that can survive in a certain place.

- **Soil** is an abiotic factor where the plants grow and live. It contains rock fragments and nutrients coming from the remains of decaying bodies. It is also a home for different microorganisms and living organisms like plants.
- **Minerals/Nutrients** are other essential substances from the soil needed by plants and animals for their growth.
- **Air** in the atmosphere is comprised of gases needed for the growth and development of organisms. An example of this is the carbon dioxide which is needed by plants for food production; and oxygen which is a gas needed by humans and animals for respiration.



## What's More

### Activity 2: Find Me!

**Directions:** Below is a word puzzle containing biotic and abiotic factors. Identify these factors from the word puzzle.

Copy the identified factors from the puzzle on a separate sheet of paper and match it with the descriptions that follow.

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

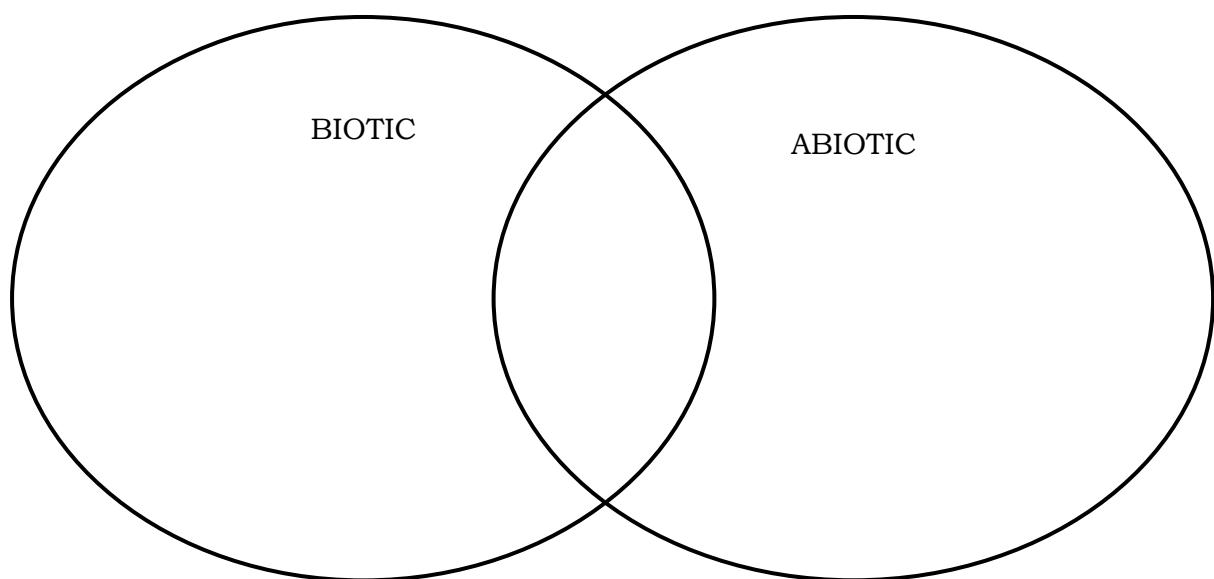
1. It is vital for the survival of all organisms. The amount of this in the environment is influenced by the amount of rainfall. It serves as the habitat of aquatic organisms.
2. The abiotic factor which determines the kind of living organisms that can survive in a certain place. It may promote growth and development among organisms in an area.

3. The abiotic factor comprised of different gases released from plants and animals needed for the growth and development of organisms.
4. The abiotic factor produced by plants that is important to respiration of humans and other animals.
5. It is an abiotic factor where the plants absorb nutrients and water in order to grow.
6. It is a very important component in the photosynthetic activity in plants to support life with other biotic components. It comes from the sun.
7. It is a component of an ecosystem that depends from plants for food because they are not capable of producing their own.
8. The biotic factor decomposes dead bodies in order to increase nutrients of soil.
9. This biotic factor provides food and oxygen to all living organisms.
10. These are abiotic factors such as vitamins and proteins in the soil needed for plant growth.



## ***What I Have Learned***

**Directions:** Differentiate biotic from abiotic components of an ecosystem in terms of *meaning*, *factors*, and *functions*. Use the Venn diagram as shown below. Place the similarities at the center and the differences at the opposite circles of the diagram. Write your answer on a separate sheet of paper.



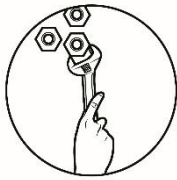
Q1. Describe the differences between biotic and abiotic components in terms of;

a. meaning- \_\_\_\_\_

b. function- \_\_\_\_\_

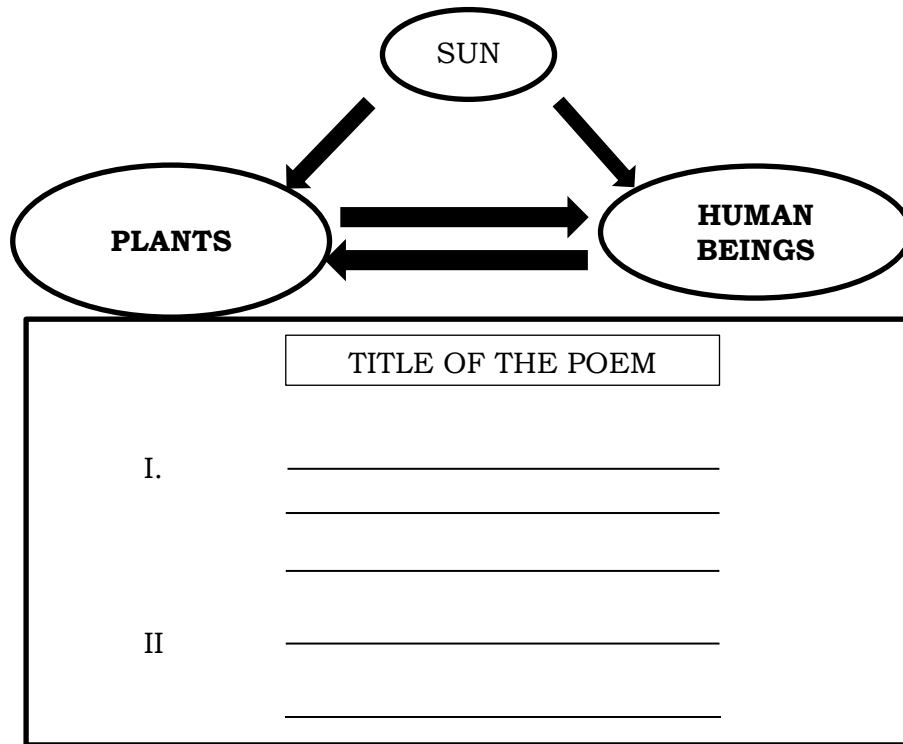
Q2 Do you think both biotic and abiotic components are important to the ecosystem?

Support your answer. \_\_\_\_\_



## What I Can Do

**Directions:** Study the given illustrations below. Construct a poem of at least two tercets (three-line) stanzas to show your understanding of the illustration that follows. Write your poem on a separate sheet of paper.



Rubric scoring for Poem

Criteria	5	3	1	Score
Title	Presents very creative title related to the topic	Presents creative title related to the topic	Presents title with a little creativity	
Sequence	Presented two stanzas in a logical order	Presented one stanza in a logical order	Presented one stanza and not in logical order	
Content	Show very good ideas	Shows good ideas	Shows little idea	
Creativity	Very creative	Creative	With a little creativity	



## Assessment

**Directions:** Read each item carefully. Write only the letter of the correct answer for each question. Use a separate sheet of paper for your answers.

1. A plant needs water, radiant energy, minerals, oxygen, and carbon dioxide to live. How are these requirements needed by plants categorized?
  - A. Climate
  - B. Minerals
  - C. Biotic components
  - D. Abiotic components
2. Which of the following represents an abiotic component of the environment?
  - A. Flowing lava
  - B. Cat nursing its young
  - C. Sprouting mongo seeds
  - D. Growing grasses on mountain
3. Which of the following are needed in setting up an aquarium as a mini ecosystem?
  - A. A number of fish and water only
  - B. Combination of water, sand, soil and light
  - C. Population of fish, snails, and plants only
  - D. Communities of different species of organisms, water, sand, soil, and sunlight
4. On which abiotic factors would varieties of fish and seaweeds rely for their survival?
  - A. Insects and sun
  - B. Water and corals
  - C. Water and temperature
  - D. Solid particles and temperature
5. Which of the following is an abiotic factor produced by plants?
  - A. Flower
  - B. Fruit
  - C. Oxygen
  - D. Stem
6. Which ecosystems below would you find the highest rate of photosynthesis?
  - A. Aquarium which contained water, fish, and plants
  - B. Fish pond which comprised of mud fish and water lily
  - C. Forest surrounded by tall trees, ferns, shrubs and animals
  - D. Lake comprises of different varieties of fish, alligators, and water cabbage



7. The distribution of the different types of organisms in an ecosystem is affected by environmental changes. Verify which of these factors is more likely to affect the distribution of oxygen?

I. Amount of sunlight	III. Availability of nutrients from soil
II. Amount of precipitation	IV. Number of different kinds of plants

- A. I & II only  
B. I, II & III only  
C. II, III, & IV only  
D. I, II, III, & IV
8. One of the following statements describes biotic factors in an ecosystem correctly. Which one is it?
- A. Gases and water in an area  
B. Non-living things in an organism's environment  
C. Plants, animals, fungi and bacteria in an environment  
D. Solid materials such as rock and soil found everywhere
9. An aquarium contains fish, snail and hydrilla plants. The organisms mentioned belong to which of the following?
- A. Biotic factors  
B. Abiotic factors  
C. Both abiotic and biotic factors  
D. Neither abiotic nor biotic factors
10. Your aquarium contains greater number of fish and few hydrilla plants. You feed the fish regularly but after few days you noticed that an increased number of fish died. Which of the following most likely caused this?
- A. More food intake by the fish  
B. Less energy is absorb from the environment  
C. Lack of food and water for the fish to survive  
D. Shortage of oxygen as life support for the fish to live
11. Which of the following statements is **TRUE**?

- |   |
|---|
| I. All animals and bacteria in the environment are biotic components.<br>II. All living things and the non-living things in an environment are abiotic components |
|---|

- A. I only  
B. II only  
C. I and II  
D. Neither I nor II

12. Which of the following abiotic factors are found in the atmosphere?
- A. Pebbles and air
  - B. Eagles and bacteria
  - C. Bacteria and Corona virus
  - D. Oxygen and carbon dioxide
13. Our cells need this kind of abiotic factor in order to survive. Which of the following factors may cause death when it is absent for an hour?
- A. Food
  - B. Nitrogen
  - C. Oxygen
  - D. Water
14. Ecosystem like forest is comprised of several biotic and abiotic components. What components can be found in the forest?

I. Bird and snake

III. Waterfalls and rocks

II. Algae and mushroom

IV. Monkey and wild pig

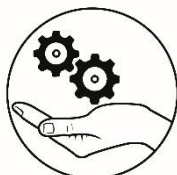
- A. I and II only
  - B. II and III only
  - C. II and IV only
  - D. I, II, III and IV
15. Which of the following statements below regarding abiotic factors are **TRUE**?

I. Abiotic components include plants, decomposers, air, sunlight and water.

II. Abiotic components comprise things such as temperature, rocks, soil and minerals.

III. Abiotic factors such as sunlight and water sustain life for living organisms in our environment.

- A. I , II and III
- B. I and II only
- C. I and III only
- D. II and III only



## Additional Activities

**Directions:** Try to perform the activity below to give you more ideas on how the organisms interact with one another in order to live. Write your answer on a separate sheet of paper.

Procedures:

1. Prepare two empty containers of same size with cover (Recycled bottles).
2. Fill each container with water until it is about two-third ( $2/3$ ) full.
3. Mark one container as setup A and the other one is setup B.
4. Add each setup the following things indicated in the table.

Table 1

SETUP A	SETUP B
Water	Water
Snail and small fish	Snail and small fish
Hydrilla or water cabbage	Without plant
Small pebbles	Small pebbles

5. Cover each setup and place it in one area.
6. Observe the two setups for two to three days.
7. Answer the guide questions on a separate sheet of paper.

### Guide Questions:

Q1. What happened to the snail and fish in each set-up after two or three days?

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Q2. In which setup was the fish still alive after two or three days? Why is this so?

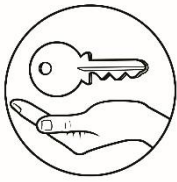
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Q3. What do you think will happen to the snail and fish in each of the set-up when left closed for a longer period of time? Explain your answer.

---

Rubric Scoring for Explanation

Criteria	5	3	1	Score
Knowledge	Provides detailed explanation and complete response to the question	Provides clear explanation but incomplete response to the question	Provides unclear explanation and incomplete response to the question	



# Answer Key

## LESSON 1

WHAT I KNOW

1. C
2. C
3. A
4. B
5. A
6. A
7. C
8. B
9. A
10. B
11. A
12. A
13. A
14. D
15. A

ASSESSMENT

1. C
2. B
3. A
4. A
5. A
6. D
7. A
8. A
9. C
10. A
11. C
12. B
13. A
14. D
15. C

**What's in!** (Activity 1)

1. C
2. D
3. B
4. A

Q1. Habitat is the place where the organisms such as a plant, animal, or other organism are living and survive.

(Activity 2)

1. The non-living things needed by plants to grow are the following:
- 1.1. Water
- 1.2. Soil
- 1.3. Sunlight

Other possible answers such as: air, temperature, nutrients, carbon dioxide, and etc.

2. The plants need enough sunlight, proper temperature, good moisture, air, enough water, and nutrients in order to grow healthy. (Answers may vary)
3. Yes, plants are living organisms because they are able to grow, adapt the environment, and reproduce like human beings and animals. (Answer may vary)

**What I Have Learned**

Sample answer:

1. I chose the word biotic component.
2. This word refers to all living (biotic) things found in an ecosystem.
3. It is different from abiotic component because it refers to all non-living (abiotic) things found in an ecosystem.
4. In addition, I learned that biotic components are dependent on abiotic components in order to survive.
5. Finally, the most important learning for me is about ecosystem that it is made up both abiotic component and biotic component interact to each other.

(All answers may varies from the students)

Organism	Number of population
1. Para grass	13
2. Bug	3
3. Ant	6
4. Earthworm	5

Sample table with answer

**What's New?** (Activity 1)

Q1. What living organisms found in an illustration?

The living organisms are Para grass, bug, ant, and earthworm.

Q2. What organism has the most number?

Para grass has the most number

Q3. What organism has the least number?

Bug has the least number

Q4. How will you describe the color of the soil?

The soil has dark brown or black color. (Answers may vary)

Q5. Does the color and type of soil in a quadrant affect the number of plants and animals/insects living in that area?

Yes, because dark brown or black color indicates that the soil has high organic matter content which helps the plants to grow healthy and yields more products. If more plants will grow, more numbers of insects will stay and grow in a certain area. (Answers may vary)

Q6. What non-living things affect the number of organisms living in a certain place?

The amount of sunlight, it is because the area is surrounded by tall trees. (Answer may vary)

Q7. What is the purpose of the activity?

To identify the living and non-living things in an ecosystem.

Q8. What is the importance of the activity?

To identify the living and non-living things in an ecosystem.

Q9. What is the result of the activity?

The living organisms are Para grass, bug, ant, and earthworm.

Q10. What is the conclusion of the activity?

The living organisms are Para grass, bug, ant, and earthworm.

Q11. What is the purpose of the activity?

To identify the living and non-living things in an ecosystem.

Q12. What is the importance of the activity?

To identify the living and non-living things in an ecosystem.

Q13. What is the result of the activity?

The living organisms are Para grass, bug, ant, and earthworm.

Q14. What is the conclusion of the activity?

The living organisms are Para grass, bug, ant, and earthworm.

**What's more?** Sample answer for activity 4: Break it down!

Ecosystem	Abiotic components	Biotic components
FOREST	Soil	Trees
	Rocks	Monkey
	Water	Birds
	Water	Shark/ Fish
	Nutrients	Sea weeds
OCEAN	Sunlight	Crabs
	Water	Crabs
	Rocks	Shrimps
	Sunlight	Ferns
RIVER	Soil	Mud fish
	Water	Frog
FISH POND	Sunlight	crabs
	Soil	Vegetables
VEGETABLE GARDEN	Nutrients	Insects
	Sunlight	Grass

## What's New?

THING OR CONDITION	FUNCTION ON ENVIRONMENT (Produce oxygen, Produce carbon dioxide, and Habitat for aquatic organisms)	BIOTIC OR ABIOTIC
1. Fish/ Snail	Produce carbon dioxide	BIOTIC
2. Plant	Produce oxygen,	BIOTIC
3. Water	Habitat for aquatic organisms	ABIOTIC

Sample table with answer:

- Q1. Do you think life is possible within the jar? Explain your answer.  
 ➤ Yes, because living organism like fish can breathe due to the presence of plants that provides oxygen and availability of water that serves its habitat.  
 ➤ (Answer may vary)
- Q2. What might happen to the fish if plants are not present? Why?  
 ➤ The fish will easily die because no oxygen will support life.  
 ➤ (Answer may vary)
- Q3. If the animals are not around, what might happen to the plants? Why do you think so?  
 ➤ Plants will easily die because no carbon dioxide will be used in making of their food. (Answer may vary)  
 Q4. Are there factors outside the aquarium that influence the growth of the organisms inside it? Cite at least one if any.  
 ➤ Yes, such as the sunlight and temperature from surroundings.  
 (Answer may vary)

## What's in

Q1. How do biotic factors differ from abiotic factors in terms of function or influence in an ecosystem?

1. Abiotic
2. Biotic
3. Biotic
4. Abiotic
5. Biotic
6. Abiotic
7. Abiotic
8. Abiotic
9. Abiotic
10. Abiotic

Abiotic factors refer to non living factors such as water and air that support life to all living things whereas biotic factors are living things such as plants, animals, fungi, bacteria, and etc. that depend their lives on non living things. (Answer may vary)

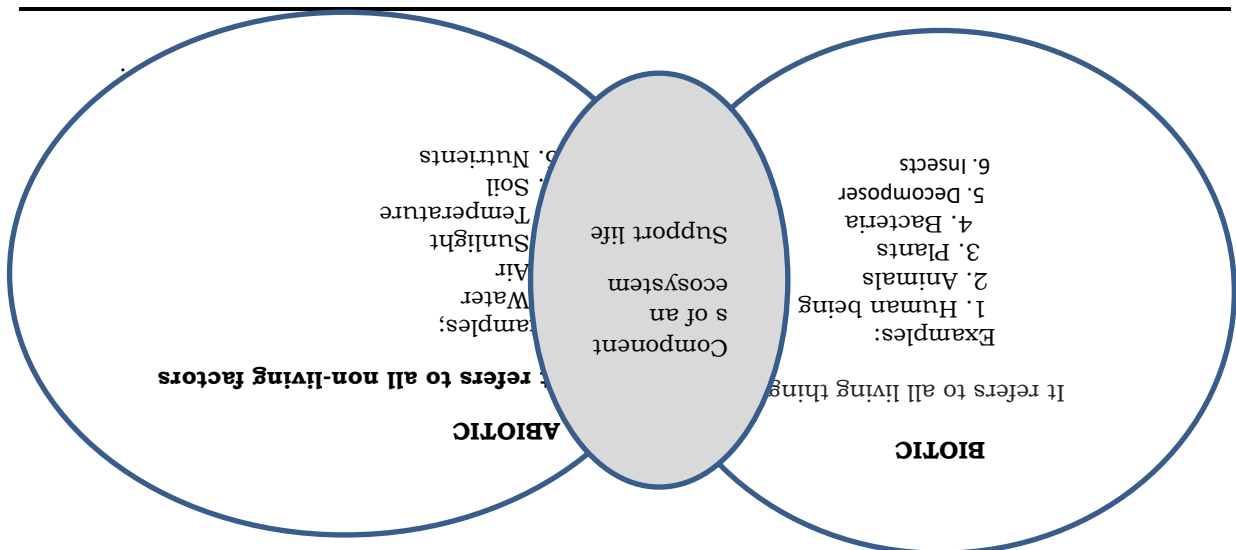
## LESSON 2

### Additional Activities

- Q1. What things are found in the garden?  
 Examples: Flowers, vegetables, grasses, insects, birds, soil, water, sunlight, air, and nutrients. (Answer may vary)
- Q2. Which of these things are living? Which of these things are non-living?  
 Living things such as flowers, vegetables, grasses, insects, and birds  
 These are non-living things such as soil, water, sunlight, air, and nutrients.  
 (Answer may vary)
- Q3. Observe the things that you identified as living. What do they have in common?  
 Living things are commonly known as biotic components that need foods and energy from the environment in order to grow, reproduce, and survive.  
 (Answer may vary)
- Q4. Observe the things that you identified as non-living. What do they have in common?  
 Non-living things are commonly known as abiotic components that support to sustain life of living organisms in the environment. (Answer may vary)
- Q5. Do you think that living and non-living things depend on each other in order to survive? Why do you think so?  
 Yes, because without non-living things such as oxygen, sunlight, water and other important materials all living things cannot survive. (Answer may vary)
- Q6. What makes living things different from non-living things?  
 Living things breathe, grow, move and die while non-living things do not breathe, reproduce, grow and move. (Answer may vary)

Q1. What is the difference between biotic and abiotic components?  
Refer to Venn diagram

Q2 Do you think both biotic and abiotic components are important to the ecosystem? Support your answer.  
Yes, because biotic components get their source of food and energy from abiotic components in order to survive. Otherwise, some abiotic components were produced and managed by biotic components in order to continue the cycle of life.  
(Answer may vary)



### What I Have Learned

Q1. What happened to the snail and fish in each set up after two or three days?  
In set-up A, both fish and snail are still alive.  
In set-up B, both the fish and snail will die.  
(Answer may vary)

Q2. In which set up was the fish still alive after two or three days? Why is this so?  
In set up A, where it contained plants that provides oxygen to support life. (Answer may vary)  
Q3. What do you think will happen to the snail and fish in each of the set up when left closed for a longer period of time? Explain your answer.  
The fish and snail will die easily in set-up B because no presence of plants. In set-up A, the fish and snail will stay living because of the presence of plants that provide oxygen within but will die soon if it is left closed for a longer period of time. (Answer may vary)

### Additional Activities

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

### What's more?

1. Water
2. Temperature.
3. Air
4. Oxygen
5. Soil
6. Sunlight
7. Human/ Animals
8. Bacteria/ Decomposer
9. Plants
10. Minerals

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