

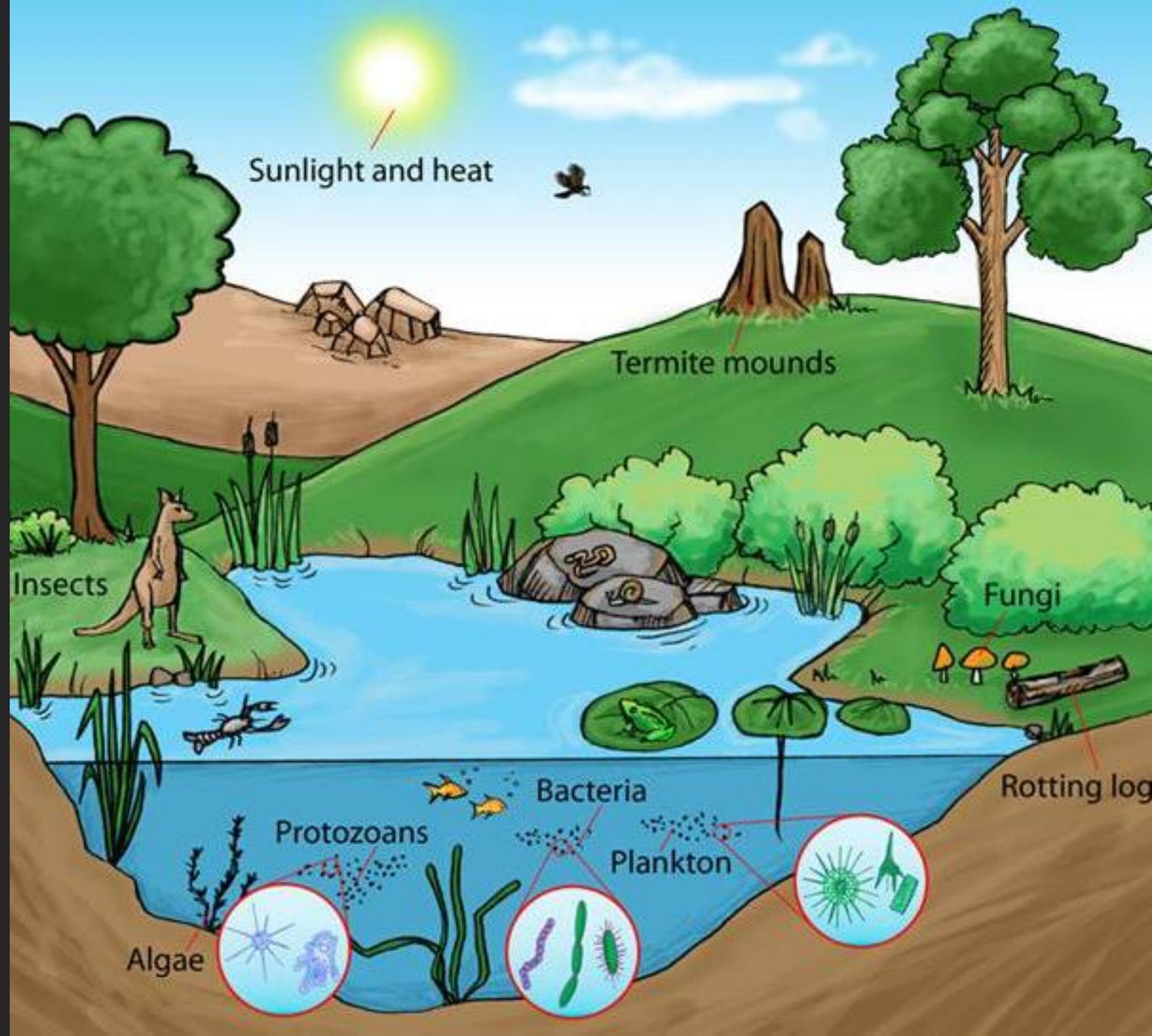
Biotic and Abiotic Factors

Objective: I can identify biotic and abiotic factors in an ecosystem.

LE Standards:

1.1b An ecosystem is shaped by the nonliving environment as well as its interacting species. The world contains a wide diversity of physical conditions, which creates a variety of environments.

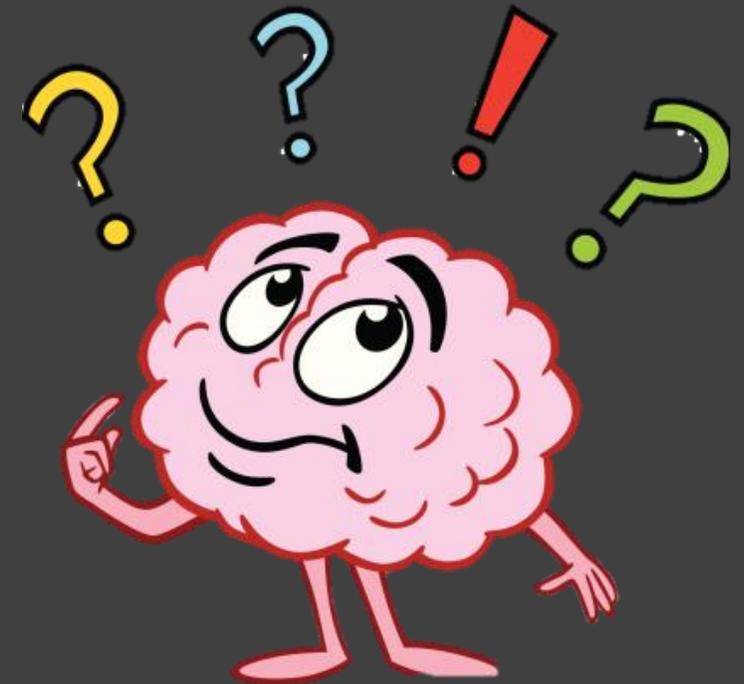
1.1d The interdependence of organisms in an established ecosystem often results in approximate stability over hundreds and thousands of years. For example, as one population increases, it is held in check by one or more environmental factors or another species.



Motivation/Activating prior knowledge

- The prefix “**Bio**” means life...
- The prefix “**a**” means no or not...

Knowing this, what can you infer is the meaning of “**biotic**” and “**abiotic**” factors?



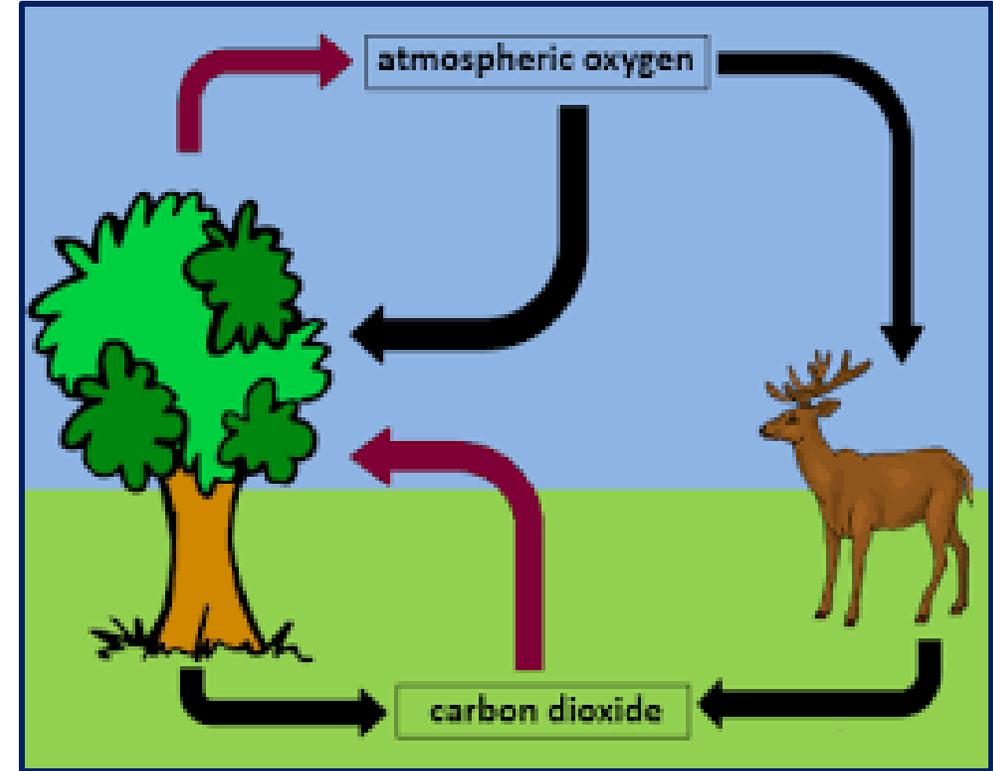
Mini-Lesson

Ecosystem= Defined area where organisms interact with living and non-living factors of the environment.



There is “interconnectedness” in each ecosystem!

- The theme of **interconnectedness** or **interdependence** means that the members of an ecosystem are dependent on one another for their survival.
- For example: plants depend on animals to give off carbon dioxide so they can use it in photosynthesis.

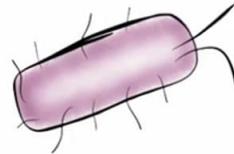


Mini-Lesson

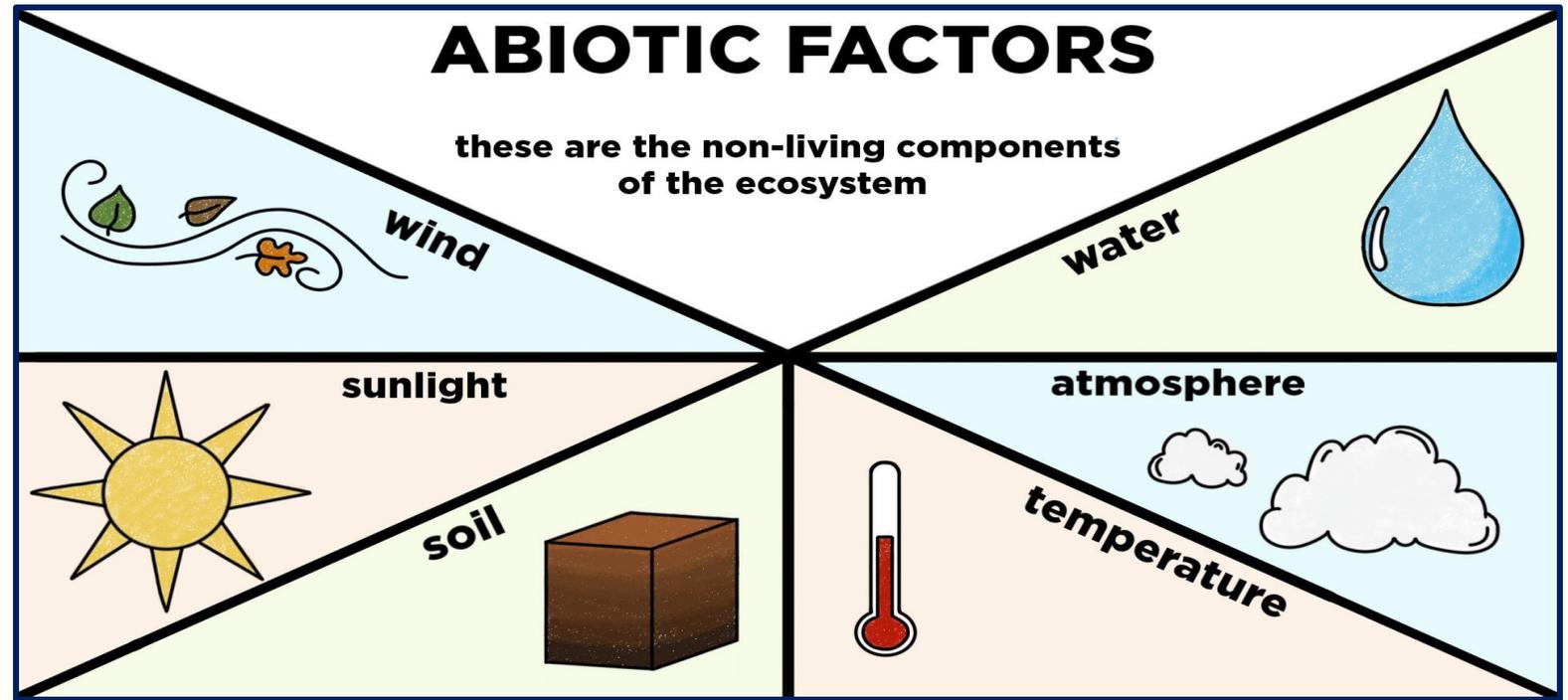
Biotic factors: the **living** components of the environment and include all of the living things that affect the organism.

Examples of biotic factors: animals, trees, parasites, pathogens, seeds, fruits, etc.

Biotic



Mini-Lesson



Abiotic factors: the **nonliving** components of the environment and include all of the non-living things that affect the organism.

Examples of **abiotic factors**: temperature, humidity, pH, salinity, oxygen concentration, amount of sunlight, soil type, rainfall, climate, wind and precipitation

Activity: Place the following in the correct category.

Biotic	Abiotic

1. Frog
2. Oak tree
3. Water
4. Almond
5. Sunlight
6. Human
7. Rocks
8. Soil
9. Fungus
10. Air

Regents Questions

Abiotic factors that affect the growth of grass in a lawn include

1

- A) bacteria and soil
- B) earthworms and nutrients
- C) moisture and minerals
- D) fertilizer and decomposers

Which list contains **only abiotic conditions** that might be found in a pond ecosystem?

2

- A) temperature of the water, green plant populations, dissolved minerals in the water
- B) temperature of the water, dissolved oxygen in the water, dissolved minerals in the water
- C) bacteria, dissolved minerals in the water, temperature of the water
- D) dissolved oxygen in the water, fish populations, insect populations

As it grows from a seed to a mature plant, a plant will grow taller and thicker. Which are **abiotic factors** most responsible for the increase in the mass of the plant?

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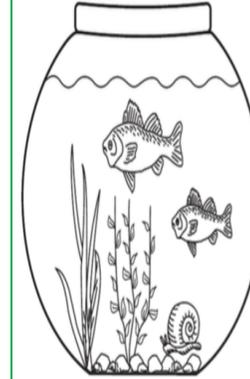
- A) water, minerals, bacteria
- B) sunlight, oxygen, plant receptors
- C) minerals, water, plant enzymes
- D) water, sunlight, carbon dioxide

The **organisms** in a pond **and the physical factors** influencing them best describe

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- A) a population
- B) an ecosystem
- C) a biosphere
- D) a food chain

A student set up a small freshwater fish tank. The tank included water, fish, gravel, a snail, and plants, as represented below.



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Which statement best describes an activity performed by a student investigating an **abiotic factor** using this setup?

- A) He records the temperature of the water.
- B) He feeds the fish 0.5 gram of fish food twice a day.
- C) He measures the growth of the plants with a metric ruler.
- D) He observes the snail scrape algae off the gravel.

Closure: What is the "theme" being portrayed by the cartoon? Why is it important for an ecosystem?



Extended Practice

- Click the following link to practice using a simulation:

http://www.glencoe.com/sites/common_assets/science/virtual_labs/CT08/CT08.html

