2.1.1 – Cycles

**Biogeochemical** Cycles: the pathway through which a substance is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cycle:**

* Enters ecosystem by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; may \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the soil (be asborbed) or \_\_\_\_\_\_\_\_\_\_\_\_\_\_ into surface water
* Returned to atomosphere by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (the loss of water by plants)



2**. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cycle:**

* Powered by two main processess:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: plants and algae capture \_\_\_\_\_\_ from the air and change it into \_\_\_\_\_\_\_\_\_\_\_\_\_ (which have carbon)
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: all living things break down sugars for energy, which returns \_\_\_\_\_ to the atomosphere
* Other factors in the carbon cycle:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ returns carbon to the soil and atmosphere
	+ Humans burn \_\_\_\_\_\_\_\_\_\_\_ fuels which adds CO2 to the atmosphere and contributes to climate change
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ removes trees which normally photosynthesize and remove CO2 from atmosphere



3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cycle:**

* Nitrogen is essential for living organisms so that they can build proteins; nitrogen is plentiful in the atmosphere, but is not \_\_\_\_\_\_\_\_\_\_\_\_ in this form
* Nitrogen Fixation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ living in the root nodules of bean plants (legumes) convert nitrogen from the air into a usable form.
* Nitrogen fixation is the first of many steps that involves \_\_\_\_\_\_\_\_\_\_\_\_ and changing the form of nitrogen

Goal 2.1.1 – Biogeochemical Cycles – Practice EOC Questions



1. This diagram shows the flow of carbon in a terrestrial ecosystem. Which will *most likely* happen if the decomposers are removed from the carbon cycle?

A. The amount of carbon dioxide in the atmosphere will increase.

B. The amount of carbon dioxide in the atmosphere will decrease.

C. The amount of carbon dioxide used by producers will increase.

D. The amount of carbon dioxide needed by consumers will decrease.

2. What is the function of autotrophs in the carbon cycle?

A. to use oxygen to produce glucose

B. to take in excess water

C. to use carbon dioxide to produce glucose

D. to feed on herbivores

3. In which way are photosynthesis and cellular respiration different?

A. Cellular respiration stores ATP, while photosynthesis releases ATP.

B. Cellular respiration produces oxygen, while photosynthesis uses oxygen.

C. Photosynthesis releases energy, while cellular respiration stores energy.

D. Photosynthesis uses carbon dioxide, while cellular respiration produces carbon dioxide.

4. Which ***best*** describes how respiration and photosynthesis move carbon throughout the biosphere?

A. taking in carbon

B. destroying carbon

C. creating new carbon.

D. recycling carbon

5. Which statement **best** explains what happens to dead organisms?

A. Decomposers use the material found in rotting organism as food.

B. Materials rot directly into rich soil.

C. Decay destroys materials found in rotting organisms.

D. Carnivores break down the waste of organisms

2.1.4 – Populations

Population Growth

**Exponential**

**growth**

1. Populations will grow until they reach their \_\_\_\_\_\_\_\_\_\_\_\_ potential, unless they are limited by factors in the environment; this type of growth is known as a \_\_\_\_\_\_\_\_\_\_\_\_ (exponential growth).
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ factors, such as availability of food, water, and space establish a carrying capacity for populations; this type of growth is known as an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is defined as the number of individuals an environment can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Limiting factors in the environment help to maintain ecosystem stability by allowing populations to fluctuate around the carrying capacity. This is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Density \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ factors: have a greater effect on a population when there is a higher population \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (the number of individuals in a given space). For example, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, predation, and the spread of infectious \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are density dependent factors.
* Density \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ factors: influence the size of a population regardless of its density. For example, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ disasters such as forest \_\_\_\_\_\_\_\_\_ are density independent factors

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the idea that communities will \_\_\_\_\_\_\_\_\_\_\_\_\_\_ other communities in a predictable, orderly way; this happens because every community \_\_\_\_\_\_\_\_\_\_\_\_ the physical factors of the environment

 Example: as trees grow, they produce shade

Practice EOC Questions – Goal 2.1.4

**1. Which graph represents the maximum carrying capacity of a bacterial colony?**

**2. This graph represents changes in human population over a period of 2,000 years. What can be concluded from the graph?**

A. Human population grew at a constant rate over the last 2,000 years.

B. Human population grew exponentially over the past 200 years.

C. Human population reached its carrying capacity around the year 1900.

D. Human population will begin to level off around 2010

**3. What will *most likely* happen if the human population continues to grow at current rates?**

A. There will be fewer natural resources available for future generations.

B. There will be an increase in nitrogen levels in the atmosphere.

C. There will be a decrease in water pollution.

D. There will be an increase in the number of strong hurricanes.

**4. A field ecologist wants to determine the interactions of various populations of organisms living in a large grassland field. Which method is *best* for conducting this study?**

A. consulting with local farmers about the diversity of organisms in the field

B. dividing the field in half, walking over it, counting organisms, and then doubling the numbers

C. walking over the entire field, collecting the organisms, and then compiling a total

D. observing the behaviors of different types of organisms several times during the year

**5. In which populations does genetic drift most often occur?**

A. in small populations B. in large populations C. in marine populations D. in terrestrial populations

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**6. The graph below represents the changes in deer population on an island over time. Identify major areas on the graph that represent population changes and discuss reasons these changes may have occurred.**

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