

Biogeochemical Lab

Assessment:

	Not Proficient	Proficient	Exceeds Proficiency
Work Ethic:	Missing elements listed in proficient AND/ OR JEOPARDIZES SAFETY.	Includes most of the following: <ul style="list-style-type: none"> • Student is on task and works consistently to complete lab during class period • Student leaves lab area clean and prepared for next class 	Includes most of the following: <ul style="list-style-type: none"> • Student helps to clean common areas OR student assists other students when appropriate OR student utilizes time to pursue
Teamwork:	Missing elements listed in proficient.	Includes most of the following: <ul style="list-style-type: none"> • Works with group members by remaining positive • Does not distract others • Positively contributes to the group's lab completion 	Includes most of the following: <ul style="list-style-type: none"> • Student assists other group members as necessary
Communication:	Missing elements listed in proficient.	Includes most of the following: <ul style="list-style-type: none"> • Answers fully address question • Limited grammatical errors and conventions • Uses scientific language (avoid the use of pronouns like I, you, me, we, our, etc.) and is concise but detailed 	Includes most of the following: <ul style="list-style-type: none"> • Discussion fully connects findings or implications to class concepts or real world events. • Appropriate scientific vocabulary used extensively and accurately

Water Cycle:

Procedures:

1. Look at the water "stations" around the room and go to the first one as your teachers directs. Write "start" in the "how I traveled" box.
2. Shake the dice at that station and write down what form you have become and which station you are going to next. Go to that station.
3. At the new station, stamp the place on your passport to show you were there and shake the dice again. If you go to the same station more than once, write a number "2" and roll the dice. Change the number each time you return.
4. Continue for as long as the game lasts. Remember to think about what nitrogen does in the environment.

Analysis questions:

1. When does water leave the air?
2. When/how does water leave the ground or surface?

3. How do people affect the water cycle?

4. How do plants affect the water cycle?

5. Where does water go after precipitating?

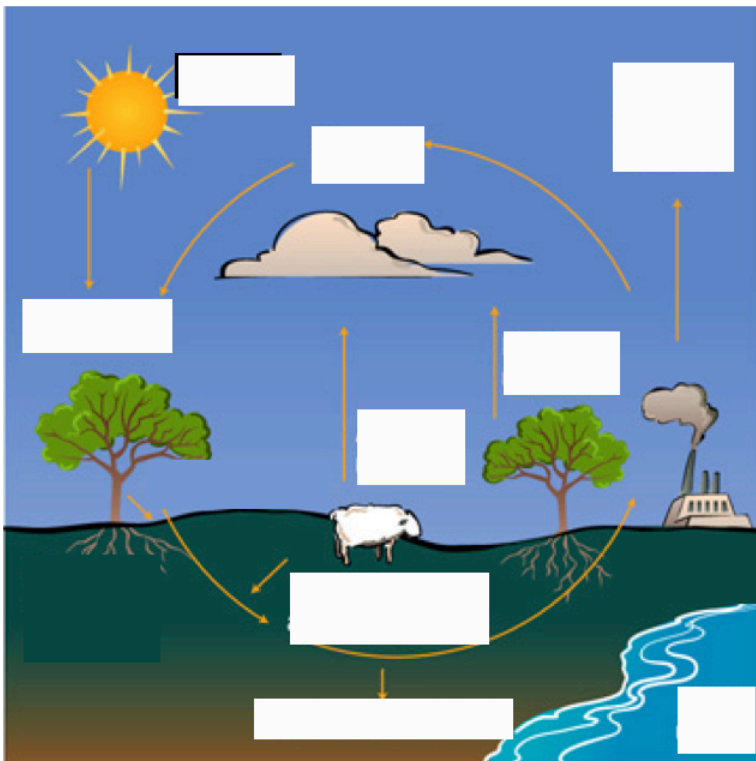
Conclusion: Draw the water cycle you experienced using arrows and words.

Carbon Cycles

Carbon Cycle (book pp. 414):

Read the section titled carbon cycle and answer the questions below.

1. Why is carbon important?
2. What are 5 ways in which carbon exists in the abiotic world?
3. In what way do you participate in the carbon cycle?
4. How does carbon transfer in the biotic world?
5. Label the picture of the carbon cycle below.
Word Bank: photosynthesis, respiration (plant and animal) auto and factory emissions, dead organisms/waste products, fossil fuels, carbon dioxide in ocean, sunlight, carbon cycle

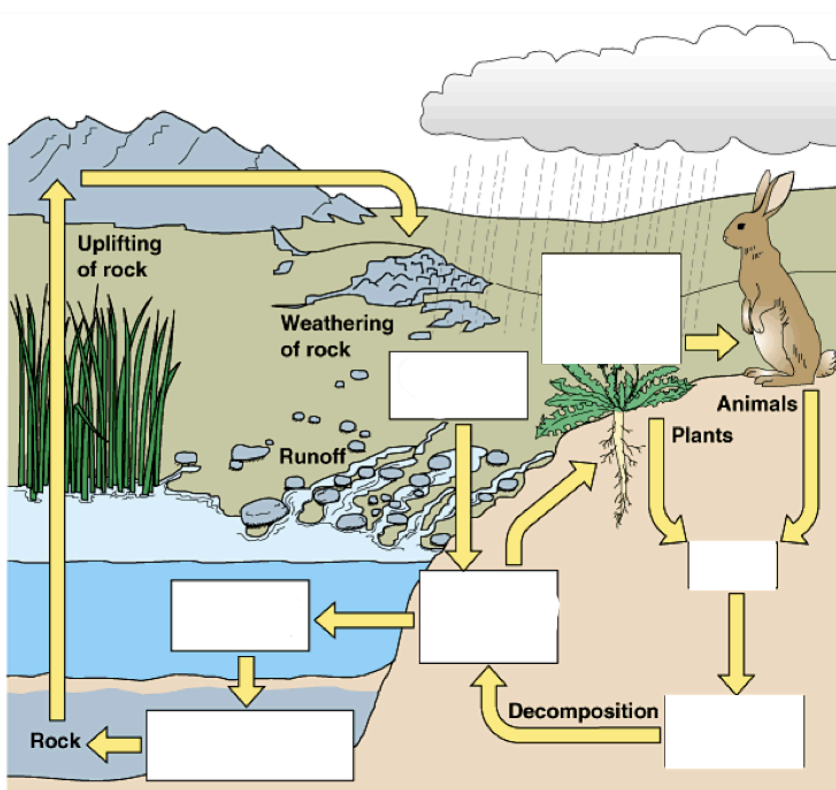


Phosphorus Cycle (book pp. 416)

Read the section titled phosphorous cycle in the textbook and use the provided handouts to answer the questions below.

1. How does the phosphorous cycle differ from the other cycles?

2. Where does the phosphorous cycle start?
3. How does the phosphorous cycle move from producers to consumers?
4. What does excessive phosphorous do to an aquatic ecosystem that is introduced from mining and agricultural?
5. Label the phosphorous cycle below.
 Word bank: phosphate in soil, phosphate in rock, phosphates in plants, phosphates in solution, sedimentation forms new rocks, decomposers, detritus (decomposing organisms)



Copyright © 2003 Pearson Education, Inc., publishing as Benjamin Cummings.

Nitrogen

Introduction: Nitrogen is an essential element in living things. The atmosphere is composed of nearly 80% nitrogen. You'd think there would be plenty of nitrogen for all living things but there is not. Nitrogen is often a limiting factor in an environment. That means that when it has all been utilized, the number of living things can no longer increase. Fortunately, there are ways for nitrogen to increase in an ecosystem. One is a type of bacteria that has evolved can gather nitrogen and

convert it to a form useful to plants and animals. They are called nitrogen-fixing bacteria and are found in plant roots in a group of plants called legumes. Alfalfa and peas are examples of legumes. You can thank a pea for the protein in your body today.

Procedures:

1. Look at the nitrogen "stations" around the room and go to the first one as your teachers direct. Write "start" in the "how I traveled" box.
2. Shake the dice at that station and write down what form you have become and which station you are going to next. Go to that station.
3. At the new station, stamp the place on your passport to show you were there and shake the dice again. If you go to the same station more than once, write a number "2" and roll the dice. Change the number each time you return.
4. Continue for as long as the game lasts. Remember to think about what nitrogen does in the environment.

Analysis questions:

1. When does nitrogen leave the air?
2. When does water carry nitrogen?
3. How do people affect the nitrogen cycle?
4. When do animals lose nitrogen?
5. What is the value of decomposing organisms and wastes in the soil?
6. How do animals get nitrogen?

Conclusion: Draw the nitrogen cycle you experienced using arrows and words.

