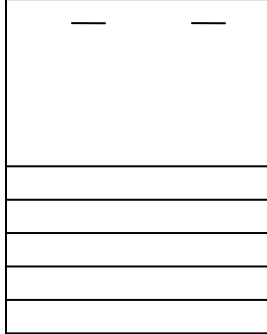


Biogeochemical Cycles Flipchart

1. Take three different pieces of paper
2. Stack them and then spread them out equally
3. Fold the stack over as follows, and staple the top:



4. On the front of the first tab write "Biogeochemical Cycles" and provide the definition.
5. Label each of the "tabs" as follows:
 - a. "Hydrological Cycle"
 - b. "Carbon-Oxygen Cycle"
 - c. "Nitrogen Cycle"
 - d. "Phosphorus Cycle"
6. Underneath each tab: Cut and paste the correct attached diagrams, then write a short description of the cycle. On each tab define the following terms:
 - a. Hydrological Cycle
 - Evaporation
 - Precipitation
 - Transpiration
 - Runoff
 - Percolation
 - b. Carbon-Oxygen Cycle
 - Cellular respiration
 - Photosynthesis
 - Combustion
 - Fossil fuels
 - c. Nitrogen Cycle
 - Nitrogen fixation
 - Nitrification
 - Ammonification
 - d. Phosphorus cycle
 - Geologic uplifting
 - Sedimentation
 - Limiting factor
7. Answer the following questions on the back of this sheet about each cycle:

The Hydrologic Cycle:

1. How much of Earth's surface is covered by water? _____
2. Water leaves the atmosphere through _____ (rain, snow, sleet, hail, or fog).
3. The process by which water evaporates from the leaves of plants in terrestrial ecosystems is called _____.
4. Water in the soil or in underground formations of porous rock is known as _____

The Carbon Cycle:

1. Why is carbon important to life on Earth? _____

2. What two processes form the basis of the short term carbon cycle? _____
3. Carbon dioxide and water are the byproducts of the process of _____
4. The remains of organisms that have been transformed by decay, heat, and pressure into energy-rich molecules are called _____.
5. Carbon is returned to the atmosphere in several ways. Describe the ways in which carbon is returned to the atmosphere. _____

6. Not all carbon moves freely through the carbon cycle. Areas that store carbon over a long period of time are called _____

The Nitrogen Cycle:

1. Why is nitrogen important to living organisms? _____
2. How much of Earth's atmosphere is made up of nitrogen gas (N_2)? _____
3. Most plants can use nitrogen only in the form of nitrate. The process of converting N_2 gas to nitrate is called _____
4. Most organisms rely on _____ to transform nitrogen gas into a useable form.
5. When decomposers break down animal excretions or dead animal and plant matter, nitrogen is returned to the soil as ammonium, in a process called _____
6. Some bacteria use nitrate as an oxygen source, releasing nitrogen gas back into the atmosphere as a waste product. These bacteria are called _____ bacteria.
7. Some nitrogen enters the soil as a result of atmospheric fixation by _____. This breaks apart nitrogen molecules in the atmosphere. Nitrogen recombines with oxygen in the air, forming nitrogen oxide. The combination of nitrogen oxide with rainwater forms nitrates, which are absorbed by the soil.

The Phosphorus Cycle:

1. Why is phosphorus essential to many living organisms? _____
2. How is the phosphorus cycle different than the other biogeochemical cycles? _____
3. Phosphorus is a limiting factor for the growth of plants. What is a limiting factor? _____
4. The excessive flow of phosphorus into an aquatic ecosystem from sewage and agricultural runoff can cause significant problems, such as algal blooms, which then die and are decomposed by oxygen using bacteria which deplete the oxygen in the water. This process is called _____

Diagrams for foldable.

