

Use the water cycle, carbon cycle, and nitrogen cycle links in the ecology section in portaportal to complete this worksheet.

Cycles of Nature

Name _____
Period _____
Date _____

Water Cycle

- The water cycle describes the complex, continuous _____ of water from the _____ to the _____, across the _____, and through _____ and _____.
- The water cycle is powered by _____ energy and aided by _____. It includes all the processes that physically _____ water and those that _____ water between _____, _____, and gaseous states.
- Liquid water is stored in _____, _____, and rivers and as _____.
- Solid water is stored as _____ and _____ in glaciers, on mountains, and at the poles.
- Water is also stored as droplets and ice crystals in _____ and as _____ in the atmosphere.
- Match the terms from the word list at the right to the correct definition:

| | |
|---|----------------|
| a) _____ -- water moves from bodies of water to the atmosphere when it changes from liquid to gas. | Infiltration |
| b) _____ -- plants release water into the atmosphere as a gas. | Transportation |
| c) _____ -- solid ice and snow change directly into gaseous water vapor without first becoming a liquid | Runoff |
| d) _____ -- water vapor in the atmosphere changes into liquid water droplets forming clouds. | Evaporation |
| e) _____ -- movement of water through the atmosphere by winds. | Groundwater |
| f) _____ -- water falls to the ground in the form of rain, snow, or hail. | Transpiration |
| g) _____ -- gaseous water vapor changes directly into solid ice without first becoming a liquid | Precipitation |
| h) _____ -- water flows into spaces in the soil and goes into the ground. | Sublimation |
| i) _____ -- water flows over the ground. | Condensation |
| j) _____ -- water that infiltrates the soil. | Deposition |
- Plant uptake occurs when plants take water from the _____ or _____. About _____ of this water is _____ back into the atmosphere.
- Animals also release _____ into the atmosphere through _____ and _____, and other forms of excretion release liquid water.

Carbon Cycle

- The carbon cycle is a model that describes the complex movement of carbon between the _____, _____, bodies of water, and _____. Carbon is the key element in all living things such as _____, animals, and _____. It is the basic building block of _____, carbohydrates, _____, and _____ in all organisms.
- Carbon is found nearly _____ on earth. It is stored as the gas _____ in the atmosphere, and carbon dioxide is _____ in water such as oceans and lakes.
- Carbon is found in _____ in soil, in certain kinds of _____, and in _____ of animals. It is also stored as _____ in the ground.
- Carbon is also stored in _____ and trees. Plants use carbon dioxide from the atmosphere to perform _____. Plants _____ the carbon as they grow. Some _____ and _____ also perform photosynthesis using carbon dioxide.
- Animals _____ to obtain the carbon they need to grow. Other _____ also obtain their carbon from _____ and other producers.

- Plants and animals – in fact, all organisms – release _____ back into the atmosphere through a process called _____. Respiration is basically the opposite of _____, and organisms perform _____ in order to use the _____ stored in their food.
- When plants and animals die they _____ releasing most of their carbon as carbon dioxide, but some becomes part of the _____. After long periods of time some of this matter in the soil is compacted and transformed into fossil fuels such as _____ and _____.
- Humans extract _____ from the ground and burn them for _____, releasing carbon dioxide into the atmosphere. Burning fossil fuels is called _____.
- Humans also contribute to the carbon cycle through _____. When we cut down or burn trees, they can no longer remove carbon dioxide from the air through _____. And when we _____ wood, the carbon in the wood becomes carbon dioxide and enters the atmosphere.
- Through the process of _____, carbon dioxide moves between the _____ and the _____ surface. Carbon dioxide in the ocean _____ throughout the ocean's water.
- _____ in the ocean use carbon dioxide from the water for _____. Ocean plants _____ this carbon just like land plants. Ocean animals _____ these plants to get the carbon they need.
- Ocean plants and animals _____ carbon dioxide back into the water through _____.
- When ocean plants and animals die, they _____ in the water releasing most of their carbon as carbon dioxide, but some also settles on the ocean floor where it gets buried in the _____.

Nitrogen Cycle

- The nitrogen cycle is a model that explains how nitrogen is _____. _____ is an essential for the formation of _____ and _____ in all organisms.
- There is a lot of nitrogen in the _____ - about _____ of the atmosphere is pure nitrogen (N_2). Because nitrogen is so _____, it is _____ to most organisms.
- Only _____ (NH_3) and _____ (NO_3) are useful to _____, so we are dependent on other processes to _____ nitrogen gas into ammonia and nitrates in the soil.
- Nitrogen gas is converted to ammonia (NH_3) by _____ - _____ bacteria in the soil and in root nodules of peas, _____, alfalfa, and _____ trees.
- Ammonia is converted to nitrates (NO_3) by _____ bacteria in the soil. _____ also converts nitrogen gas to ammonia and nitrate compounds.
- Ammonia (NH_3) and nitrates (NO_3) in the soil can both be assimilated by _____ and used to build up _____. The plants may in turn be eaten by _____ and used to produce animal protein.
- Animal _____ and the biomass of _____ organisms are broken down by _____. This results in nitrogen nutrients being _____ to the soil as ammonia.
- _____ bacteria in the soil break down ammonia and nitrates and return _____ to the _____ completing the cycle.

Review Questions

- How do plants obtain carbon?
- How do animals obtain carbon?
- What are three ways carbon is returned to the atmosphere?
- How do plants obtain nitrogen?
- How do animals obtain nitrogen?
- How does nitrogen get returned to the atmosphere?
- What are three ways water gets into the atmosphere?
- How does water get back to earth?
- What happens to water that falls on earth? (List 3 or 4 possibilities)