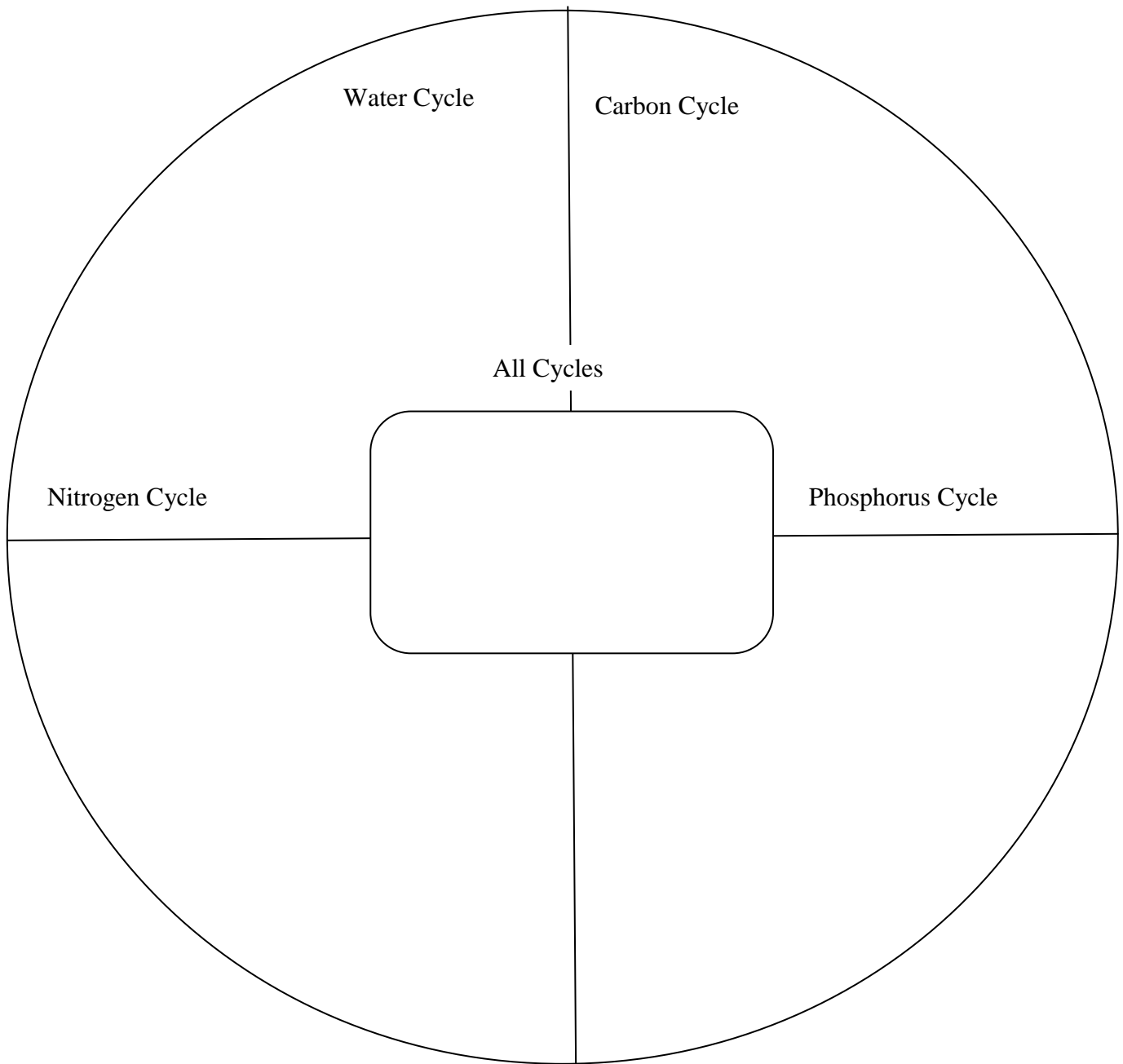


## Bio - Nutrient Cycles Introduction Graphic Organizer



### Nutrient Cycles Introduction:

- Read the introduction on “*3-3 Cycles of Matter*”.
- Place the following words/concepts in the appropriate section of the cycle that it belongs with.

### 3-3 Cycles of Matter

Matter, unlike energy, is recycled within and between ecosystems. Matter is passed from one organism to another and from one part of the biosphere to another through biogeochemical cycles. These cycles connect biological, geological, and chemical processes. Matter can cycle through the biosphere because biological systems do not use up matter, they only change it.

All living things require water to survive. Water cycles between the ocean, atmosphere, and land. Several different processes are involved in the water cycle, including evaporation and transpiration. Evaporation is the process in which water changes from a liquid to a gas. Transpiration is the process in which water evaporates from the leaves of plants.

All the chemical substances that an organism needs to survive are called nutrients. Like water, nutrients cycle within and between ecosystems. The three most important nutrient cycles are the carbon, nitrogen, and phosphorus cycles. Carbon is a key ingredient of living tissue. Processes involved in the carbon cycle include photosynthesis and human activities such as burning.

Nitrogen is needed by all organisms to build proteins. Processes involved in the nitrogen cycle include nitrogen fixation and denitrification. In nitrogen fixation, certain bacteria convert nitrogen gas into ammonia. In denitrification, other bacteria convert nitrogen compounds called nitrates back into nitrogen gas.

Phosphorus is needed for molecules such as DNA and RNA. Most of the phosphorus in the biosphere is stored in rocks and ocean sediments. Stored phosphorus is gradually released into water and soil, where it is used by organisms.

The primary productivity of an ecosystem is the rate at which organic matter is created by producers. One factor that controls primary productivity is the amount of available nutrients. When an ecosystem is limited by a single nutrient that is scarce or cycles very slowly, this substance is called a limiting nutrient. If an aquatic ecosystem receives a large quantity of a limiting nutrient, there may be a sudden increase in the amount of algae, called an algal bloom.

#### WORD/CONCEPT LIST- CYCLES

photosynthesis	ingredient in living tissue	nitrogen fixation
algal bloom	limiting nutrient	evaporation
DNA/RNA	evaporates from leaves	rocks and sediment
bacteria converts nitrogen to ammonia	nitrates	human activities
transpiration	denitrification	builds protein
released into water and soil	change from liquid to gas	biogeochemical cycle
bacteria converts nitrates to nitrogen gas		