

Use with textbook pages 68-87.

Nutrient cycles

Answer the questions below.

1. Where are nutrients accumulated or stored for short or long periods?

2. Name a biotic process and an abiotic process that allow nutrients to flow in and out of stores.

3. Photosynthesis is an important process in which carbon and oxygen are cycled through ecosystems. Describe this process.

4. Cellular respiration is the process in which plants and animals make use of stored energy and release carbon dioxide back into the atmosphere. Describe this process.

5. How is decomposition related to the carbon cycle?

6. What is nitrogen fixation?

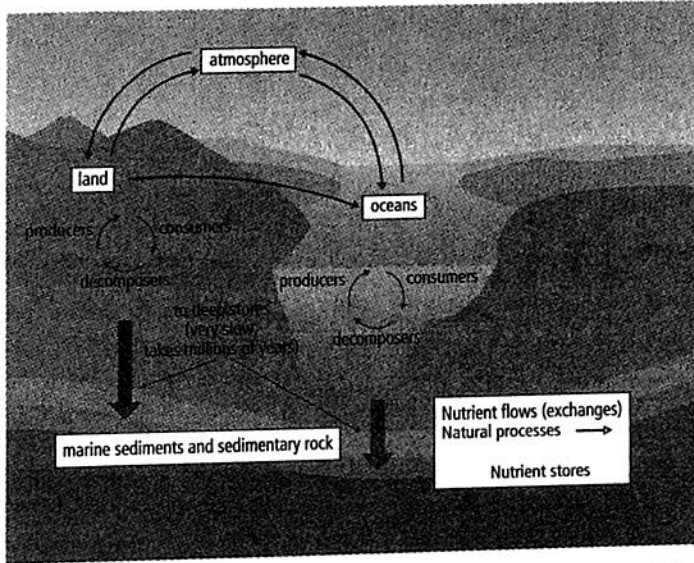
7. What is denitrification?

8. What is eutrophication?

Use with textbook pages 69–70, 86–87.

The cycling of nutrients in the biosphere

Use the general model of a nutrient cycle to answer the questions below.



1. This diagram illustrates the general model of a nutrient cycle. What types of human activities can affect a nutrient cycle?

2. How do these human activities affect a nutrient cycle?

3. On the diagram above, add terms and arrows that could represent the effects of human activity on a nutrient cycle.

4. How do changes in nutrient cycles affect biodiversity?

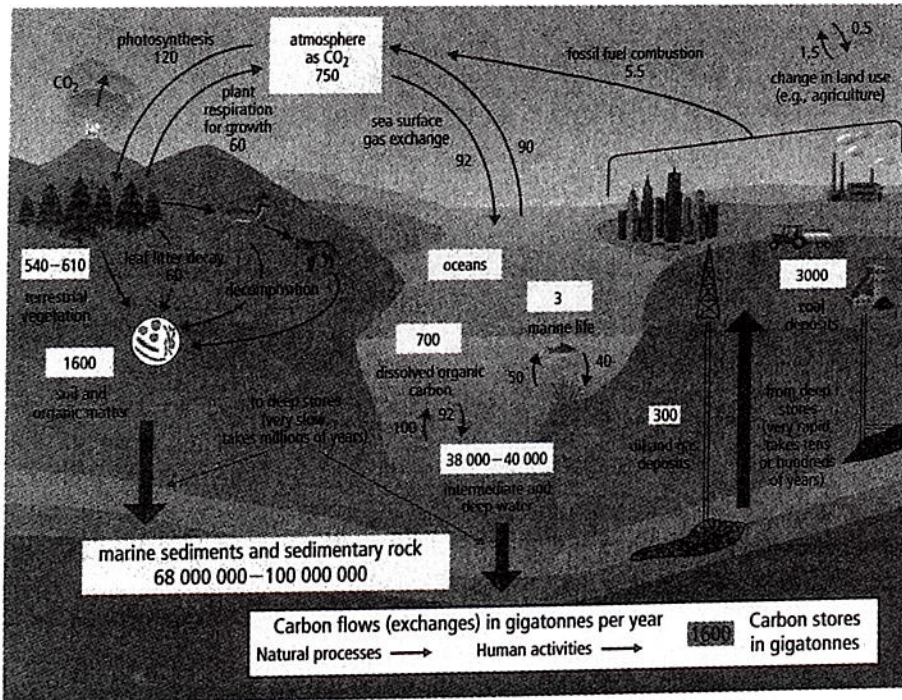
5. Reflect on your local community. Discuss a human activity that is affecting your local ecosystem.

Use with textbook pages 71-87.

The carbon, nitrogen, and phosphorus cycles

The carbon cycle

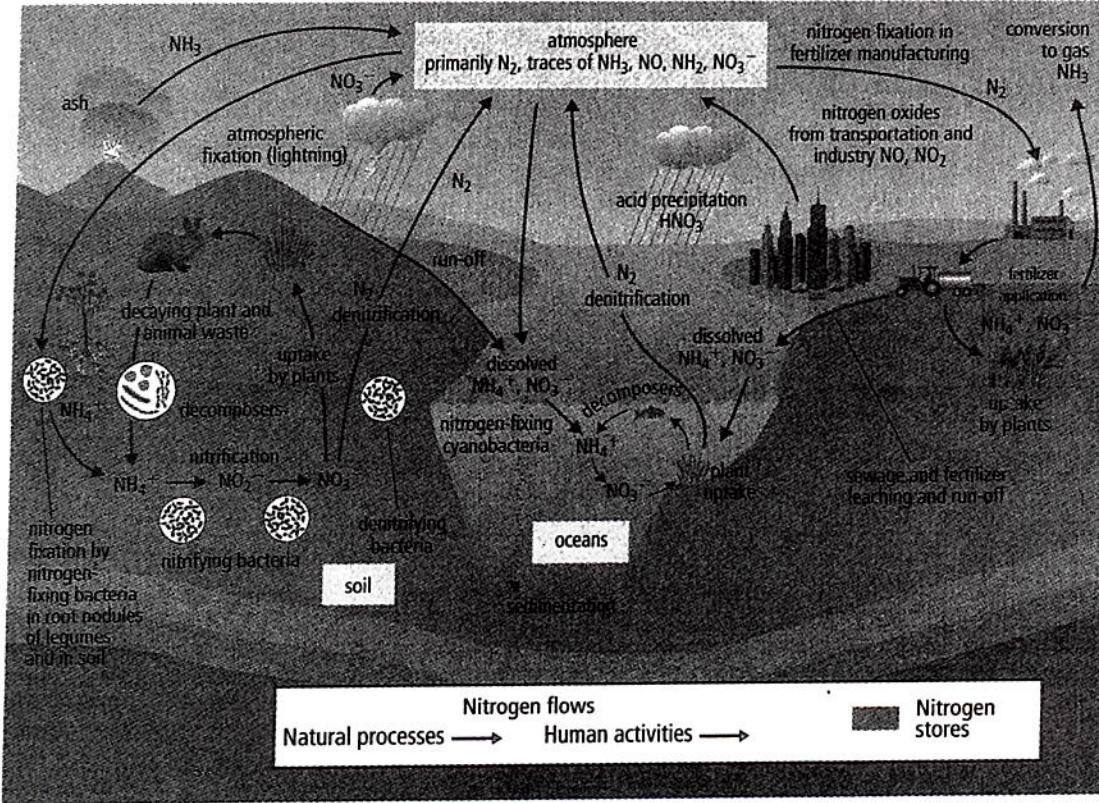
Use the nutrient cycle below to answer the questions in the chart that follows.



Why is the carbon cycle important?	<hr/> <hr/> <hr/>
How is carbon stored?	<hr/> <hr/> <hr/>
How is carbon cycled?	<hr/> <hr/> <hr/>
Name several human activities that affect the carbon cycle.	<hr/> <hr/> <hr/>

The nitrogen cycle

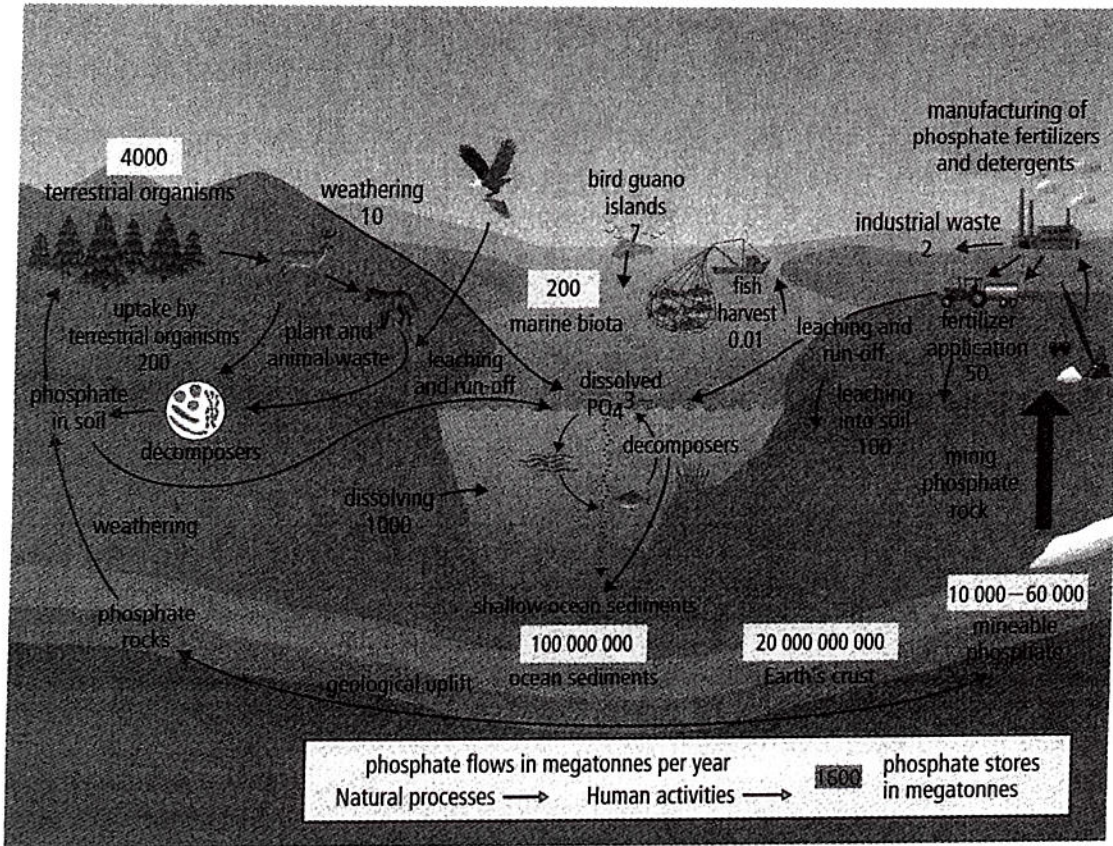
Use the nutrient cycle below to answer the questions that follow.



<p>Why is the nitrogen cycle important?</p>	<p>_____</p> <p>_____</p>
<p>How is nitrogen stored?</p>	<p>_____</p> <p>_____</p>
<p>How is nitrogen cycled?</p>	<p>_____</p> <p>_____</p>
<p>Name several human activities that affect the nitrogen cycle.</p>	<p>_____</p> <p>_____</p>

The phosphorus cycle

Use the nutrient cycle below to answer the questions that follow.



<p>Why is the phosphorus cycle important?</p>	<p>_____</p> <p>_____</p>
<p>How is phosphorus stored?</p>	<p>_____</p> <p>_____</p>
<p>How is phosphorus cycled?</p>	<p>_____</p> <p>_____</p>
<p>Name several human activities that affect the phosphorus cycle.</p>	<p>_____</p> <p>_____</p>

Nutrient cycles in ecosystems

Use with textbook pages 68–87.

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

Term	Descriptor
1. _____ cellular respiration	A. the process in which nitrogen is released into the atmosphere
2. _____ denitrification	B. substances, such as nitrogen and phosphorus, that are required by plants and animals for energy, growth, development, repair, and maintenance
3. _____ nitrification	C. the process in which rock is broken into smaller fragments
4. _____ nutrients	D. a process in which carbon dioxide enters plants and reacts with water in the presence of sunlight to produce carbohydrates and oxygen
5. _____ photosynthesis	E. the process in which ammonium is converted into nitrate
6. _____ sedimentation	F. the process in which plants and animals release carbon dioxide back into the atmosphere by converting carbohydrates and oxygen into carbon dioxide and water.
7. _____ weathering	G. the process in which soil particles and decaying organic matter accumulate in layer on the ground or at the bottom of large bodies of water

Circle the letter of the best answer.

- 8.** In the carbon cycle, where are the highest stores of carbon found?
- terrestrial vegetation
 - marine sediments and sedimentary rocks
 - oil and gas deposits
 - soil and organic matter
- 9.** Calcium carbonate is a structural component of:
- marine organisms
 - terrestrial organisms
 - algae
 - volcanic ash
- 10.** Which of the following is not stored in the atmosphere as a gas?
- carbon
 - oxygen
 - nitrogen
 - phosphorus
- 11.** Nitrogen fixation results in:
- ammonium being converted into nitrates
 - nitrates being consumed by bacteria
 - nitrogen gas being converted into nitrate or ammonium
 - ammonia being converted into carbohydrates
- 12.** Lightning provides energy that:
- absorbs energy into land masses
 - fixes nitrogen in the atmosphere
 - fixes carbon dioxide in the atmosphere
 - releases nitrogen into the soil