

Carbon Cycle

Vocabulary

carbon cycle

(KAHR buhn SEYE kuhl) complex cycle in which carbon is exchanged between living things, the atmosphere, Earth's interior, and water

Using Science Words

1. The carbon cycle includes _____.
 - A. only living things
 - B. only nonliving things
 - C. both living and nonliving things



1 Living things need carbon to survive. However, Earth has only a certain amount of carbon. Organisms are constantly being born and growing. How do they get the carbon they need? Many elements move through living organisms and the nonliving environment in cycles. Carbon cycles between the living and the nonliving environment in a complex process called the **carbon cycle**.

2 In the living environment, carbon exists in the cells of organisms. In the atmosphere carbon exists as a **gas**. Carbon is also in the rocks that make up Earth's crust. It is found dissolved in Earth's water too.

Reading Check

2. In the living environment, carbon exists in _____.
a. cells
b. rocks
c. the air
- 3 The most important part of the carbon cycle is between living things and the atmosphere. In the atmosphere, carbon (C) is attached to two oxygen (O) molecules. **Oxygen** is the gas that makes up about 20% of the air we breathe. When carbon is attached to oxygen, it forms a gas called carbon dioxide (CO₂).
- 4 The cells in most living things cannot use carbon when it is in carbon dioxide. It must be made into sugar in order to be useful. Plants, algae, and some bacteria create this sugar through chemical processes. Plants and algae use energy from the sun to change water and carbon dioxide from the air into sugar. This process is called photosynthesis.

Reading Check

3. Green plants and algae use _____ during photosynthesis.
a. oxygen
b. carbon dioxide
c. bacteria
- 5 Each molecule of sugar contains carbon atoms. Plants get their carbon by making sugars they can use themselves. Animals get the carbon they need when they eat plants or other animals. Carbon must return to the atmosphere so plants can use it again. This action completes the cycle. It can happen in three main ways.
- 6 Most carbon dioxide reenters the atmosphere after it has been used by a living thing. Plants give off oxygen as a waste product during photosynthesis. Nearly all consumers use that oxygen when they break down the sugars they eat. As those sugars are broken down, carbon dioxide is produced as a waste. This waste gas, carbon dioxide, is released into the atmosphere when organisms exhale, or breathe out.
- ### Reading Check
4. Plants take in carbon dioxide and release _____.
a. sunlight energy
b. carbon
c. oxygen
- 7 Carbon dioxide also enters the atmosphere by combustion. Combustion is the process of burning. Burning wood or fossil fuels releases large amounts of carbon dioxide into the atmosphere.

✓ Reading Check

5. Fossil fuels release carbon dioxide during _____.
a. photosynthesis
b. combustion
c. decomposition

- 8 The third way carbon dioxide reenters the atmosphere is by decomposition. When an organism dies, decomposers break down

its tissues. Carbon dioxide is released by bacteria and fungi as they break down the compounds in dead tissue.

✓ Reading Check

6. The carbon released during decomposition was stored in _____.
a. fossil fuels
b. tissues
c. oxygen

Word Study

Subjects and Predicates The sentence below has a subject and a predicate. The subject is who or what the sentence is about. The predicate is what the subject is, does, or has.

The small boat / swayed in the wind.
(Subject) (Predicate)

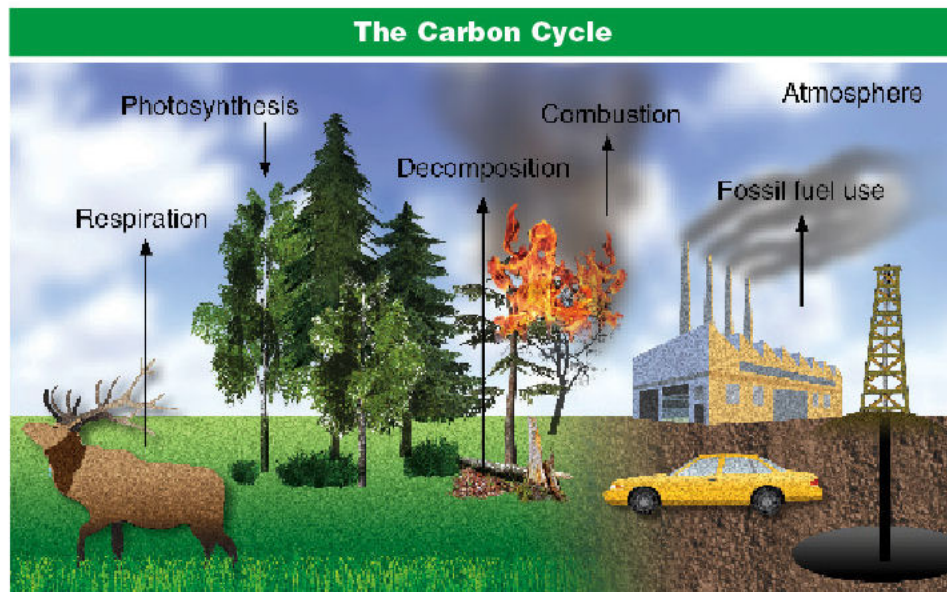
Read the following sentences. If the words in bold type are the subject of the sentence, write *S*. If they are the predicate, write *P*.

7. All living things **have carbon in their cells**.
8. **Carbon** cycles between the living and the nonliving environment.
9. **Rocks in Earth's crust** contain carbon.
10. Living things **must get carbon in a form they can use**.
11. **A molecule of sugar** contains carbon.
12. Plants **release oxygen back into the atmosphere**.
13. Carbon dioxide **is produced as a waste**.
14. During respiration, **carbon dioxide gas** is released into the atmosphere.
15. Carbon dioxide in the atmosphere **is useful to living things**.
16. After an organism dies, **decomposers** break down its tissues.

Standardized Test Practice

Test Tip

Diagrams Don't try to memorize all the information in a diagram. Quickly review the diagram. Then refer to the diagram as you answer questions.



Multiple Choice Use the diagram to answer the questions.

17. How do factories add carbon to the atmosphere?
- A. They use fossil fuels.
 - B. They burn carbon dioxide.
 - C. They produce solid waste.
 - D. They decompose tissues.
18. Which process is not a natural part of the carbon cycle?
- A. combustion through forest fires
 - B. animals breathing
 - C. using fossil fuels
 - D. rotting leaves
19. How do animals add carbon to the atmosphere?
- A. combustion
 - B. respiration
 - C. decomposition
 - D. photosynthesis

Using Science Words

1. C

Comprehension

2. a
3. b
4. c
5. b
6. b

Word Study

7. P
8. S
9. S
10. P
11. S
12. P
13. P
14. S
15. P
16. S

Standardized Test Practice

17. A
18. C
19. B

Writing About Science

Describe the carbon cycle.
Draw pictures to show each step.