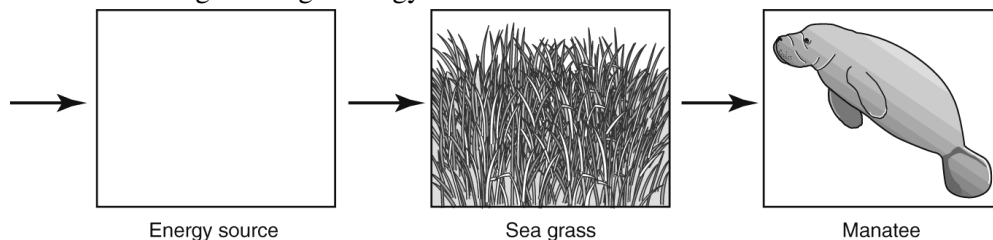


Assessment Bank – Matter and Energy in Living Things

SC.8.L.18.4

1. What is energy?
  - A. anything that takes up space
  - B. anything that has mass
  - C. the ability to conduct current
  - D. the ability to do work
2. What kind of energy is stored in food?
  - A. chemical energy
  - B. heat energy
  - C. kinetic energy
  - D. light energy
3. How does blowing up a balloon help prove that air is matter?
  - A. It shows that air has kinetic energy.
  - B. It shows that air takes up space.
  - C. It shows that air contains oxygen.
  - D. It shows that air is a solid.
4. Worms break down dead plants in the soil to release nutrients. Which property of nutrients shows that they are matter?
  - A. Nutrients are warm.
  - B. Nutrients can do work.
  - C. Nutrients contain energy.
  - D. Nutrients have mass.
5. Why do all organisms need food?
  - A. Food provides organisms with all the water they need.
  - B. Food provides energy needed by cells.
  - C. Food provides the oxygen that is needed for respiration.
  - D. Food provides organisms with the DNA they need to grow.
6. Biologists measure the length of a tagged sea turtle. They learn that the turtle is 2.3 cm longer than the last time it was measured. Where did the sea turtle get the nutrients it needed to grow?
  - A. from the jellyfish it ate
  - B. from sunlight it absorbed
  - C. from the oxygen it breathed
  - D. from nutrients it absorbed from the water

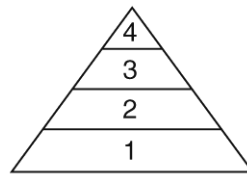
7. The diagram shows how the organisms get energy.



What goes in the box labeled *Energy source*?

- A. a fish
- B. soil
- C. the sun
- D. water

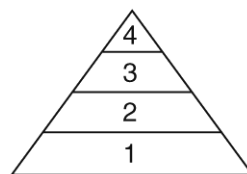
8. An alligator lives in a swamp with deer, birds, fish, trees, and other plants. The alligator eats a bird that eats the seeds and plants. What is the original source of the energy that the alligator gets from eating the bird?
- the flowing water in the swamp
  - the energy that the bird creates
  - the sunlight that the plants absorb
  - the heat from the air in the swamp
9. Which of these statements is true of ecosystems?
- Animals do not travel from one ecosystem to another ecosystem.
  - The total amount of energy in an ecosystem does not change.
  - Air cannot be used by organisms once the air moves out of an ecosystem.
  - Matter lost by one ecosystem is gained by the surrounding environment.
10. A coral reef is damaged during a hurricane. The waves and currents move broken pieces of coral onto the beach. What happened to the matter in the broken pieces of coral?
- It is still part of the coral reef ecosystem.
  - It was removed from the environment.
  - It became part of the beach ecosystem.
  - It was lost due to the energy in the waves.
11. The diagram below shows an energy pyramid. In a marine ecosystem, algae carry out photosynthesis. Barracuda eat snapper fish. Reef sharks eat barracuda.



Energy Pyramid

Which organism would be at the top of the energy pyramid?

- algae
  - barracuda
  - reef shark
  - snapper fish
12. The diagram shows an energy pyramid.

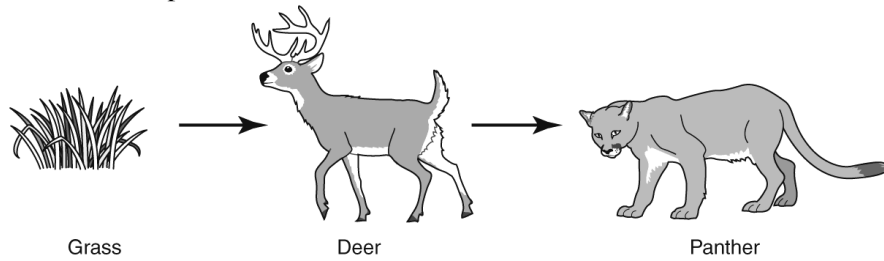


Energy Pyramid

Which type of organism would be in Section 2 of the pyramid?

- autotrophs
  - carnivores
  - herbivores
  - producers
13. Saw grass takes in light energy during photosynthesis. What happens to most of this energy?
- It is stored as chemical energy.
  - It disappears as it is used up by the plant.
  - It is transferred to organisms that eat the grass.
  - It is used to help the saw grass grow and reproduce.

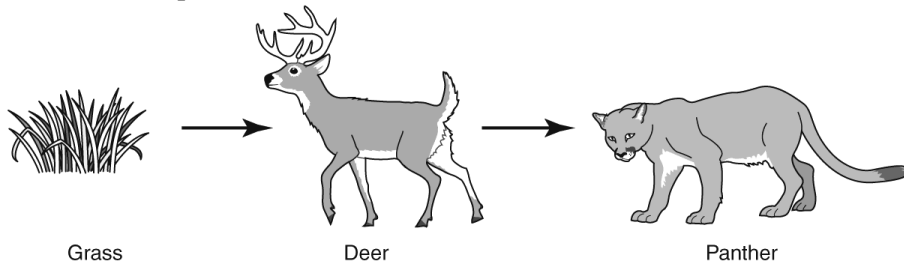
14. The diagram below shows a simple food chain.



Which statement supports the ecosystem represented by the food chain?

- A. It can support more panthers than deer.
- B. It can support more deer than panthers.
- C. It can support the same number of panthers as it can deer.
- D. The amount of grass does not affect the ecosystem.

15. The diagram below shows a simple food chain.



Which organism is at the base of the food chain?

- A. deer
- B. grass
- C. panther
- D. the sun

16. Plants perform photosynthesis and respiration. Dead plants are broken down and become part of the soil. Which of the following matter do plants help to cycle through ecosystems?

- A. carbon only
- B. carbon and oxygen only
- C. carbon, oxygen, and nitrogen only
- D. carbon, oxygen, nitrogen, and water

17. Select the phrase that best describes a consumer in a food chain.

- A. an organism that converts light energy into chemical energy
- B. an organism that breaks down dead plants and animals
- C. an organism that is at the bottom of the food chain
- D. an organism that gets its energy by eating plants or animals

18. Select the phrase that best describes a decomposer in a food chain.

- A. an organism that converts light energy into chemical energy
- B. an organism that is at the bottom of the food chain
- C. an organism that gets its energy by eating plants or animals
- D. an organism that breaks down dead plants and animals

19. Which of the following statements about energy pyramids is true?

- A. The largest proportion of organisms are found in the top level.
- B. The smallest proportion of organisms are found in the top level.
- C. Carnivores are most likely to be found in the bottom level.
- D. Producers are most likely to be found in the top level.

20. Energy is transferred between certain organisms in an ecosystem. Which of these statements explains why the sea grass is a producer?
- A. It uses energy from the sun to make food.
  - B. It creates energy needed by the ecosystem.
  - C. It is eaten by other organisms.
  - D. It releases nutrients into the soil.
21. A rabbit eats 25 grams of grass. A half hour later, Joe weighs the rabbit on a scale. Its mass is only 18 grams more than it was before it ate the grass. Which of the following best explains what happened to the other 7 grams of mass?
- A. They are lost when the rabbit eats the grass.
  - B. They are absorbed by the rabbit's digestive system.
  - C. They are converted to energy, which the rabbit uses to live.
  - D. They are converted to potential energy, which the rabbit stores.
22. Kiley sees this picture of a Florida ecosystem on the wall at the pet shop.

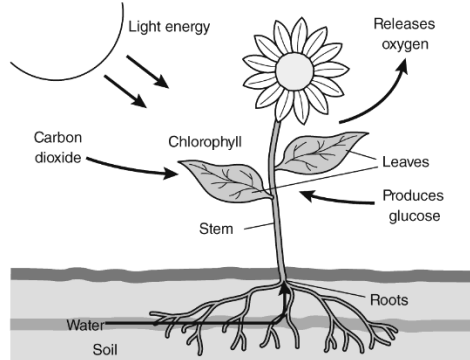


- When a bigger fish eats a smaller fish, what happens to mass in this ecosystem?
- A. The mass of the two fish together is less than the mass of the bigger fish after it eats the smaller fish.
  - B. The mass of the bigger fish after it eats the smaller fish is less than the mass of the two fish together.
  - C. The mass of the bigger fish after it eats the smaller fish is more than the mass of the two fish together.
  - D. The mass of the two fish together is the same as the mass of the bigger fish after it eats the smaller fish.
23. Living systems obey the law of conservation of energy. Which of the following statements does NOT summarize a key idea of this law?
- A. During an ordinary chemical reaction no energy is created.
  - B. Energy can be changed in form during a chemical reaction.
  - C. During an ordinary chemical reaction no energy is destroyed.
  - D. Energy can be destroyed during an ordinary chemical reaction.
24. Living systems obey the law of conservation of mass. Which of the following statements supports the main ideas of the law of conservation of mass?
- A. The substances that take part in a chemical reaction are the same as the substances that are formed by the reaction.
  - B. The masses of the substances that take part in a chemical reaction are less than the masses of the substances that are formed.
  - C. The masses of the substances that take part in a chemical reaction are equal to the masses of the substances that are formed.
  - D. The masses of the substances that take part in a chemical reaction are greater than the masses of the substances formed by the reaction.

25. All organisms require energy to carry out their life processes. Organisms get this energy by breaking down the foods they eat. What is the initial source of the energy that is contained in food?
- A. heat
  - B. sound
  - C. sunlight
  - D. chemicals

SC.8.L.18.1

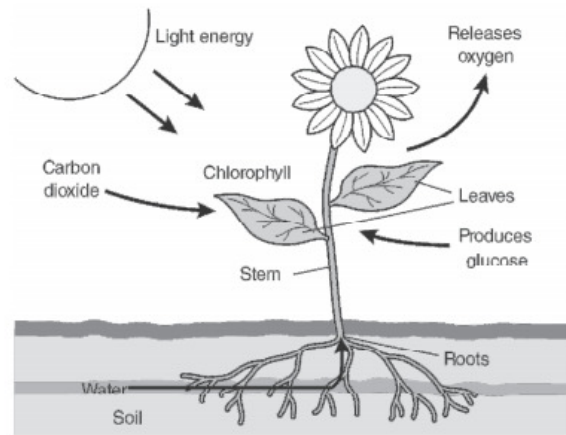
1. Green plants and algae make their own food through photosynthesis. What is photosynthesis?
  - A. a cell process that uses energy from sunlight to convert water and oxygen into food
  - B. a cell process that uses energy from sunlight to convert water and glucose into food
  - C. a cell process that uses energy from sunlight to convert water and chlorophyll into food
  - D. a cell process that uses energy from sunlight to convert water and carbon dioxide into food
2. Plant cells contain a green pigment called chlorophyll. Chlorophyll has a role in the process of photosynthesis. What does chlorophyll do?
  - A. produces glucose from oxygen
  - B. produces oxygen from glucose
  - C. absorbs light energy from the sun
  - D. absorbs glucose from the plant
3. Green plants produce their own food during photosynthesis. This image shows the process of photosynthesis.



Which of these substances is also a product of photosynthesis?

- A. carbon dioxide
  - B. chlorophyll
  - C. oxygen
  - D. water
4. What is the food that plants produce during photosynthesis?
    - A. carbon dioxide
    - B. chlorophyll
    - C. chloroplasts
    - D. glucose
  5. Sunlight and chlorophyll play major roles in photosynthesis. What happens when sunlight strikes a plant's leaves?
    - A. Chlorophyll captures oxygen.
    - B. Chlorophyll captures light energy.
    - C. Chlorophyll releases light energy.
    - D. Chlorophyll releases carbon dioxide.
  6. How do organisms get the energy they need?
    - A. Plants get energy from fertilizers, and animals get energy by drinking water.
    - B. Plants get energy from glucose produced in the soil, and animals get energy directly from sunlight.
    - C. Plants do not require energy because they do not move, and animals get energy by performing exercise.
    - D. Plants break down the glucose they produced in photosynthesis, and animals get energy from eating other organisms.
  7. Plants make their own food during photosynthesis. In what group do plants belong?
    - A. producers
    - B. consumers
    - C. chloroplasts
    - D. decomposers

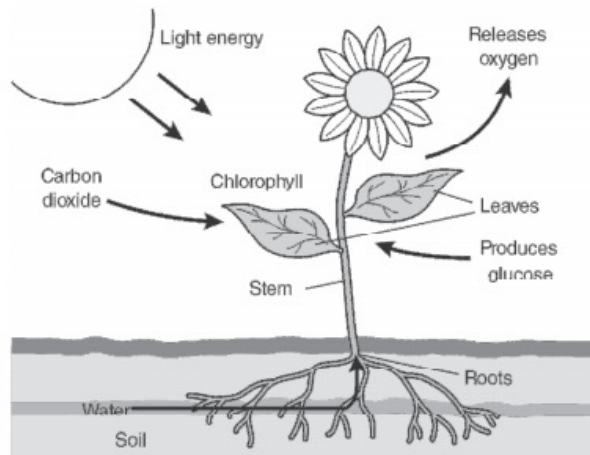
8. This image shows the process of photosynthesis.



How do plants obtain the water, carbon dioxide, and energy they use for this process?

- A. Carbon dioxide is absorbed from the soil, water is taken in by the stems, and energy comes from sugars stored in the plant.
  - B. Carbon dioxide enters through the leaves, water enters through roots, and light energy is captured by the chlorophyll in plant cells.
  - C. Water enters as rain falls on the stems, carbon dioxide is absorbed from fertilizer, and energy comes from sunlight heating soil around the plant's roots.
  - D. Carbon dioxide and chemical energy are absorbed through the roots and the leaves absorb water from the air.
9. Living things can be grouped depending on how they get food. Some organisms get food from eating other organisms. Other organisms can make their own food. In which group do organisms that can make their own food belong?
- A. consumers
  - B. decomposers
  - C. predators
  - D. producers

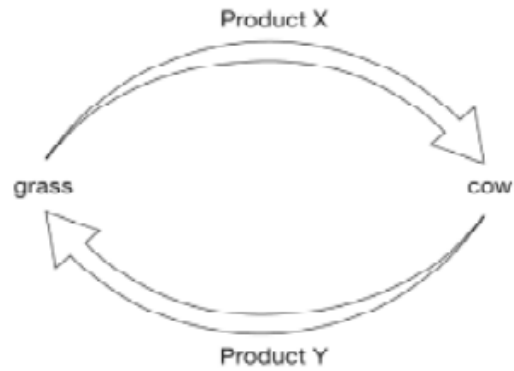
10. This diagram shows the process of photosynthesis.



Which statement is true about the process of PHOTOSYNTHESIS?

- A. Glucose and oxygen are products of photosynthesis.
  - B. Glucose is transformed into oxygen in the leaves of the plant.
  - C. Carbon dioxide and oxygen are starting materials for photosynthesis.
  - D. Chlorophyll is made in the leaves of the plant, as a result of photosynthesis.
11. Which of the following do plant cells need for photosynthesis to take place?
- A. oxygen
  - B. glucose
  - C. light energy
  - D. chemical energy

12. The diagram below shows the flow of two gases between two organisms. One gas is a product of photosynthesis and the other is a product of cellular respiration.



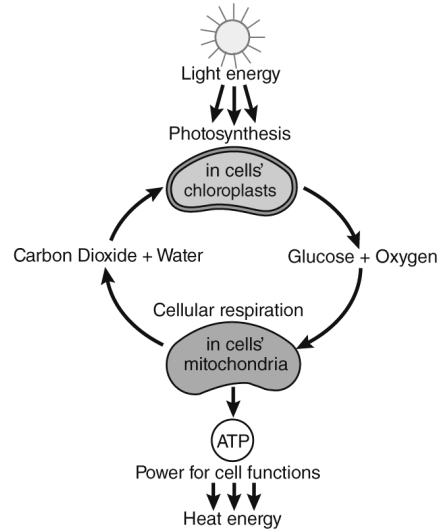
Which statement describes Product X?

- A. It is carbon dioxide released by cellular respiration.
- B. It is carbon dioxide released by photosynthesis.
- C. It is oxygen released by cellular respiration.
- D. It is oxygen released by photosynthesis.



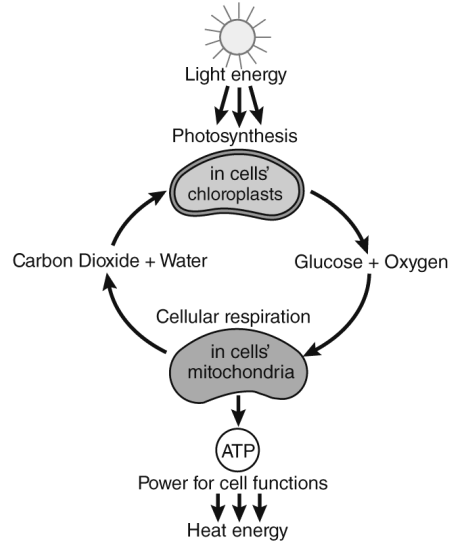
SC.8.L.18.2

1. Plants can provide the materials that animals use in cellular respiration, and animals can provide some of the materials needed by plants for photosynthesis. This image shows the relationship.



According to the diagram, which of these materials does cellular respiration provide that plants can use in photosynthesis?

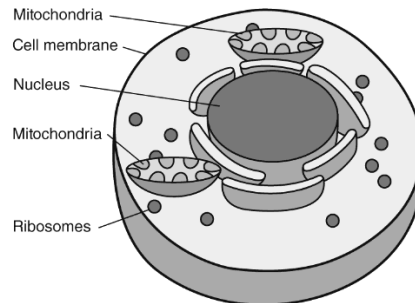
- A. ATP
  - B. carbon dioxide
  - C. chloroplasts
  - D. mitochondria
2. There is a connection between photosynthesis and cellular respiration. The products from one provide the raw materials for the other. This image shows the relationship between the two processes.



What products of photosynthesis are starting material for cellular respiration?

- A. glucose and oxygen
  - B. heat energy and ATP
  - C. carbon dioxide and water
  - D. light energy and chlorophyll
3. Organisms all perform activities that allow them to survive. Which of these activities is a way that organisms get the energy they need to grow, breathe, and move?
- A. exercise
  - B. consume other organisms
  - C. generate body heat
  - D. flee from predators

4. Kristine exercises regularly. The process of cellular respiration makes it possible for Kristine to run on the treadmill and to lift weights. What do her cells do during cellular respiration?
  - A. convert kinetic energy into chemical energy
  - B. absorb light energy through the chlorophyll in their chloroplasts
  - C. combine water and carbon dioxide to produce oxygen and glucose
  - D. break down food molecules to release energy in the form of ATP
  
5. Cellular respiration allows cells to break down glucose to release energy which is used for cell processes. Which substance do cells in the human body need to carry out cellular respiration?
  - A. They need carbon dioxide.
  - B. They need chlorophyll.
  - C. They need oxygen.
  - D. They need water.
  
6. What happens to glucose inside a cell during cellular respiration?
  - A. The cell uses ATP to break down glucose.
  - B. The cell uses water to break down glucose.
  - C. The cell uses oxygen to break down glucose.
  - D. The cell uses nitrogen to break down glucose.
  
7. Jamal is running a race this afternoon. He eats a big breakfast to make sure that he can reach the finish line because food provides the energy his cells need to complete any activity. What form of energy is stored in food?
  - A. chemical energy
  - B. kinetic energy
  - C. light energy
  - D. mechanical energy
  
8. Cellular respiration takes place in both prokaryotic and eukaryotic cells. This diagram shows the different parts of a eukaryotic cell.



In which part of the cell does cellular respiration take place in eukaryotes?

- A. cell membrane
  - B. mitochondria
  - C. nucleus
  - D. ribosomes
- 
9. There is a relationship between breathing and cellular respiration. Breathing involves taking in oxygen and releasing carbon dioxide. How does the oxygen affect the process of cellular respiration?
    - A. Oxygen and ATP combine to produce energy in the form of carbon dioxide.
    - B. Oxygen and glucose combine to produce energy in the form of ATP molecules.
    - C. Oxygen and hydrogen combine to produce energy in the form of ATP molecules.
    - D. Oxygen and carbon dioxide combine to produce energy in the form of ATP molecules.
  
  10. What do animals do with the carbon dioxide produced in their cells during cellular respiration?
    - A. reuse it during photosynthesis
    - B. combine it with water to make sugar
    - C. exhale it in the breathing process
    - D. store it for later use

11. During cellular respiration, cells break down food to release energy. During photosynthesis, cells produce food in the form of glucose. What is one difference between these two processes?
- A. Cellular respiration uses oxygen and photosynthesis produces oxygen.
  - B. Cellular respiration uses carbon dioxide and photosynthesis does not.
  - C. Cellular respiration produces oxygen and photosynthesis does not.
  - D. Photosynthesis produces more glucose than cellular respiration does.

12. The table below gives information about the process of cellular respiration.

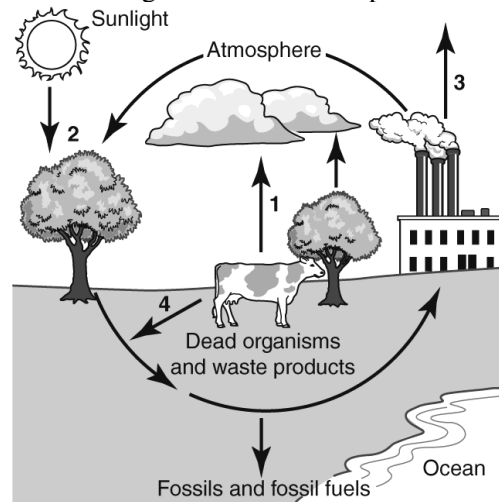
Reactants	Products
glucose + oxygen	carbon dioxide + water + ATP

Where do humans obtain the reactant glucose?

- A. breathing
  - B. eating
  - C. photosynthesis
  - D. drinking water
13. What is the role of ATP in a cell?
- A. supplies energy for cellular activities
  - B. causes cellular respiration
  - C. digests cellular invaders
  - D. absorbs sunlight
14. During cellular respiration, an organism's cells break down glucose to provide energy for life activities. Which of these substances is also produced during cellular respiration?
- A. carbon dioxide
  - B. fat
  - C. oxygen
  - D. protein
15. Which of the following is NOT produced by the process of cellular respiration?
- A. water
  - B. energy
  - C. oxygen
  - D. carbon dioxide
16. What is the end result of cellular respiration?
- A. Energy is absorbed by chlorophyll.
  - B. Glucose is stored for cell processes.
  - C. Energy is released for cell processes.
  - D. Carbon dioxide is absorbed by chlorophyll.

SC.8.L.18.3

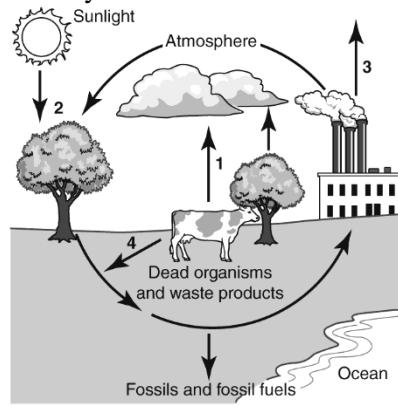
1. One of the largest cypress trees in Florida has a tree trunk with a diameter of about 3.5 m. What is the source of most of the carbon in the cypress tree's trunk?
  - A. The carbon created by the tree during photosynthesis.
  - B. The carbon stored in tree seeds.
  - C. The carbon dioxide molecules the tree absorbed from the atmosphere.
  - D. The nutrients containing carbon that the tree absorbed from the soil.
2. What does the law of conservation of energy state?
  - A. It is important to use as little energy as possible.
  - B. Organisms save the energy that they create.
  - C. Organisms change energy into mass.
  - D. Energy cannot be created or destroyed.
3. Carbon exists in many forms on Earth. The diagram below shows part of the carbon cycle.



What is happening in Step 1?

- A. Animals are releasing energy into the environment and storing carbon.
  - B. Animals are decomposing and releasing carbon into the soil.
  - C. Animals are converting carbon dioxide from the atmosphere to oxygen.
  - D. Animals are breaking down organic molecules and releasing carbon dioxide into the atmosphere.
4. A freshwater marsh is a type of ecosystem. Grasses, fish, wading birds, frogs, and alligators live together in freshwater marshes. Pieces of decaying material sink to the bottom of the marsh. In which of these places can carbon be found in the marsh?
    - A. in the atmosphere and water only
    - B. in living things only
    - C. in living things and decaying materials only
    - D. in the atmosphere, water, living things, and decaying materials

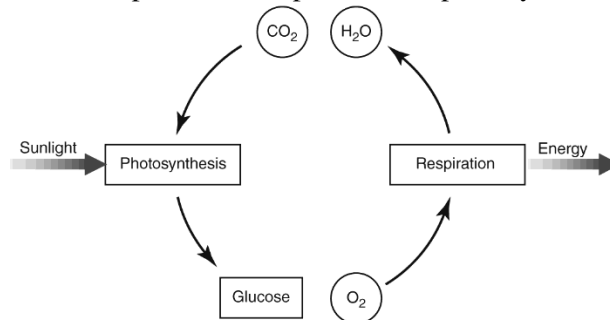
5. The diagram below shows part of the carbon cycle.



How do decomposers fit into the cycle shown?

- They help trees capture light energy from the sun for photosynthesis.
  - They store energy by breaking down dead organisms into fossil fuels.
  - They release energy that breaks down the organic molecules that trees produce.
  - They get energy and release carbon dioxide by breaking down the dead organisms.
6. In the carbon cycle, how do living things store most of their energy?
- water
  - light energy
  - organic molecules
  - heat energy

7. The diagram below shows the relationship between respiration and photosynthesis.

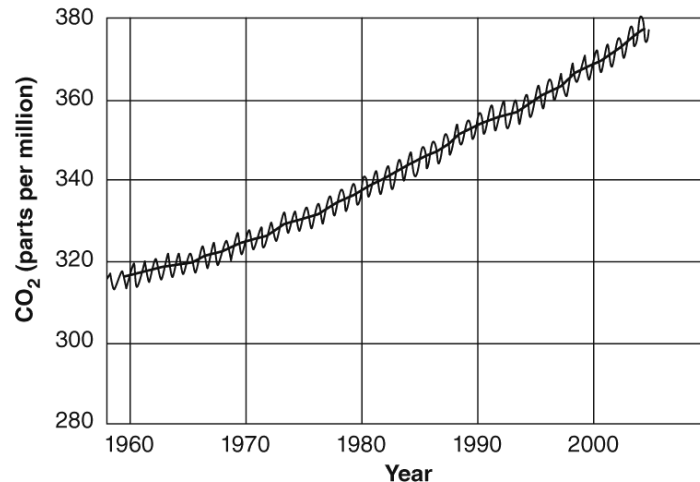


How is combustion similar to cellular respiration?

- It needs glucose and oxygen to occur.
- It can occur only in living cells.
- It removes energy from the environment.
- It increases the amount of carbon dioxide in the environment.

8. The graph shows the changes in carbon dioxide in the atmosphere over more than 40 years.

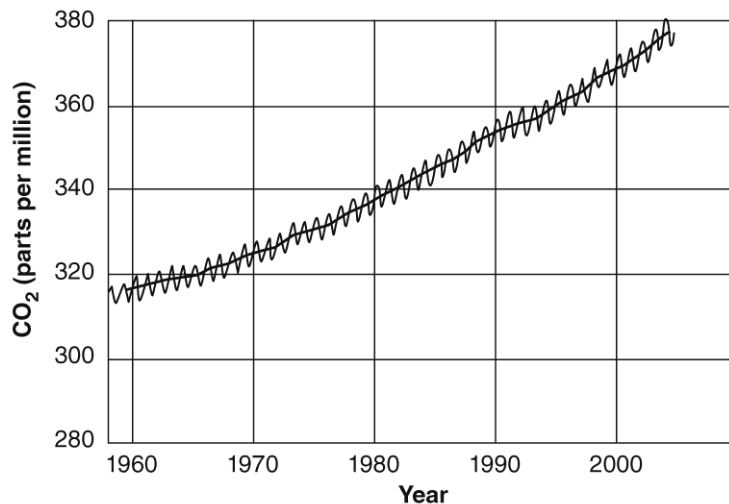
**Amount of Atmospheric Carbon Dioxide per Year**



Which of the following is the best conclusion you can draw from the graph?

- A. The amount of carbon dioxide in the atmosphere has been steadily increasing since 1960.
  - B. The data set is too irregular to determine how the amount of carbon dioxide has changed.
  - C. Fossil fuels have caused carbon dioxide levels in the atmosphere to increase since 1960.
  - D. Carbon dioxide levels in the atmosphere have been increasing since the last ice age.
9. The graph shows the changes in carbon dioxide in the atmosphere over several years.

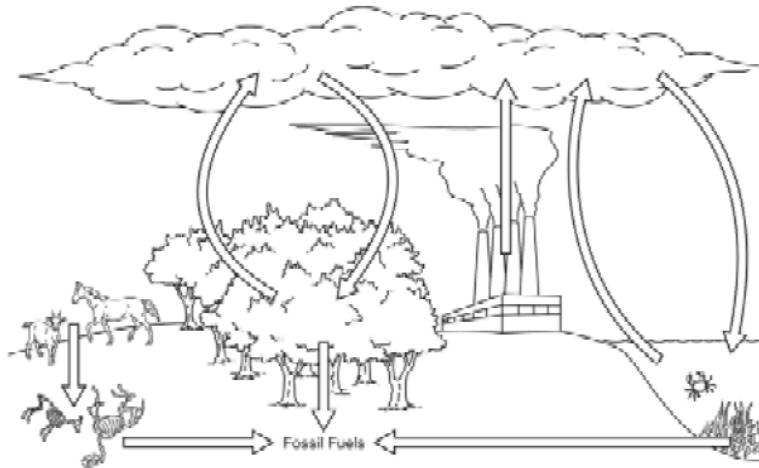
**Amount of Atmospheric Carbon Dioxide per Year**



Each year, the amount of carbon dioxide decreased in the spring and summer and increased again in the fall and winter. Which statement best explains the yearly cycle shown in the data?

- A. The rate of cellular respiration increases during warmer months.
  - B. The rate of photosynthesis decreases in the winter because many plants in cold climates die or lose their leaves.
  - C. There is a time lapse between the processes of photosynthesis and respiration in the carbon cycle.
  - D. The volume of carbon dioxide depends on the air temperature.
10. Organisms store energy for future use. Which of the following is an example of stored energy that occurs as part of the carbon cycle.
- A. Plants release carbon dioxide into the environment.
  - B. Plants hold water in their leaves and stems.
  - C. Animals radiate heat into the environment.
  - D. Animals store glucose in cells.

11. Jessica draws this carbon cycle diagram.



With what could she replace the industrial building?

- A. automobile
- B. dog
- C. farm
- D. person