

# GRADE 7 REVIEW

## TERM 1 - 2024 - 2025

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explain how light energy is used to make sugars from carbon dioxide and water through the process of photosynthesis.

p10

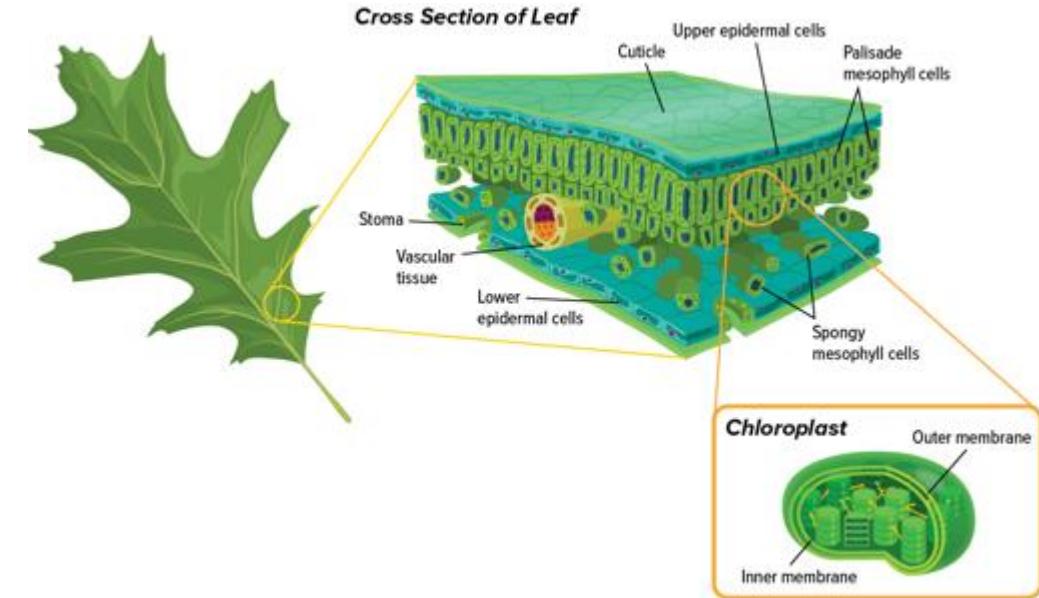
- Leaves capture the energy from the sun
- sunlight moves through the top layers to the layers below.
- vascular tissue moves materials through the leaf.

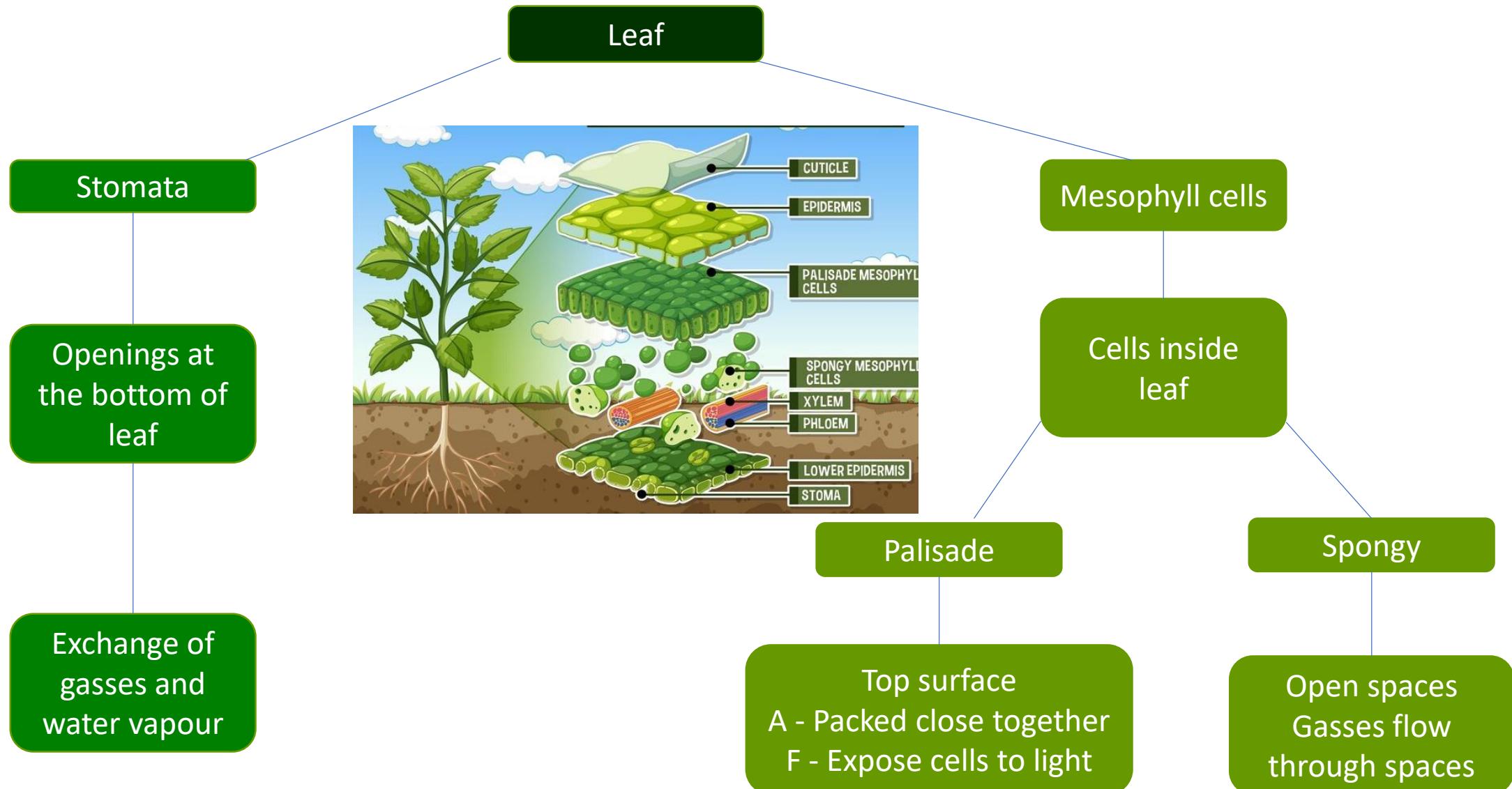
1. What do we call the waxy cover that is produced by the epidermal layer. **cuticle**

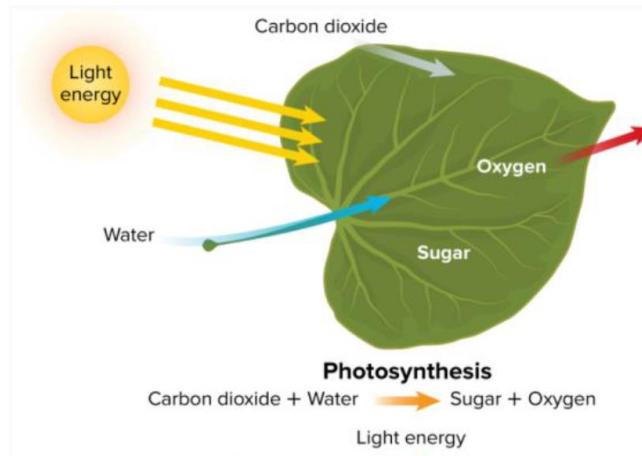
2. What type of leaf cells contain the chloroplast  
**Spongy and palisade**

3. What is the reaction happening in the chloroplast. Fill in the blanks

Carbon dioxide \_\_\_\_\_ light \_\_\_\_\_ +







Which of the following is **NOT** true about plants' leaves?



Chlorophyll absorbs light

(hydrogen, oxygen)

energy splits apart water molecules into hydrogen atoms and oxygen atoms

(oxygen, stomata) The stomata in the plant exchange water vapor, oxygen, and CO<sub>2</sub>

carbon dioxide, glucose)

Carbon dioxide, entering through stomata, combines with hydrogen atoms and forms glucose (sugar)

1 Their color is green because chlorophyll reflects green light only

2 They are the major food-producing organs

3 They contain stoma in the upper epidermal layer only

4 They have many different types of cells in their structure

1. Photosynthesis uses all the following except \_\_\_\_\_ to make food.

- a. Carbon dioxide
- b. **Chemical energy**
- c. Light
- d. Water

2.. What is the source of the carbon atoms in a plant's cells?

- a. They were created as the plant grew
- b. The sun
- c. Water molecules
- d. **The environment**

3. Which is the best explanation of the change in energy shown in the model?

- a. New energy is produced by the plants during photosynthesis
- b. Large amount of energy is released into the environment during photosynthesis
- c. Energy from sunlight is destroyed as it powers photosynthesis
- d. **Energy input from the environment is stored in food molecules during photosynthesis**

4. Chloroplasts are the location of photosynthesis

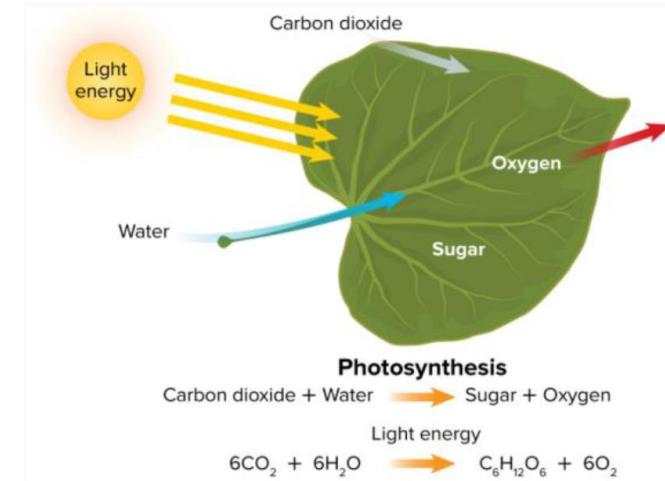
- a. **True**
- b. False

5. Photosynthesis is the process in which plants use energy from light to produce\_\_\_\_\_

- a. New cells
- b. Organelle's
- c. **Food**
- d. None of the above

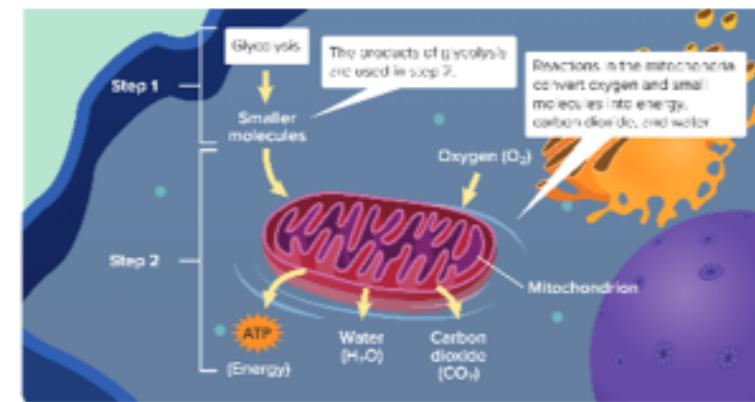
6. In recent decades, average global temperatures have increased significantly. Scientists agree that the widespread destruction of the amazon rain forest contribute to climate change. Which mechanism might be cited to support that hypothesis?

- a. Deforestation causes water on the ground to reflect sunlight
- b. **Deforestation reduces the number of plants able to absorb carbon dioxide**
- c. Photosynthesis produces energy, which gives off heat
- d. Plants use up energy during cellular respiration



1. Cellular Respiration is a series of chemical reactions that convert the energy in food to usable energy (ATP)

2 Parts



## Cytoplasm

Glycolysis

Glucose broken down to smaller pieces

Produce energy (ATP)

## Mitochondria

Smaller molecules and O<sub>2</sub> needed.

H<sub>2</sub>O and CO<sub>2</sub> are given off

1. Water is a product of cellular respiration

a. **True**

b. False

2. Cellular respiration is the process in which organisms break down food to release \_\_\_\_.

a. **Energy**

b. Nutrients

c. Sugar

d. Oxygen

3. Which organisms use cellular respiration to convert energy into usable form?

a. Seedless plants only

b. Only photosynthetic organisms

c. Only mammals

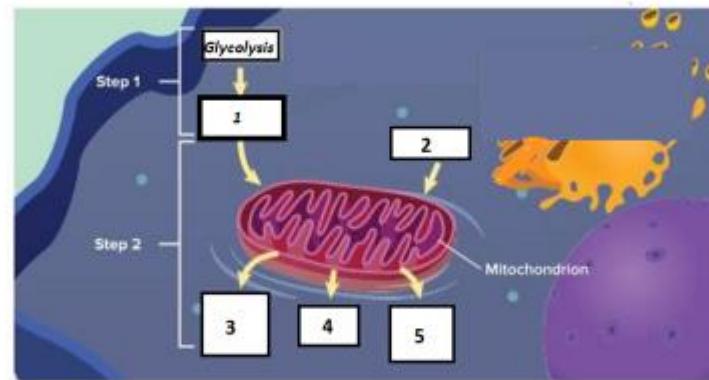
d. **All organisms**

4. Sucrose molecules break down during cellular respiration

a. True

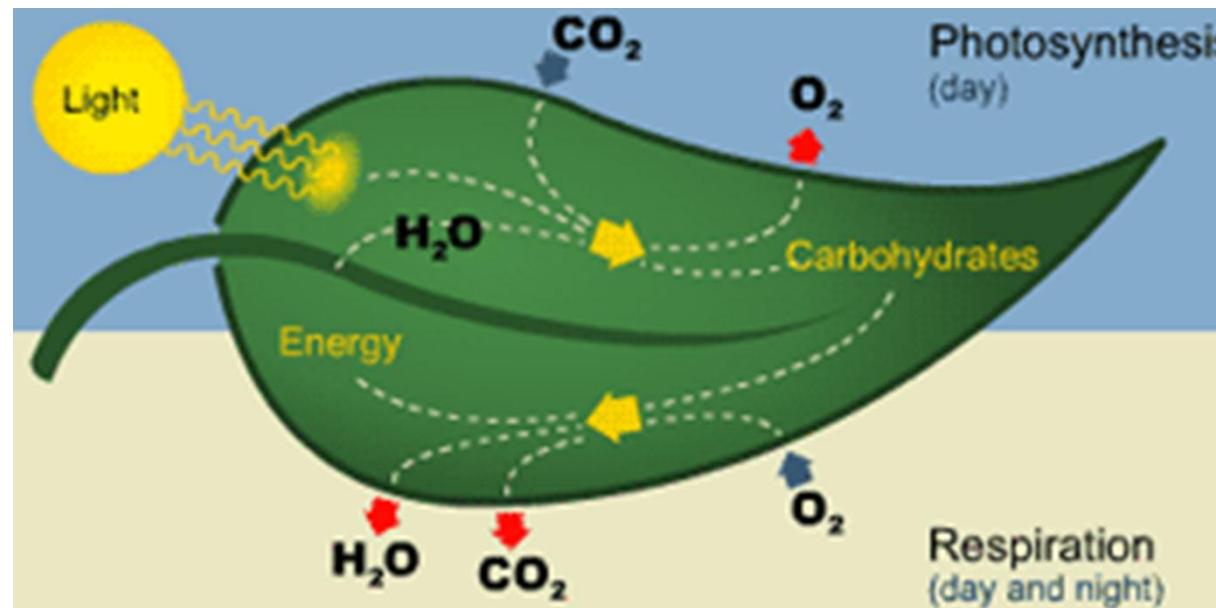
b. **False**

Which of the following chemical equation correctly completes the below reaction that occurs in the mitochondria as shown in the figure?



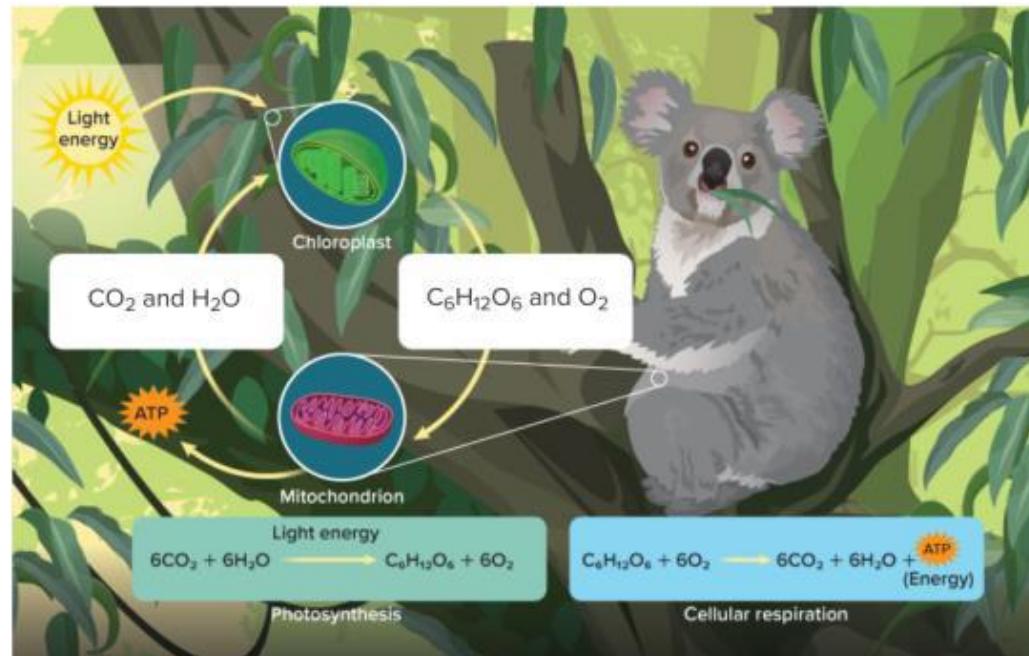
1	$\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{ATP}$
2	$6\text{H}_2\text{O} + \text{ATP} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{CO}_2$
3	$6\text{CO}_2 + \text{ATP} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$
4	$6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + \text{ATP}$

	Photosynthesis	Cellular respiration
<b>Energy</b>	Use sun energy	Release energy (ATP)
<b>CO<sub>2</sub></b>	Use CO <sub>2</sub>	Gives off CO <sub>2</sub>
<b>Water</b>	Uses water	Gives off water
<b>Oxygen</b>	Gives off oxygen	Uses oxygen
<b>Glucose</b>	Makes glucose	Uses glucose



Identify inputs and outputs of each system

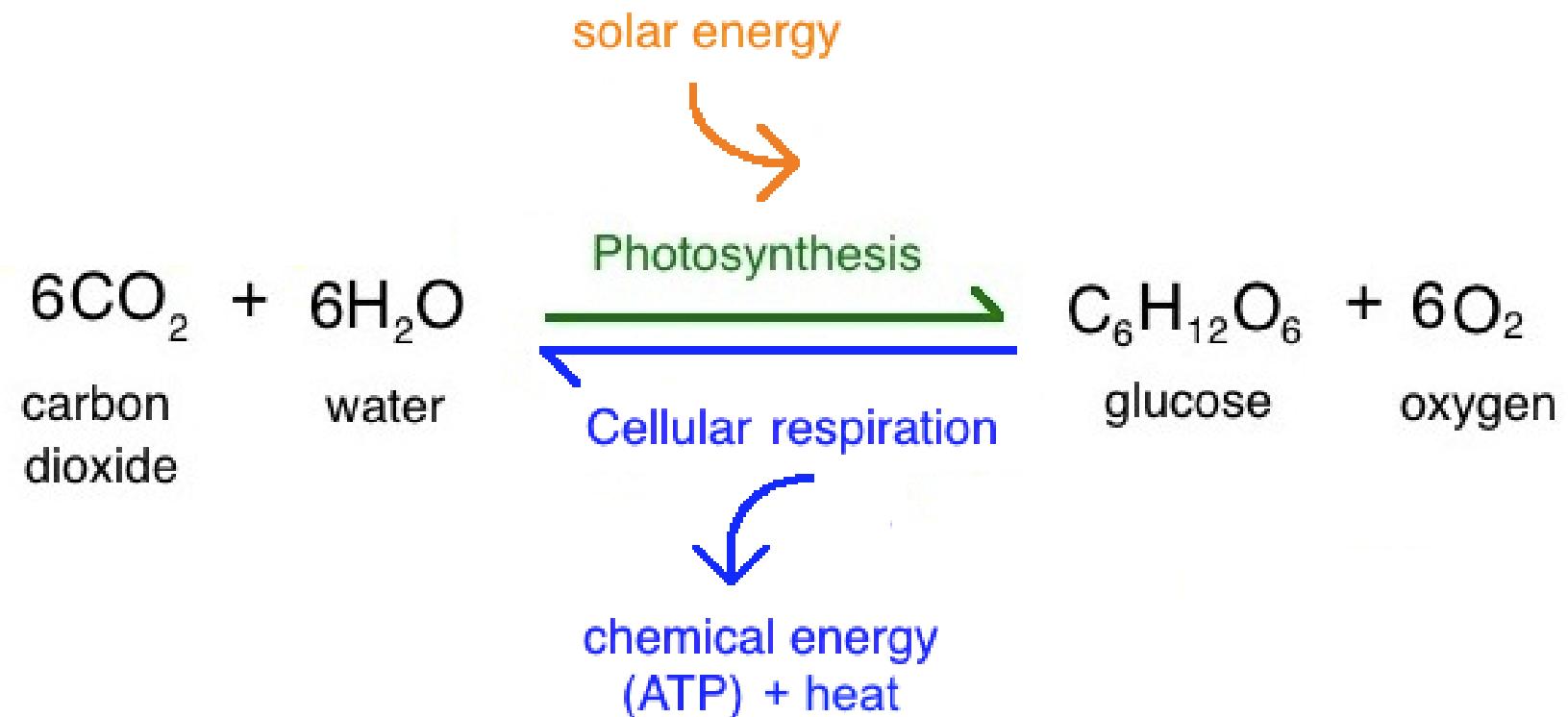
Photosynthesis Summary		
Input	Output	Location
Carbon dioxide, water, and Light energy	Glucose and Oxygen waste	Chloroplast found in mesophyll cells



## Cellular Respiration Summary

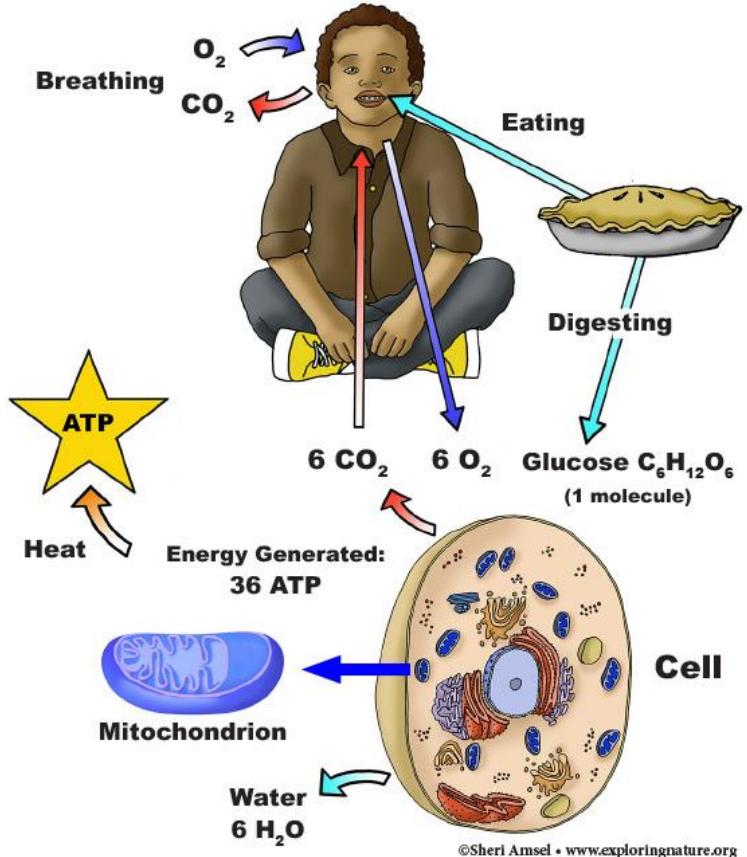
Input	Output	Location
Oxygen and glucose	ATP energy Water and Carbon dioxide waste	Cytoplasm-glycolysis Mitochondria-ATP production

**1. Explain** the transfer of energy and cycling of matter by modeling the chemical reactions of photosynthesis and cellular respiration below.



- Cellular respiration convert the food you eat into energy.
- This energy is crucial for all bodily functions.
- During exercise, your muscles require more ATP to fuel movements.
- The need for more energy leads to a faster rate of cellular respiration.

### Cellular Respiration in Animals



**1. Producers** are organisms that make their own energy

- photosynthesis (plants) – use sunlight
- chemosynthesis (bacteria) – use chemical energy

**2. Consumers** are organisms that obtain energy by eating other organisms.

**2.1 Herbivores:**

These are primary consumers that eat plants (e.g., rabbits, deer). They obtain energy by consuming the glucose produced by plants.

**2.2 Carnivores:**

These are secondary or tertiary consumers that eat other animals (e.g., lions, wolves). They obtain energy by breaking down the organic matter from their prey.

**2.3 Omnivores:**

These consumers eat both plants and animals (e.g., humans, bears), allowing them to obtain energy from multiple sources.

**2.4 Decomposers**

Decomposers are organisms, such as fungi and bacteria, that break down dead organic matter. They play a critical role in recycling nutrients in the ecosystem.

Consumers produce their own food

- a. **True**
- b. False

13. Which of the following eats only eucalyptus leaves?

- a. **Herbivores**
- b. Carnivores
- c. Omnivores
- d. Detritivores

14. Which of the following would eat a dead rabbit?

- a. Herbivores
- b. Carnivores
- c. Omnivores
- d. **Detritivores**

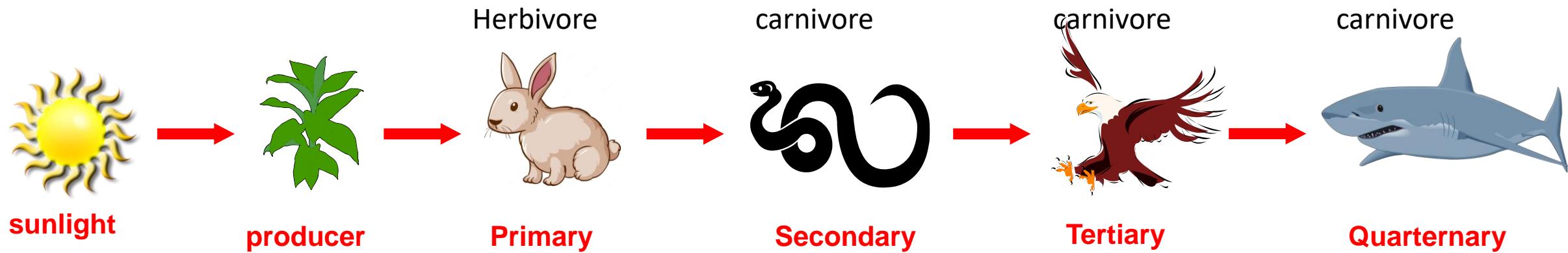
15. Which of the following would eat a hamburger with lettuce on it?

- a. Herbivores
- b. Carnivores
- c. **Omnivores**
- d. Detritivores

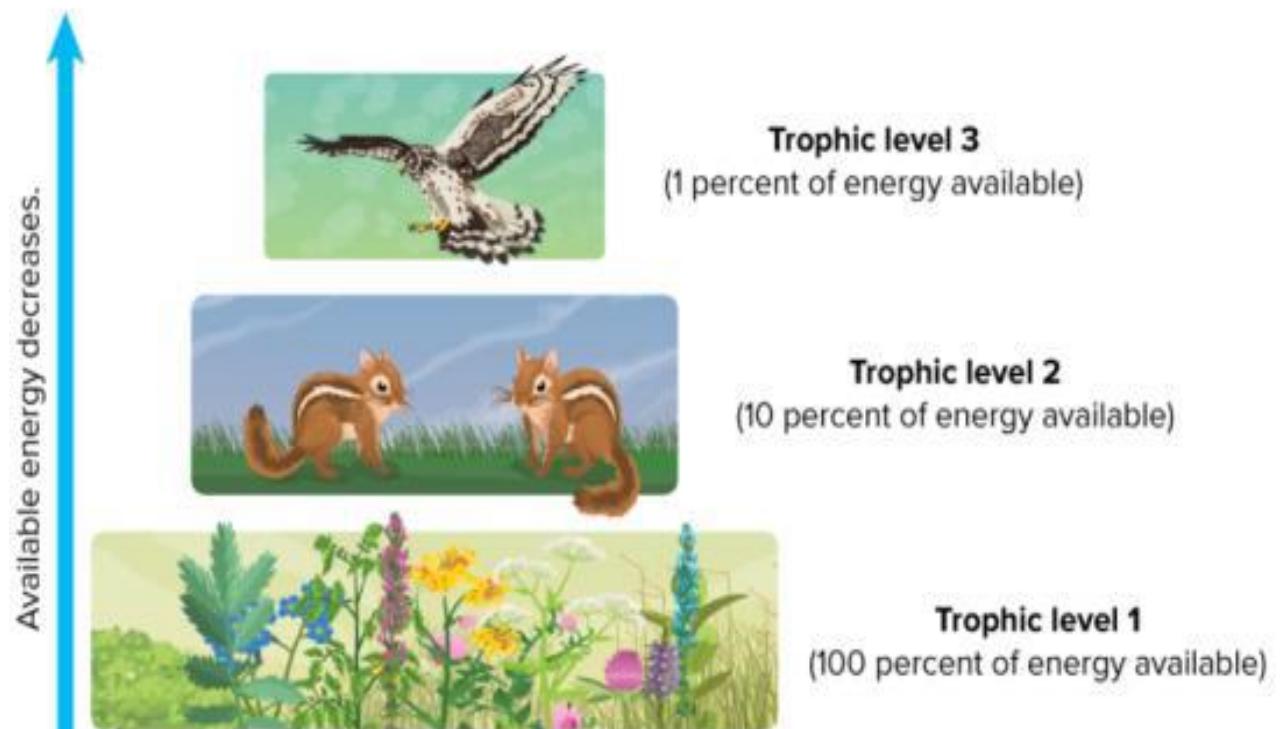
- The sun is the main source of energy
- Energy flows in one direction
- Energy flows from one organism to another
- Organisms do not use all the energy
- Some energy is released into the environment as thermal energy
- **Law of conservation of energy** – energy cannot be created or destroyed, but can change form



The plant gets energy from the sun and the squirrel gets energy from the plant



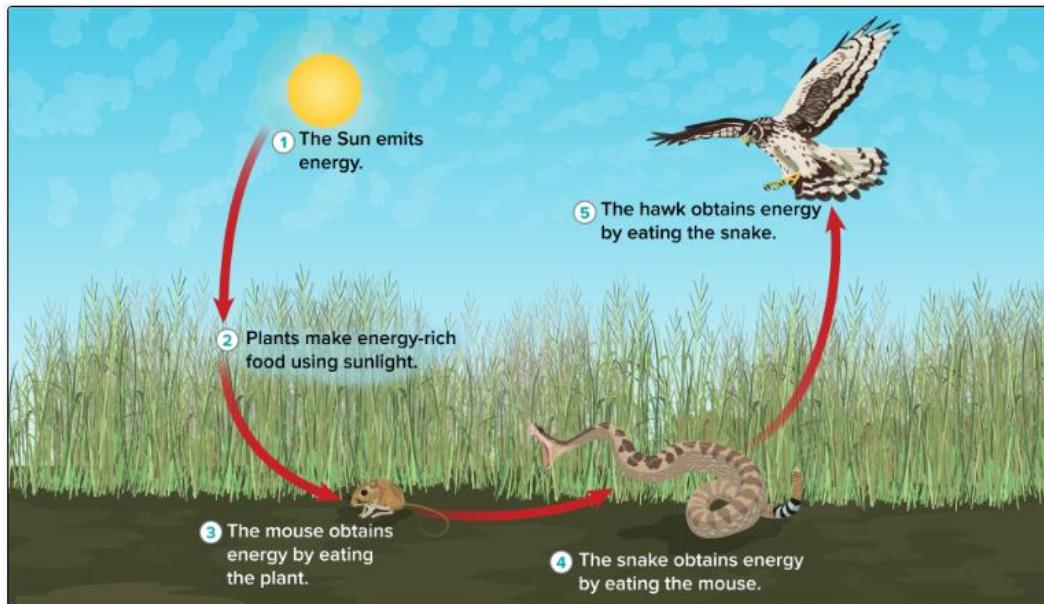
- Shows the amount of energy available in each trophic level of a food chain.
- At each step only 10% of energy is transferred to the next level.
- 90% of available energy is used by the organism or lost to the environment as thermal energy or heat.



A student analyzed the energy pyramid below. He found that, less energy is available for consumers at each higher trophic level. Why does this occur?

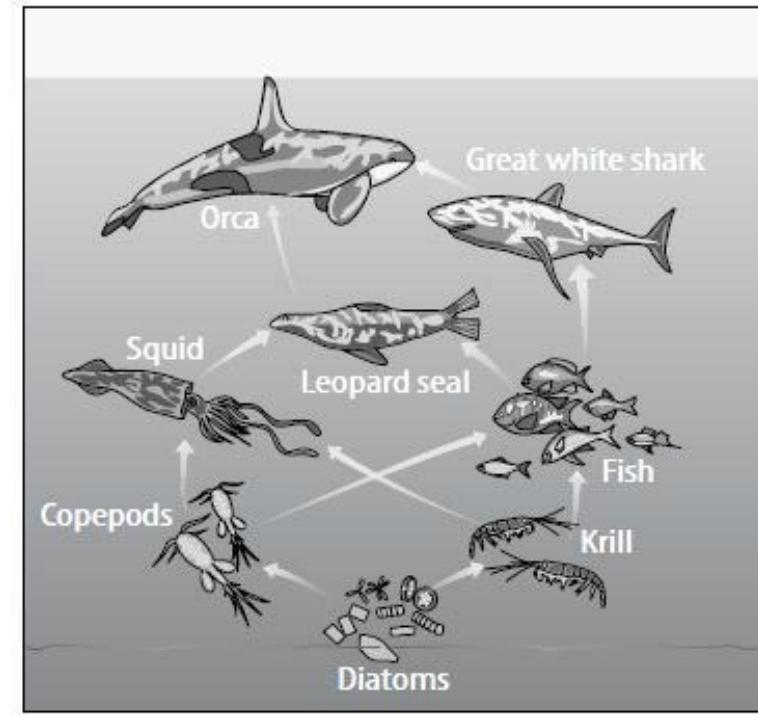
- a. because producers are only found at the bottom of the pyramid
- b. because predators eat more organisms in their own level than organisms in other levels
- c. because consumers eat both producers and other consumers
- d. because organisms use most of the available energy to fuel their own life processes

- 3. In an energy pyramid, approximately 10 percent of the energy available in one trophic level is transferred to the next level. Which statement helps explain why this occurs?
  - A Consumers eat both producers and other consumers.
  - B Organisms use most of the available energy to fuel their own life processes.
  - C Predators eat more organisms in their own level than organisms in other levels.
  - D Producers exist in only the lowest level of the pyramid.



## FOOD CHAIN

Shows how energy moves from the sun to the producer to the consumer



## FOOD WEB

Some organisms in a food web can be part of more than one food chain

Which is a model of feeding relationships?

- a. Protein building
- b. Food map
- c. **Food web**
- d. Sugar molecule

Analyze the food web. Which statement is correct?

- a. **The model tracks the transfer of energy as energy flows in this ecosystem**
- b. The transfer of matter back into the environment occurs only at the detritivore level.
- c. The model shows the transfer of matter only
- d. The decomposers in the model use matter but not energy for their life processes.

Energy cycles through ecosystems because it returns to the Sun.

- a. True
- b. **False**

In what form is energy NOT used for life processes released from living things?

- a. Light energy
- b. Sound energy
- c. **Thermal energy**
- d. Chemical energy

Which is most likely the first step in a basic food chain?

- a. The snake obtains energy by eating the mouse
- b. Plants make energy-rich food using sunlight
- c. **The sun emits energy**
- d. The hawk obtains energy by eating the snake

Which of the following flows through ecosystems in one direction?

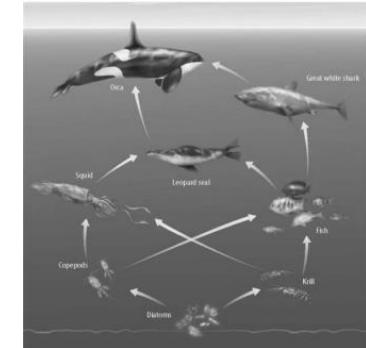
- a. Carbon
- b. **Energy**
- c. Nitrogen
- d. water

Which of the following organisms would NOT be on the first trophic level of an energy pyramid?

- a. Dog
- b. Tree
- c. Grass
- d. Algae

Which organism has the most available in the food web?

- a. **Diatoms**
- b. Leopard seal
- c. Squid
- d. Orca



As you move upward, from level to level in an energy pyramid, available energy \_\_\_\_.

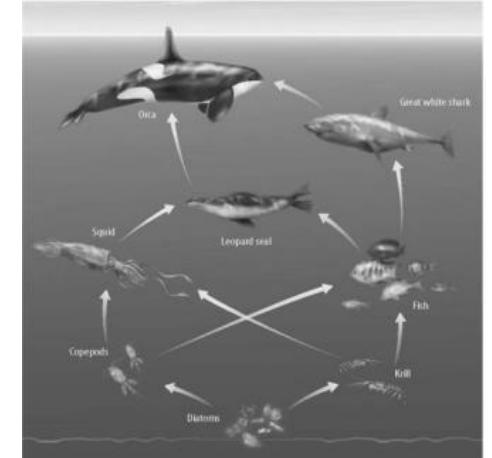
- a. **Decreases**
- b. Increase
- c. Stays the same
- d. Is destroyed

Available energy increases as it is transferred from one organism to another in a food chain.

- a. True
- b. **False**

What eats the squid?

- a. Diatoms
- b. **Leopard seal**
- c. Squid
- d. Orca



In an energy pyramid approximately 10 percent of the energy available in one trophic level is transferred to the next level. Which statement helps to explain why this occurs?

- a. Consumers eat both consumers and other producers.
- b. **Organisms use most of the available energy to fuel their own life processes.**
- c. Predators eat more organisms at their own trophic level than organisms at other levels.
- d. Producers exist only in the lower level of the energy pyramid.

28. Why are food webs better representations of how energy moves through an ecosystem than food chains?

- a. Food chains include decomposers, which do not play a role in energy movement through an ecosystem.
- b. Food chains show how matter moves through an ecosystem, not energy.
- c. Food webs include how energy enters an ecosystem, and food chains do not.
- d. **Food webs show that animals in an ecosystem can get energy by eating different things.**

Which statement does **NOT** describe energy flow in ecosystems?

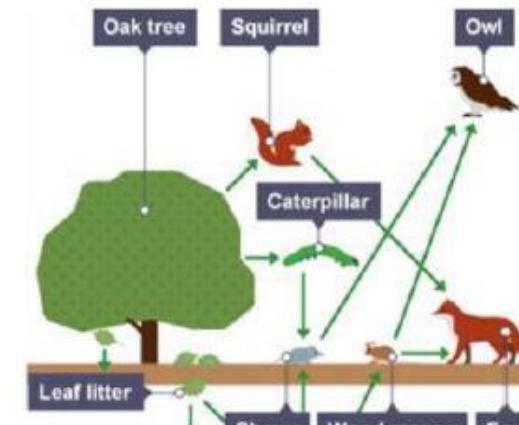
Energy flow usually starts with the Sun

Energy moves from one organism to another

Energy moves in one direction

Energy is constantly recycled

Analyze the food web given below. Identify the organisms obtaining energy directly from producers.

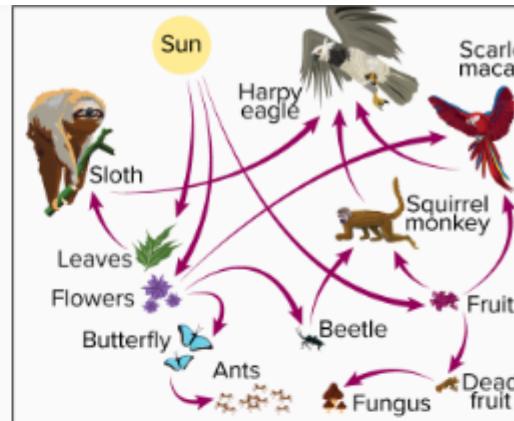


- a. Shrew, Caterpillar, Squirrel, Wood Mouse
- b. Squirrel, Caterpillar, Fungi, Earthworm
- c. Shrew, Fungi, Earthworm, Wood Mouse
- d. Squirrel, Caterpillar, Owl, Fox



2. Analyze the food web. Which statement is correct?

- A The model tracks the transfer of energy as energy flows in this ecosystem.
- B The transfer of matter back into the environment occurs only at the detritivore level.
- C The model shows the transfer of matter only.
- D The decomposers in the model use matter but not energy for their life processes.



3. In an energy pyramid, approximately 10 percent of the energy available in one trophic level is transferred to the next level. Which statement helps explain why this occurs?

- A Consumers eat both producers and other consumers.
- B Organisms use most of the available energy to fuel their own life processes.
- C Predators eat more organisms in their own level than organisms in other levels.
- D Producers exist in only the lowest level of the pyramid.

In the following food web, under what category the labeled mockingbird (in the red box) is classified?

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Carnivore

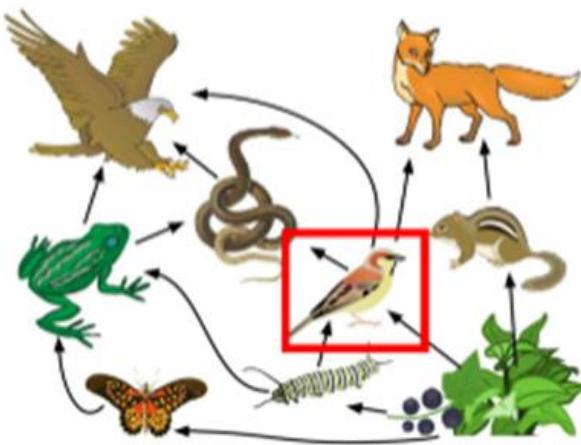
Omnivore

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Detritivore

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Herbivore



All organisms contain carbon

Humans – get carbon from food

Plants - get carbon from atmosphere and water

## How does carbon enter the atmosphere

- Organisms die and decompose – carbon goes into soil
- Fossil fuels formed when organisms decomposed – coal, oil, gas

## How is carbon used

Plants – photosynthesis makes sugar

Organisms eat plants and take in carbon

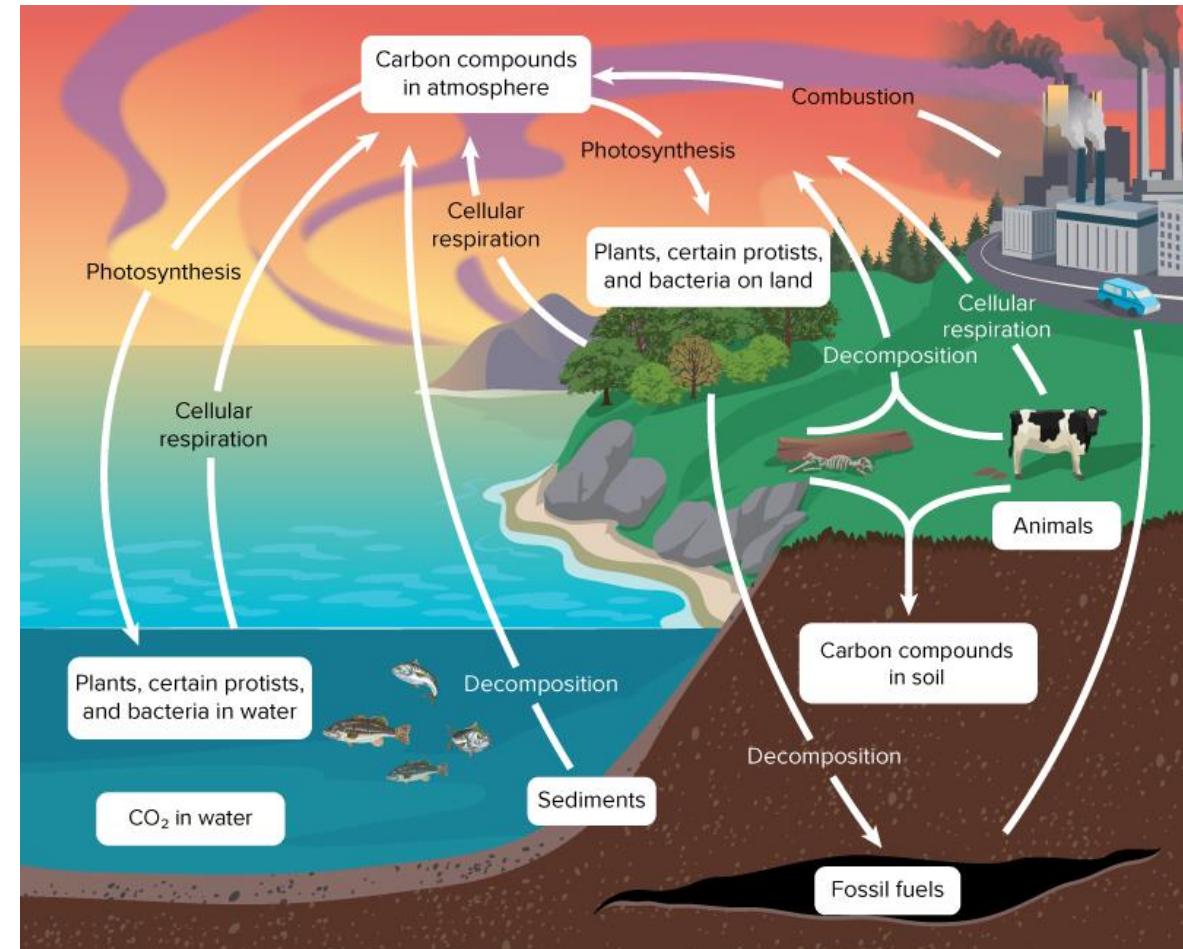
Which of the following is **NOT** true about systems that cycle matter?

Living things play a role in the cycling of matter

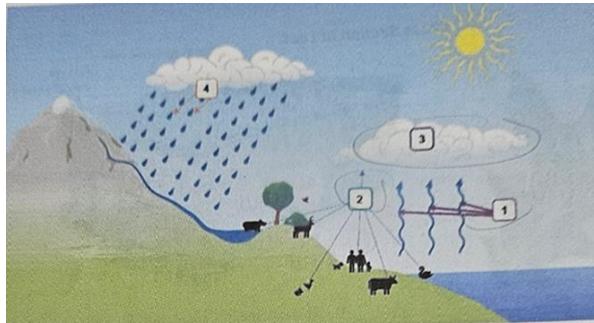
Matter changes form as it cycles

Some matter is destroyed as it cycles through the environment

Matter is constantly cycling through the environment



Use the water cycle in the figure and answer the questions



**Evaporation** - liquid water changes into gas

**Transpiration** - loss of water vapor from the leaves

**Condensation** - water vapour in the air is changed into liquid water.

**Precipitation** - Water is released from clouds (rain)

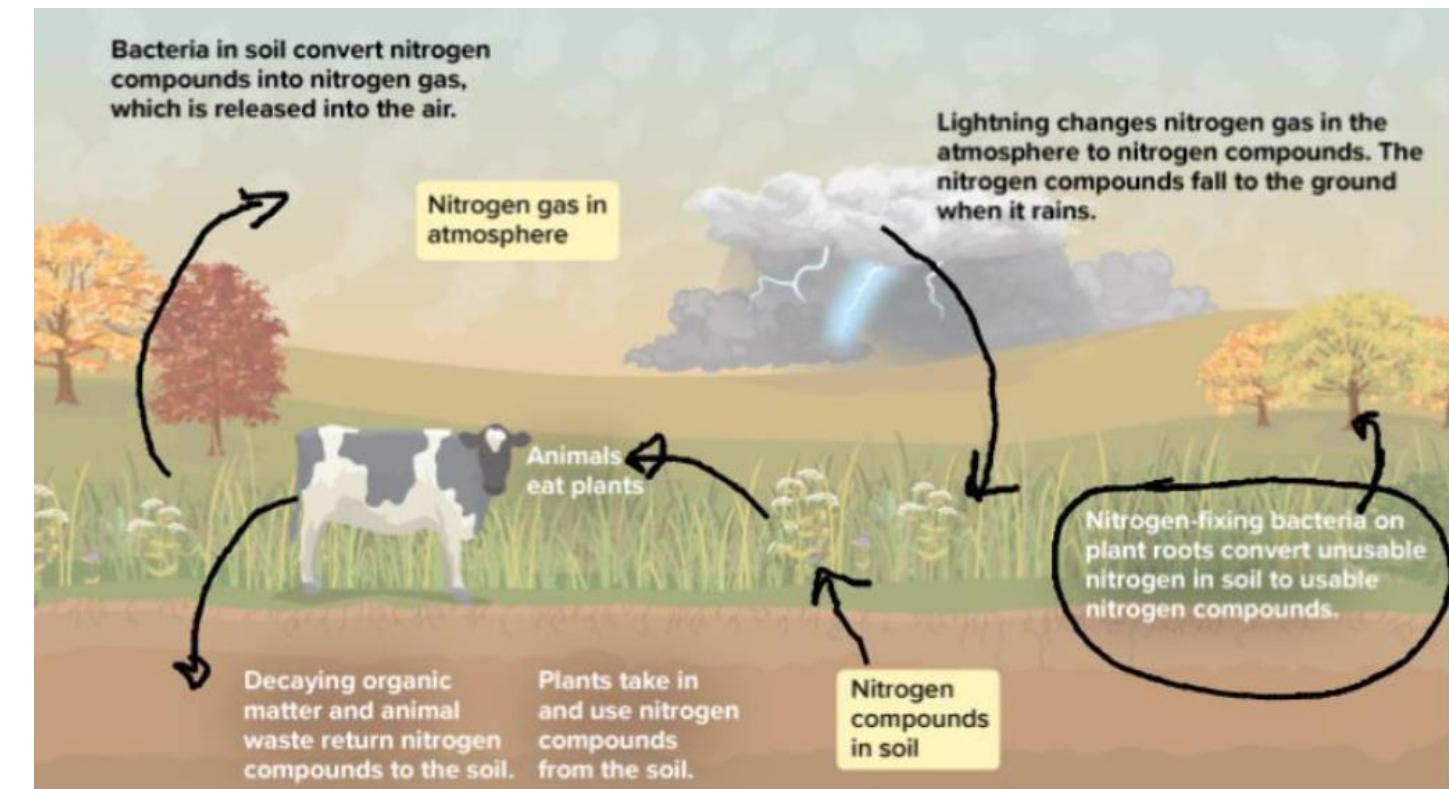
Give the correct name for the processes

- 1 Evaporation
- 2 Respiration
- 3 condensation

If process number 4 did not happen, how would it affect the water cycle

There would be no rain and this could cause endless drought.

- **Nitrogen fixation** – process that changes atmospheric nitrogen into nitrogen compounds that are usable by living organisms
- Animals take in nitrogen when they eat plants or other animals
- When plants or animals die – decomposers break down the dead material and return nitrogen to the environment
- Animal waste return nitrogen to the environment

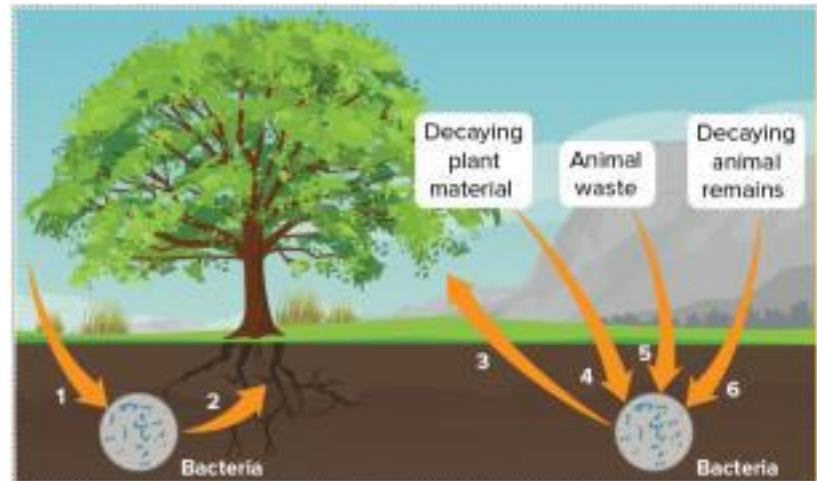


Elements such as oxygen, nitrogen, and carbon cycle through a system once

- a. True
- b. **False**

30. Keisha and her classmates created a model of the nitrogen cycle. What is the function of the bacteria in the picture?

- a. They prevent nitrogen from harming the plants.
- b. They remove nitrogen from the soil.
- c. They remove nitrogen from the soil
- d. **They return nitrogen to the system**



31. Which of the following steps in the nitrogen cycle takes place after animals eat plants?

- a. Lightning changes nitrogen gas into nitrogen compounds.
- b. Plants use nitrogen from the soil.
- c. Bacteria on plant roots fix nitrogen to make it usable.
- d. **Decaying waste returns nitrogen to the soil.**

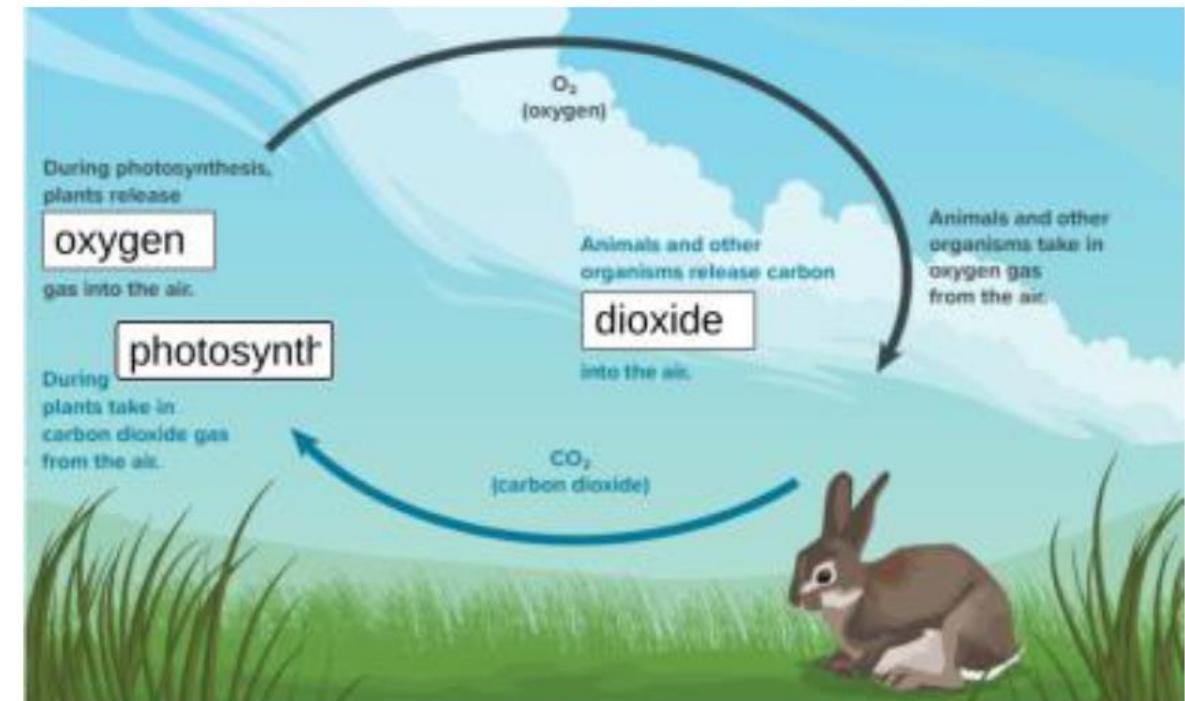
32. Which of the following is NOT an example of how bacteria aid in the nitrogen cycle?

- a. nitrogen fixation
- b. breaking down the tissue of dead organisms
- c. changing nitrogen compounds into atmospheric nitrogen
- d. **infecting tissue**

- Photosynthesis release oxygen into the environment
- Phytoplankton release more than 50% of the oxygen in the Earth's atmosphere
- Plants and animals use the oxygen in the air

Phytoplankton are said to release how much of the oxygen in Earth's atmosphere?

- between 5% and 10%
- between 15% and 20%
- less than 5%
- more than 50%**

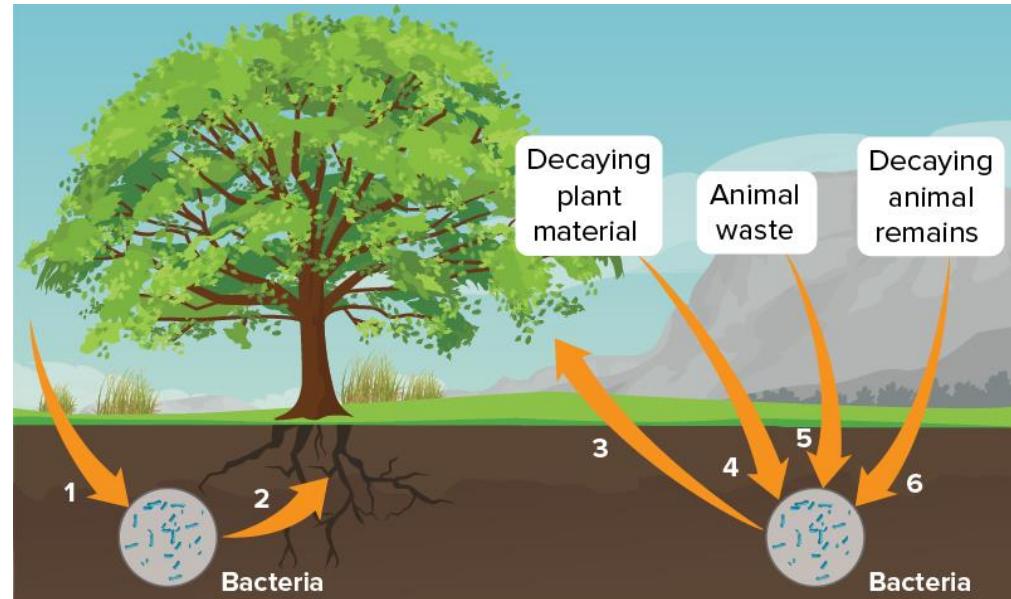


2. What is the function of the bacteria shown in the model?

- A They prevent the nitrogen from harming the plants.
- B They remove the nitrogen from the soil.
- C They remove the oxygen from the soil.
- D They return the nitrogen to the system.

3. Which of the following is NOT true about systems that cycle matter?

- A Living things play a role in the cycling of matter.
- B Matter changes form as it cycles.
- C Some matter is destroyed as it cycles through the environment.
- D Matter is constantly cycling thought the environment.





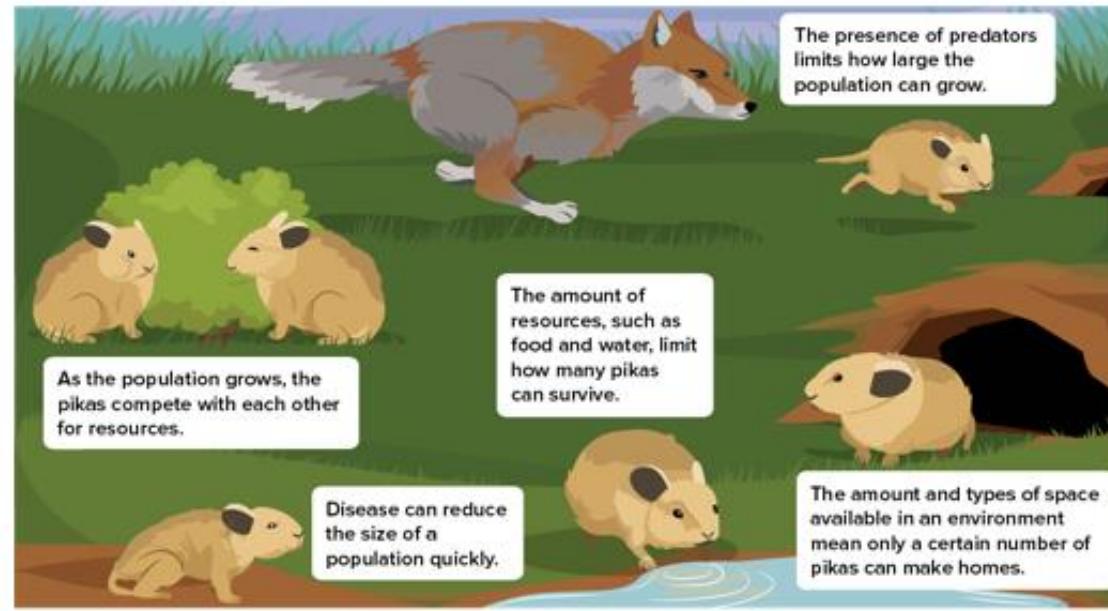
Different species of animals form a community in this ecosystem

**Limiting factors –**  
anything that restricts  
the size of a population

**Limiting factors for pikas**

- Population grow
- Food and water
- Disease
- Predators
- Space for homes

Examine the figure of a population of **pikas** below. Read about how limiting factors affect their population and answer the following question.



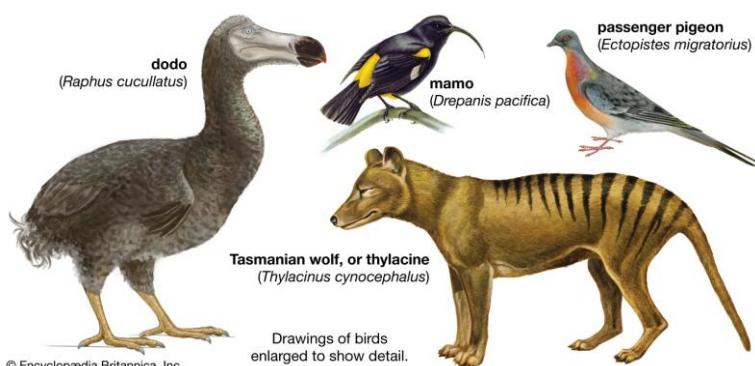
In the illustration of the **pikas**, you examined how limiting factors affected their survivability. Think about everything you need to survive. Choose one factor and construct an explanation about why it might be a limiting factor for the human population.

I need food to survive.

I think it is a limiting factor because if there was not enough food in a population, the population would not grow.

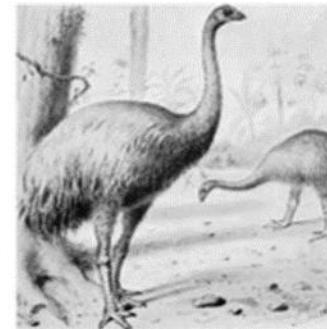
An **extinct** species is a species that has died out. No individuals are left

An **endangered** species is a species whose population is at risk of extinction



New Zealand was once home to a large, flightless bird called giant moa. When humans first settled in the island they hunted the moa for food within 200 years, all the giant moas had been killed.

How the giant moa species can be classified?



Extinct species

Endangered species

Threatened species

Limited species

**Commensalism**

One organism benefit, the other don't get harmed

The plant benefit - use the tree as its habitat, the tree is not harmed

**Parasitism**

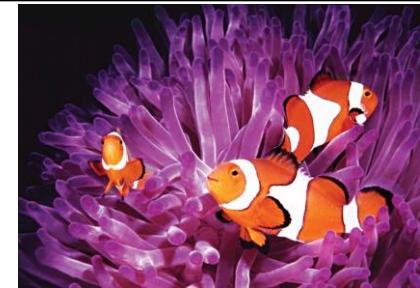
One organism benefit, the other gets harmed

The wasp benefits , the spider gets harmed

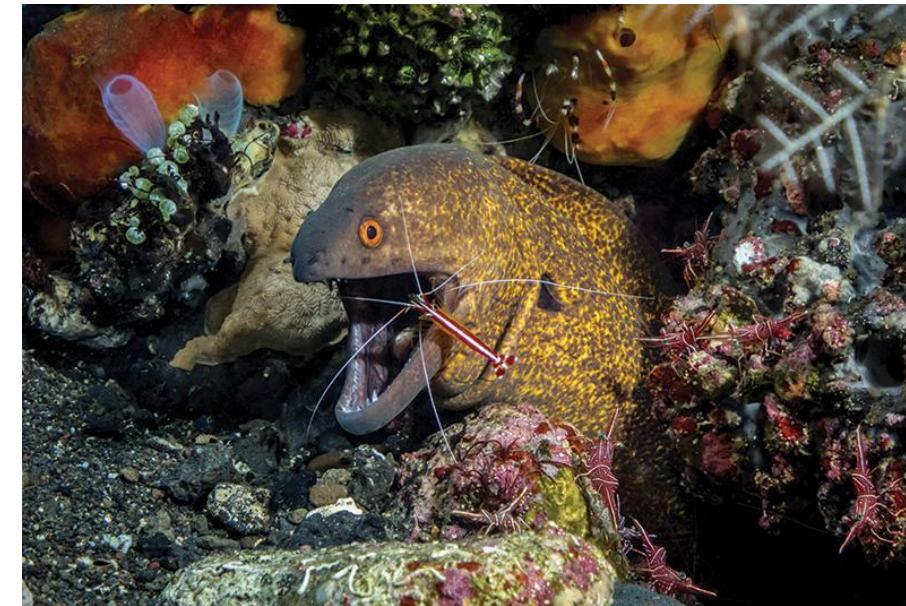
**Mutualism**

Both organisms benefit

The clownfish receives protection from the anemone, the anemone will sting predators of the clownfish



**Mutualism** - shrimp clean parasites, dead skin and algae around the moray eel's eyes, gills, and teeth, they get a free meal, and the eel is cleared of its parasites



<b>Cooperative relationships</b> Individuals of the same species work together for the good of the group	<b>Predator-Prey</b> A predator hunts and kills a prey organism	<b>Competitive relationships</b> Two or more organisms fight for the same resource at the same time
 A photograph showing a group of lions attacking a large Cape buffalo in a dry, open landscape. The lions are leaping and biting at the buffalo's legs and body.	 A photograph of a red fox in a snowy environment. The fox is captured in mid-stride, carrying a small, dark prey item in its mouth. Its fur is a mix of brown and white, and it has a bushy tail.	 A cartoon illustration on a yellow background. It depicts a baboon, a cheetah, and a lion all running towards a single bunch of bananas on the ground. The baboon is in the foreground, the cheetah is in the middle ground, and the lion is in the background.

Define – ecological succession

Define – Climax community

P109

**Ecological succession** – an ecological community, gradually changes into another community

**Climax community** – the final stage of ecological succession in a land community



Ecological Successions A

Ecological Successions B

Compare according to	Ecological succession A	Ecological Succession B
Name	primary	secondary
Presence of life in Step 1	no	yes
Area (old/new)	new	old
Time required to develop climax	hundreds of years	150+ years

## Eutrophication

The process of a body of water becoming nutrient rich through

- Decaying organisms
- Runoff from fertilizers

Which of the following can cause **eutrophication** as shown in the lake below?



No.	Reason
1	Decaying organisms fall to the bottom of the lake
2	Runoff from fertilizers used in farming
3	High rate of fish reproduction (population increase)

1 & 2

2 & 3

1 & 3

1, 2, & 3

### How do forest fires occur

- lightning strikes, which can ignite dry vegetation.
- spontaneous combustion can occur in hot conditions, especially in areas with a lot of dry organic material.

### Effect of forest fire on ecosystem

- Loss of habitat
- Stress
- Loss of food
- Loss of shelter

- Loss of habitat
- Increased greenhouse gases
- Soil erosion
- Flooding
- Food scarcity leads to extinction

2. What is happening in the image?

A The forest is undergoing primary succession.

B The forest is undergoing secondary succession.

C The green sprouts will not grow into full plants and the forest will not recover.

D The forest is suffering from eutrophication.



3. How might a lake suffering from eutrophication affect a population of fish?

A The population will grow because of the extra nutrients.

B The population will suffer due to decreases in oxygen and habitat loss.

C The fish population will not be affected.

D The size of the population will waver.

**4. Argue** A city council member wants to implement a policy that will allow farmers to dump nitrogen-containing fertilizers in the local water systems. Construct an argument against this policy, focusing on the effect it would have on local aquatic species.

Algae will grow faster leading to ...

- harm water quality, food resources and habitats
- Decrease in oxygen needed by fish and water plants

**5. Describe** Imagine a forest near you that has a high level of biological diversity. A flash flood has swept through the forest. Describe how such a disruption would change the populations within the forest.

1. Immediate Habitat Loss
2. Displacement of Wildlife
3. Reduction in Food Sources:
4. Altered Reproduction Cycles:
5. Changes in Species Composition
6. Ecosystem Recovery and Regeneration
7. Invasive Species Proliferation: Flooding can facilitate the spread of invasive species

