

APPLYING CONCEPTS

Consumers

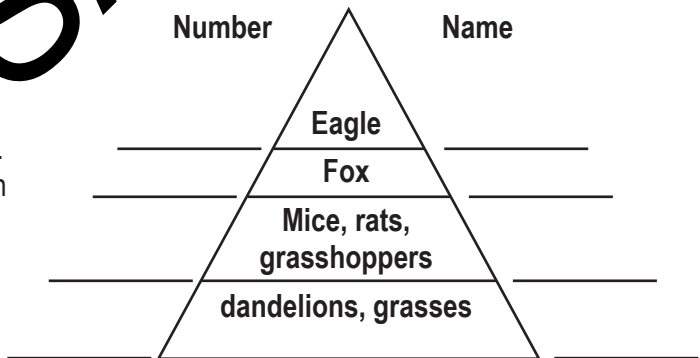
Read the text and answer the questions.

Consumers are organisms that get energy and nutrients by eating other organisms.

Consumers can be classified into three types, based on what they eat. Herbivores are animals that eat plants. Herbivores may eat plant roots, seeds, berries, fruit, or any other part of a plant. Herbivores do not eat animals. Carnivores are organisms that eat other animals. Carnivores do not eat plants. Omnivores are organisms that eat both plants and animals.

Consumers can be classified into three levels based on where they rank on the food chain. A food chain shows the flow of energy between a select group of organisms. Energy flows from an organism on one level when it eats an organism on a different level. The levels on a food chain are called trophic levels. The first trophic level is Producers. The second trophic level is Primary Consumers. Primary Consumers are animals that eat producers. The third trophic level is Secondary Consumers. Secondary Consumers are animals that eat Primary Consumers. In other words, Secondary Consumers eat animals that eat producers. The fourth trophic level is Tertiary Consumers. Tertiary Consumers are animals that eat Secondary Consumers. A Tertiary Consumer is an animal that eats an animal that eats an animal that eats a producer.

1. Use the text to label the four trophic levels on the diagram. Include each trophic level number and its name.



2. Does energy flow up or down on the diagram? Why? Explain your response in a well-organized paragraph.
3. Compare and contrast herbivores, omnivores, and carnivores.

Nonliving Parts of Ecosystems

Read the text and answer the questions.

Ecosystems include nonliving parts such as air, climate, soil, minerals, water, and landforms. These nonliving, or abiotic, parts affect what types of plants and animals live in the ecosystem.

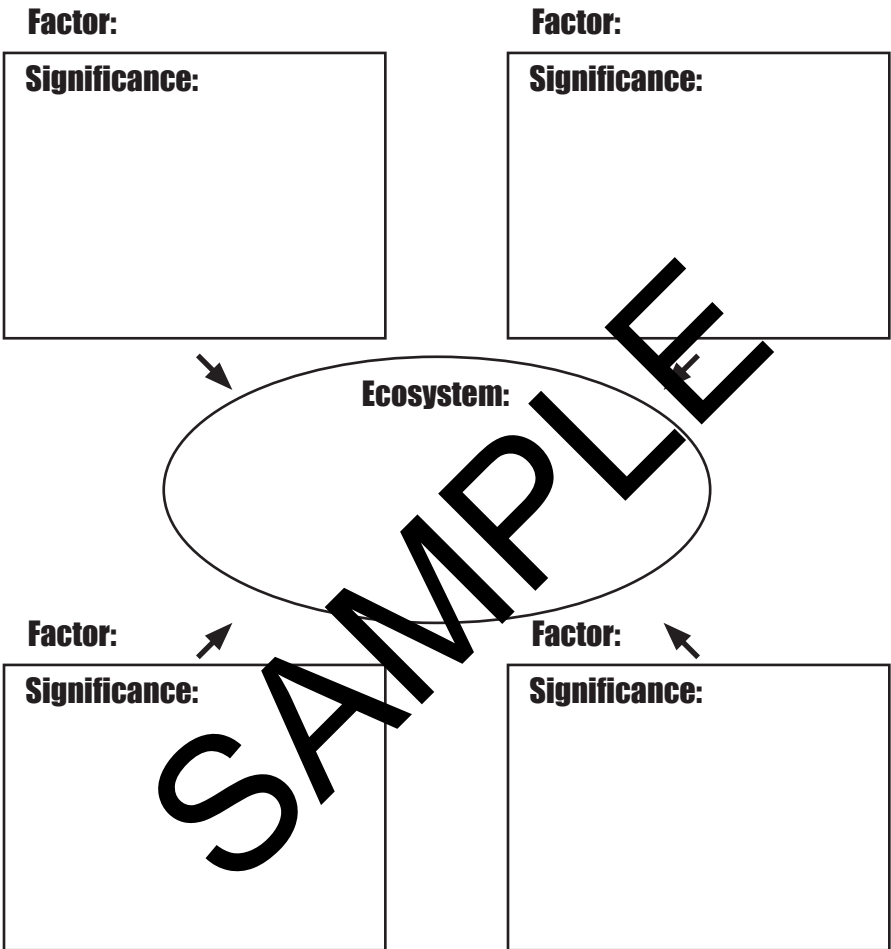
Climate is the weather in an area over a long period of time. Rainfall and air temperature are two aspects of climate. Temperature and rainfall affect the plants and animals that live in an ecosystem. For example, tropical plants grow in rainy climates, not in deserts where they do not get enough water. Similarly, polar bears, with their thick, warm fur, are best-suited to survive in cold arctic climates. Many plants prefer mild temperatures and moderate rainfall. However, plants that grow in hot, desert climates have special abilities to survive the hot sun and lack of rain.

Soil is loose layers of broken-down rock mixed with organic material. Soil may be hard and rocky or it may be soft and sandy. Fertile soil, which has plenty of water and nutrients, can sustain many types of plant-life. Loose, rocky soil provides good drainage for many types of trees, while fine silt soil is home to many grasses. Additionally, soil holds minerals that are essential to life.

All plants and animals need water. The movement of water in an ecosystem affects the way of life of many life forms. Still water in lakes and ponds supports a variety of plants and animals. Rain or quickly melting snow can form streams and rivers that nourish many ecosystems. However, water can damage an ecosystem. Flowing water can uproot plants, upsetting the natural balance of an ecosystem. It can also form canyons over time, which may create new ecosystems that support different plant and animal life.

Landforms, such as mountains, hills, valleys, and plains, also affect ecosystems. Mountains tend to be colder and wetter. Their slopes allow for flowing water like streams, but they also lead to erosion. Valleys may create areas of poor drainage, which may be ideal for some plants and animals, but unsuitable for others.

1. Use the text to define abiotic.
2. Use the graphic organizer to identify the four main abiotic factors in the text and to explain the significance of each.



3. A. Give an example of how water can be supportive in an ecosystem.
B. Give an example of how water can be destructive in an ecosystem.
4. Make three inferences about “unfriendly” ecosystems, such as ecosystems where water is scarce or temperatures are extreme.
5. Give an example of how landform and climate can have an impact on the availability of water in an ecosystem.

Aquatic Ecosystems

An ecosystem in a body of water is known as an “aquatic ecosystem.” The two types of aquatic ecosystems are marine ecosystems and freshwater ecosystems. Marine ecosystems are saltwater and they cover approximately 70% of the Earth. Freshwater ecosystems are not saltwater and they include ponds, lakes, streams, and rivers.

Read the text and answer the questions.

A pond is a type of freshwater ecosystem. The living organisms in a pond ecosystem are dependent on and connected with each other as well as with the nonliving parts of the pond ecosystem such as water, minerals, and the sun.

Plants grow in and around the pond. Plants in the pond serve as hiding places for small aquatic animals and fish. Plants around the pond serve as hiding places and homes for birds, turtles, and other animals. Plants are also an important food source for many organisms in the pond ecosystem.

Plankton, small plant and animal organisms that float or drift in the water, are part of a pond ecosystem. Plankton and algae are a source of food for many organisms at the pond.

Fish, turtles, snakes, frogs, ducks, dragonflies, and birds are examples of some of the animals that live in or around the pond. They are part of the pond ecosystem, too. These animals feed on other plants or animals in or around the pond. They are also the food source for other animals at the pond.

When plants and animals die in the pond ecosystem, decomposers change plant and animal remains into nutrients that help plants grow.

- List the benefit(s) to the pond ecosystem provided by each of the following:
 - plants
 - plankton
 - producers
 - consumers
 - dead plants and animals
- True or False: An aquatic ecosystem can include plants and animals that do not live in the water.