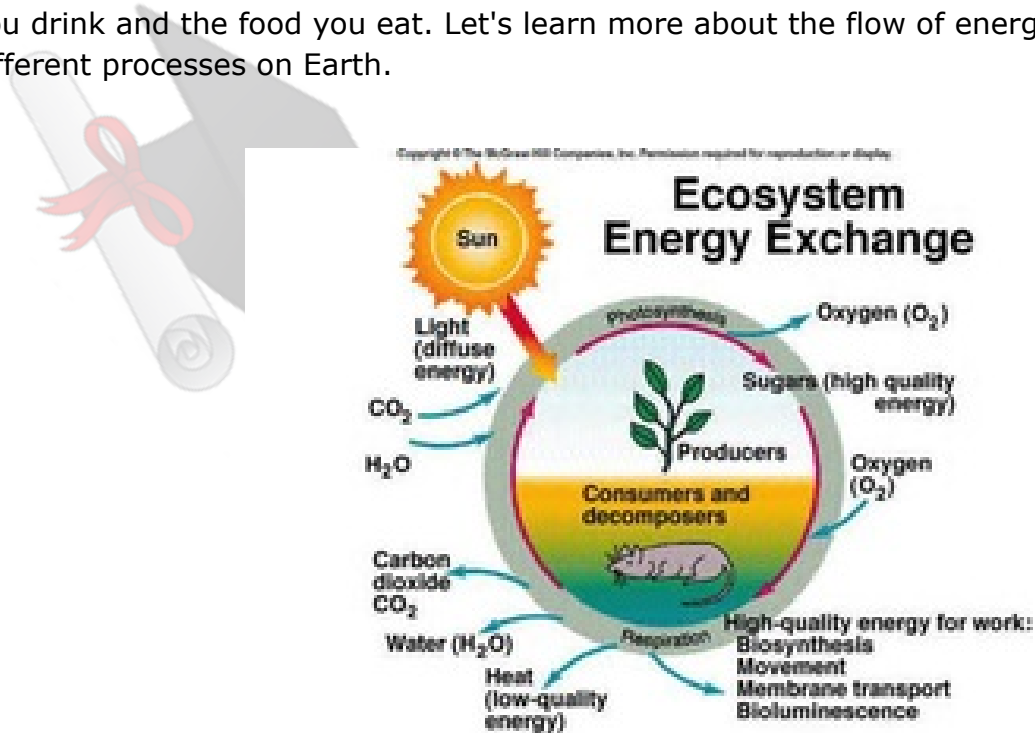


## F. Flow Of Energy & Matter

### Flow Of Energy & Matter

In the world around us, there is a constant flow of energy and matter. Energy is what makes things work, like when you run and play, you are using energy from your body. Matter, on the other hand, is anything that takes up space and has mass, like the water you drink and the food you eat. Let's learn more about the flow of energy and matter in different processes on Earth.



### Food Chains

Food chains show how energy is transferred from one living thing to another. They start with a producer, which is a plant that makes its own food using sunlight. The producer is eaten by a herbivore, which is an animal that eats plants. Next comes the carnivore, which is an animal that eats other animals. Finally, there are decomposers, which break down dead plants and animals, releasing nutrients back into the soil.

### Food Webs

In nature, many food chains are connected, forming a food web. This shows how different living things are connected by what they eat and what eats them. It's like a big puzzle where everything is connected!

### Photosynthesis

Photosynthesis is a vital process that happens in green plants, algae, and some bacteria. It's how producers make their own food using energy from the Sun. During photosynthesis, plants take in carbon dioxide from the air and water from the ground. With the help of sunlight, they use these ingredients to produce glucose, a type of sugar, and oxygen, which is released into the air. This process is essential because it provides food and oxygen for all living things on Earth.

## **Respiration**

Respiration is the process by which living things release energy from the food they eat. Humans and animals breathe in oxygen, and it combines with glucose from food to produce energy, carbon dioxide, and water. This energy is used by our bodies to do all sorts of things, from running and jumping to thinking and growing.

## **The Water Cycle**

The water cycle is the continuous movement of water on Earth. It goes through several stages, such as evaporation, condensation, precipitation, and runoff. During evaporation, the Sun heats up water bodies like lakes and oceans, turning the liquid water into water vapor, which rises into the atmosphere. As the water vapor cools down, it condenses to form clouds. When the clouds become heavy with water droplets, they fall to the ground as precipitation, which can be rain, snow, sleet, or hail. The water then flows on the ground as runoff, filling up rivers and lakes, and eventually returning to the oceans to start the cycle all over again.

## **The Carbon Cycle**

The carbon cycle is how carbon, an essential element for life, moves between living things and the environment. Producers take in carbon dioxide from the air during photosynthesis, and this carbon becomes part of their tissues. When consumers eat the producers, they obtain the carbon, which becomes part of their bodies too. When living things respire or decompose, they release carbon dioxide back into the air. Also, when fossil fuels like coal, oil, and gas are burned, they release carbon dioxide into the atmosphere, contributing to global warming.

1. What is energy?
  - A) Anything that takes up space and has mass
  - B) The constant flow of matter
  - C) What makes things work
  - D) The continuous movement of water
2. What is matter?
  - A) The constant flow of energy
  - B) Anything that takes up space and has mass
  - C) What makes things work
  - D) The process of producing glucose in plants
3. What is a producer in a food chain?
  - A) An animal that eats plants
  - B) An animal that eats other animals
  - C) A plant that makes its own food using sunlight
  - D) An organism that breaks down dead plants and animals
4. What is a carnivore in a food chain?
  - A) An animal that eats plants
  - B) An animal that eats other animals

- C) A plant that makes its own food using sunlight
- D) An organism that breaks down dead plants and animals

5. What is photosynthesis?

- A) The process by which living things release energy from food
- B) The continuous movement of water on Earth
- C) The process by which producers make their own food using energy from the Sun
- D) The process of decomposing dead plants and animals

6. What is the purpose of respiration?

- A) To release energy from food
- B) To produce oxygen for all living things
- C) To produce glucose and oxygen
- D) To break down dead plants and animals

7. What is the water cycle?

- A) The process by which living things release energy from food
- B) The process of decomposing dead plants and animals
- C) The continuous movement of water on Earth
- D) The process of producers making their own food using energy from the Sun

8. How does water vapor form in the water cycle?

- A) From the cooling of water droplets
- B) From the Sun heating up water bodies
- C) From the process of precipitation
- D) From the evaporation of carbon dioxide

9. What is the carbon cycle?

- A) The process by which living things release energy from food
- B) The process of decomposing dead plants and animals
- C) The continuous movement of carbon on Earth
- D) The process of producers making their own food using energy from the Sun

10. How does carbon dioxide return to the atmosphere in the carbon cycle?

- A) From the cooling of water droplets
- B) From the Sun heating up water bodies
- C) From the process of respiration and decomposition
- D) From the process of photosynthesis

## ANSWERS & EXPLANATIONS

1. C - What makes things work.
  - Energy is what makes things work, like when you run and play, you are using energy from your body.
2. B - Anything that takes up space and has mass.
  - Matter is anything that takes up space and has mass, like the water you drink and the food you eat.
3. C - A plant that makes its own food using sunlight.
  - A producer in a food chain is a plant that makes its own food using sunlight during photosynthesis.
4. B - An animal that eats other animals.
  - A carnivore in a food chain is an animal that eats other animals, not plants.
5. C - The process by which producers make their own food using energy from the Sun.
  - Photosynthesis is the process by which producers make their own food using energy from the Sun.
6. A - To release energy from food.
  - The purpose of respiration is to release energy from food, which is used by our bodies to do all sorts of things.
7. C - The continuous movement of water on Earth.
  - The water cycle is the continuous movement of water on Earth through processes like evaporation, condensation, precipitation, and runoff.
8. B - From the Sun heating up water bodies.
  - Water vapor forms in the water cycle from the Sun heating up water bodies like lakes and oceans, turning the liquid water into water vapor.
9. C - The continuous movement of carbon on Earth.
  - The carbon cycle is the continuous movement of carbon between living things and the environment.
10. C - From the process of respiration and decomposition.
  - Carbon dioxide returns to the atmosphere in the carbon cycle through processes like respiration and decomposition.