

# Energy in Ecosystems Study Guide

For \_\_\_\_\_ # \_\_\_\_\_

## Lesson 1: What is an Ecosystem?

**Definition:** An **ecosystem** is all the living and non-living things in an environment and how they interact.

Ecosystems can be big or small.

Four non-living parts (**Habitat**): Soil, water, sunlight, and air

The living parts (**Community**): Animals, plants, fungi, and microbes

You are part of the ecosystem. You can affect it (like polluting it). It can affect you (like how hot or cold, getting your food, etc.)

**Definition:** A **habitat** is a place where an animal or plant lives.

Habitats provide shelter, water, and food for living things.

## Lesson 2: How Do Plants Get Energy?

Plants get their energy from the sun. They have **chlorophyll** in their leaves.

**Chlorophyll** is a substance that traps the sun's energy. It helps the plants turn water ( $H_2O$ ) and carbon dioxide ( $CO_2$ ) into sugar ( $C_6H_{12}O_6$ ). Sugar is the food of plants. Oxygen ( $O_2$ ) is the left-over and we breathe it!

**Definition:** When plants use the sun's energy to turn water and carbon dioxide into sugar, the process is called **photosynthesis**.

**Definition:** Because plants **make** their own food, plants are called **producers**.

Plants can store sugar all over. They can turn sugar into starch and store it in the roots.

## Lesson 3: How do Other Living Things get Energy?

Animals **can't** make their own food. They get their food/energy from eating plants or other animals that eat plants.

**Definition:** Animals are **consumers** because they eat, or consume, other living things for their energy.

**Definition:** Animals that eat only plants are **herbivores**. Animals that eat only other animals are **carnivores**. Animals that eat both plants and animals to get energy are called **omnivores**.

**Definition:** **Decomposers** are living things that break down and put once living material back into soil, air, and water. Fungi and microbes (bacteria) are some decomposers, so are earthworms.

**Definition:** An animal that eats things that are already dead (carrion) is called a scavenger.

#### Lesson 4: What are Food Chains and Food Webs?

**Definition:** A food chain is the flow of energy through an ecosystem.

Example: Sun ( grass ( gopher ( snake ( hawk

**Definition:** All the food chains in a community are called the food web.

**Definition:** A predator is an animal that hunts other living things. Prey is eaten by a predator.

Food webs can be changed by nature ( Fires or storms can wipe out plants, then animals must move or starve.

People can negatively affect food webs ( Pollution, over fishing, too much pesticide, habitat loss.

People can help in the food web ( monarch butterfly farms

#### Extra Credit:

**Carbon cycle** ( Plants use  $\text{CO}_2$  and  $\text{O}_2$  is released. Animals breathe in  $\text{O}_2$  and give off  $\text{CO}_2$ .

**Nitrogen cycle** ( nutrients from soil feed plants, animals eat plants, decomposers break down

dead things and put nutrients back in the soil to be used by plants etc. etc. etc...