

Answer all questions in your notebook. Give this page a title, and write in full sentences that rephrase the question in the answer or you won't get credit for the questions! Return this sheet when you're done.

Food Chains and Webs --- "What's for dinner?"

Every organism needs to **obtain energy** in order to live. For example, plants get energy from the sun, some animals eat plants, and some animals eat other animals.

A **food chain** is the sequence of **who eats whom** in a biological community (an ecosystem) to obtain nutrition. A food chain starts with the **primary energy source**, usually the **sun** or boiling-hot deep sea vents. The next link in the chain is an **organism that makes its own food** from the primary energy source -- an example is **photosynthetic plants** that make their own food from sunlight (using a process called **photosynthesis**) and **chemosynthetic bacteria** that make their food energy from chemicals in hydrothermal vents. These are called **autotrophs** or **primary producers**.

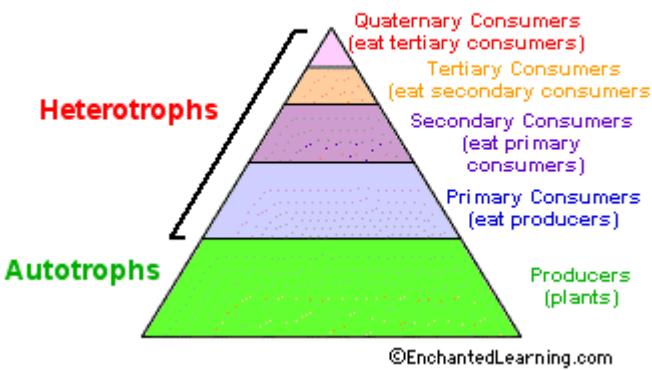
Sample Food Chains

Trophic Level	Grassland Biome	Pond Biome	Ocean Biome
Primary Producer	grass	algae	phytoplankton
Primary Consumer	grasshopper	mosquito larva	zooplankton
Secondary Consumer	rat	dragonfly larva	fish
Tertiary Consumer	snake	fish	seal
Quaternary Consumer	hawk	raccoon	white shark

Food Chain Questions

1. What travels through a food chain or web?
2. What is the ultimate energy for all life on Earth?
3. The 1st organism in a food chain must always be what type of organism?
4. Draw a simple food chain with a producer and 3 consumers NOT shown above.

The Food Web



The arrows in a food chain show the flow of **energy**, from the sun or hydrothermal vent to a top predator. As the energy flows from organism to organism, energy is lost at each step. A network of many **food chains** is called a **food web**. Don't forget that when any organism dies, it is eventually eaten by **detritivores** (like vultures, worms and crabs) and broken down by **decomposers** (mostly bacteria and fungi), and the exchange of energy continues.

FOOD WEB (draw in your notebook):

- 1) Choose an organism from your favorite biome. Draw (or write) that organism in the middle of your paper.
- 2) With your chosen organism, create your food web with at least 10 organisms.
- 3) At the bottom of your food web, create 3 separate food chains with at least 4 organisms in each that show the transfer of energy from one trophic level to the next. Use your knowledge of an energy pyramid to do this. (For example: Grass (10,000 J) Grasshopper (1,000 J) Mouse (100 J) Snake (10 J)

Here is the rubric for grading your food web READ THIS:

- Included arrows to show energy flow (Are they pointed in the correct direction?)
- Labeled each organism as Producer; Primary Consumer; Secondary Consumer; Tertiary Consumer or Quaternary Consumer.
- Labeled your Producer(s) as Autotrophs (Yes, they can have more than one title).
- Label at least 5 of your Consumers as Heterotrophs
- Your food web has MANY interactions within your population (it should look like a crazy spider web).
- Your food webs correctly shows energy transfer amounts.

(Here is a list of organisms you may use if you are having a difficult time: Grass; Fox; Rabbits; Squirrels; Mice; Seed Eating Birds; Insectivorous birds; Hawk; Owl; Snake; Herbivorous Insects; Predaceous Insects; Toad; Spider; Bacteria that serves as a decomposer.)

AFTER you have created your food web, answer these questions.

- 1- Explain what would happen to a terrestrial food web if the herbivorous insects were all killed with insecticide?
- 2- Imagine a marine food web where algae is the main producer. What would happen if the algae dies (we will learn more about how that can happen later).
- 3- What would happen in every food web if there were no decomposers?
- 4- Conclusion: Explain why every factor of a food web is an important factor.