An energy pyramid shows the distribution of energy among trophic levels.

Producers use energy from sunlight to make food. Herbivores eat plants—the producers—to get energy. Some of the energy is used by the animals to grow and some is used for cellular respiration. However, most of the energy that is consumed is lost as heat. Carnivores then eat the herbivores. And again, most of the energy is lost as heat.

An energy pyramid is a diagram that compares the energy used by producers, primary consumers, and other trophic levels. In other words, an energy pyramid shows how much energy is available at each trophic level. Energy is lost at each trophic level of a food chain. Because of this, a typical energy pyramid has a large base of producers. Each level above gets smaller, because as energy is lost as heat, there is less energy available as food for organisms. The longer the food chain, the more energy is lost between the bottom and top links.
Other pyramid models illustrate an ecosystem’s biomass and distribution of organisms.

An energy pyramid shows energy loss at each trophic level. Pyramid diagrams can also be used to represent other components of an ecosystem. Two other types of pyramid models are a biomass pyramid and a pyramid of numbers.

**Biomass Pyramids**

*Biomass* is a measure of the total amount, or dry mass, of organisms in a given area. A biomass pyramid is a diagram that compares the biomass of different trophic levels within an ecosystem. It shows the mass of producers that are needed to support primary consumers, the mass of primary consumers required to support secondary consumers, and so on. Notice that each trophic level has a smaller biomass than the one below it.

The biomass pyramid shows the total dry mass of organisms found at each trophic level.

**VOCABULARY**

The prefix *bio-* refers to life or living things. *Mass* is a measurement of the amount of matter. *Biomass* is a measurement of the amount of living organisms in an area.
Pyramids of Numbers
A pyramid of numbers gives a count of the numbers of individual organisms at each trophic level in an ecosystem. This type of pyramid gives a good picture of the large numbers of producers that are required to support just a few top-level consumers. Notice that it takes a huge number of producers to support just a few mountain lions.

What is represented by a pyramid of numbers?

In a pyramid of numbers, each level represents the actual number of organisms at each trophic level.

1. What is represented by an energy pyramid? __________________________
2. What is represented by a biomass pyramid? __________________________

13.6 Vocabulary Check

Vocabulary:
- biomass
- energy pyramid

Mark It Up

Go back and highlight each sentence that has a vocabulary word in bold.

1. What is represented by an energy pyramid? __________________________
2. What is represented by a biomass pyramid? __________________________

13.6 The Big Picture

3. Which trophic level contains the most energy? _________________
4. What happens to most energy at each trophic level? _______________