

Ecological Pyramids

Each step in a food chain or food web is called a trophic level. Primary producers make up the first trophic level. The other levels are occupied by consumers. Ecological pyramids are models used to show the relative amount of energy or matter within each trophic level in an ecosystem.

Directions:

1. **Lightly** shade the first (bottom) level of each pyramid green.
2. **Lightly** shade the second level of each pyramid yellow.
3. **Lightly** shade the third level of each pyramid blue.
4. **Lightly** shade the fourth (top) level of each pyramid red.
5. Label each level of the first pyramid side with the following terms as you move up the pyramid: primary producer, primary consumer, secondary consumer, tertiary consumer.
6. Add in additional vocabulary as you move up the pyramid: autotroph, herbivores, carnivores, apex predator.

Pyramid of Energy:

Pyramids of energy show the relative amount of **ENERGY** at each trophic level in an ecosystem. Most of the energy is contained in the primary producer level. Only a small portion of energy is available to the next level because organisms use up much of the energy they consume through life processes such as metabolism, movement, growth, and reproduction. Most of the remaining energy is released into the environment as heat. On average only 10% of energy is stored in the next trophic level, the other 90% is given off as heat.

7. On the second pyramid side fill in the relative amount of energy in each level using percentages. The bottom level should have 100%, each level following retains only 10% of the energy in the level below.
8. In the bottom level of the pyramid explain why there must be more energy in the bottom level of the pyramid.

Pyramid of Biomass:

Biomass is said to be the amount of living tissue in an ecosystem, and is usually measured in grams. Pyramids of biomass show the relative amount of living **MATTER** at each trophic level in an ecosystem. The amount of biomass that each trophic level can support is in part determined by the amount of energy available to organisms in a given level.

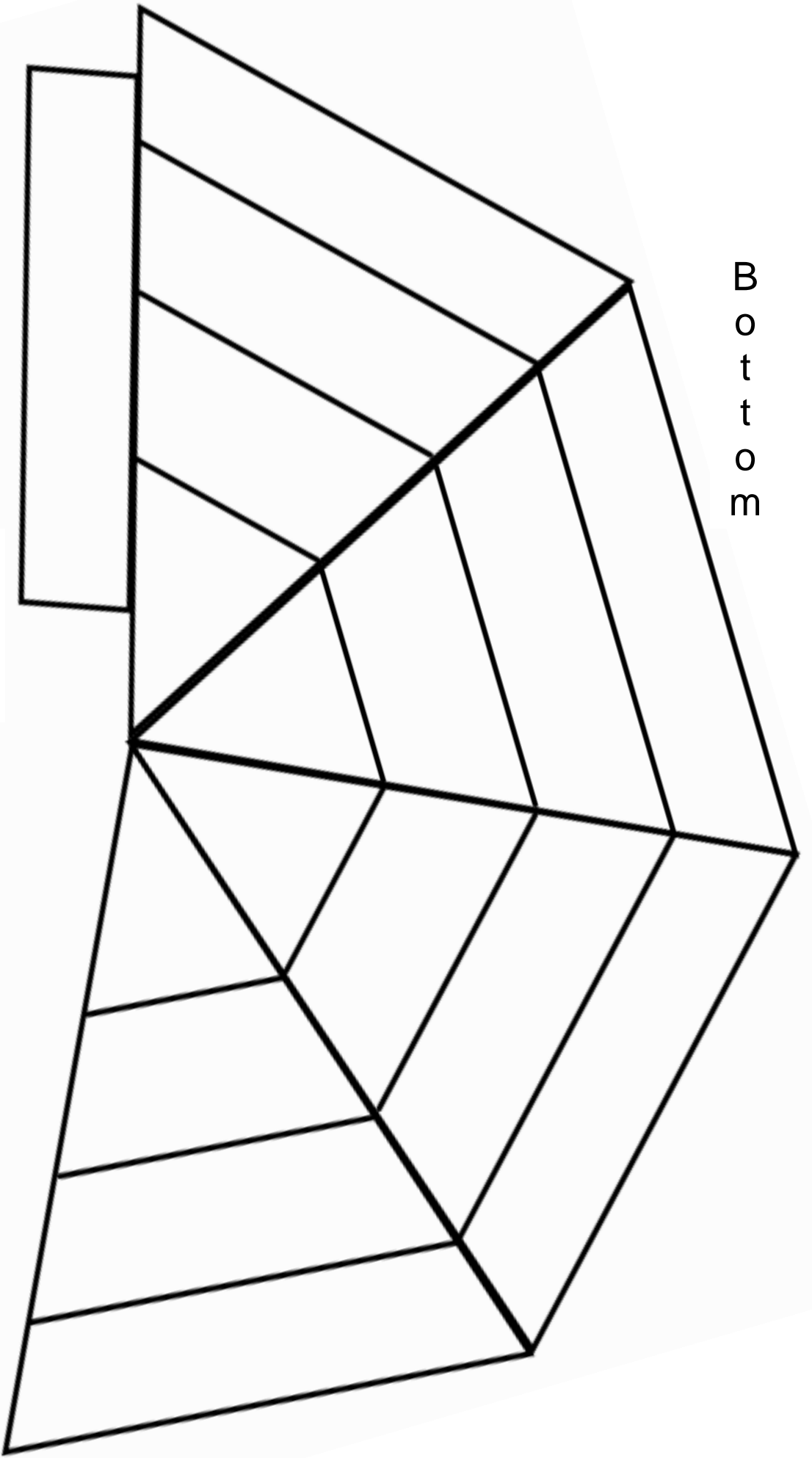
9. On the third pyramid side draw pictures of example organisms in each level of a pyramid of biomass. Be sure to include the correct relative number of organisms in each level.

Pyramid of Numbers:

Pyramids of numbers show the relative **NUMBER** of organisms at each trophic level. In most ecosystems the pyramid of numbers are similar to a pyramid of biomass in that the amount of organisms decrease at each level. However, in some ecosystems consumers may be smaller in size and mass than the organism they feed on. For example, thousands of insects may feed on one tree, dozens of birds may live in the tree and feed off of the insects, and one eagle may hunt the birds in the tree.

10. On the fourth pyramid side draw a picture of what organisms may be in each level of a pyramid of numbers that has less producers than consumers. Be sure to include the correct relative number of organisms in each level.
11. Now cut out the outer shape of your pyramid and fold on the lines radiating from the center. Tape or glue it together. *** Make sure not to cut out the tab that you'll tape inside the pyramid! ***

T
O
P



B
O
T
T
O
M