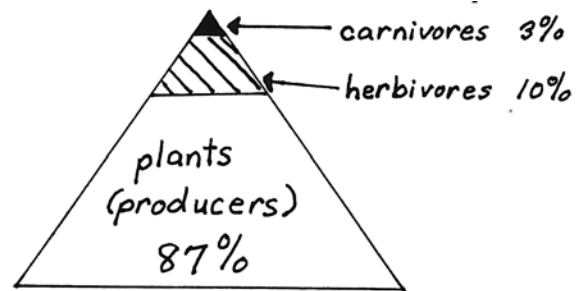Name:_____   Date:_____

Pyramid of Numbers

The food pyramid is one way of looking at relationships between plants and animals. In this pyramid, the largest part at the bottom would be the producers (the green plants). Herbivores (animals that eat plants) would occupy the next smaller level. Carnivores that eat herbivores would occupy the next still smaller level. At the top in the smallest level would be the predators (carnivores that prey on other animals including herbivores and other carnivores).

In a typical pond, the plants might represent about 87% of the matter; the herbivores about 10% and the carnivores about 3%.

The Questions

1. In some rivers, every evening in the summer, there is a hatch of insects that lasts for one hour. A trout in a good location can catch one of the drifting insects every 30 seconds.

    a. How many insects does this trout eat in 1 minute? _____

    b. How many insects does this trout in 1 hour?_____

    c. How many insects does this trout eat in 1 day? _____

2. When the water in the above rivers warms up on June 1st, trout begin to feed. When the water cools on October 1st, the trout stop feeding and go into the rocks.

    a. For how many days are the trout feeding? _____

    b. Look at your answer for question #1(c). Now figure out how many insects that trout eats in one year. _____

3. In a particular pond, there are 1, 000 kilograms of living plants and animals. Three percent of the living plants and animals are carnivores. Ten percent are herbivores and eighty-seven percent are plants.

   a. How many kilograms of carnivores are there? How many grams of carnivores? _____

   b. How many kilograms of herbivores are there? How many grams of herbivores? _____

   c. How many kilograms of plants are there? _____

4. In the particular pond described above, all the carnivores are trout. They have an average weight of 300 grams each. How many trout are there in this pond?

5. In this same pond, all the herbivores are insects. Their average size is 0.01 grams. How many insects are there in the pond?

ANSWERS TO ACTIVITY: PYRAMID OF NUMBERS

1. a. This trout eats 2 insects in one minute.

    b. This trout eats 120 insects in one hour.

    c. This trout eats 2880 insects in one day.

2. a. The trout are feeding for 122 days.

    b. The trout eats 251,360 insects in one year.

3. a. There are 30 kg. or 30,000 grams of carnivores.

    b. There are 100 kg. ore 100,000 grams of herbivores.

    c. There are 870 kg. of producers (plants)

4. There are 100 trout in this pond.

5. There are 10,000,000 (10 million) insects in the pond.