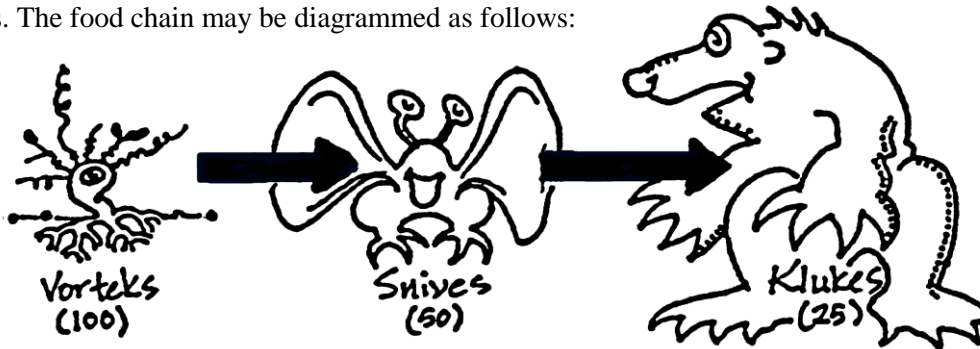


WHAT IS A FOOD PYRAMID?

Background

Biologists in the year 2034 observe a food chain that is part of an ecosystem on a distant planet. They find that it has many characteristics of food chains on earth. Here is what they discover.

On a particular area of land, a small, plant-like organism capable of photosynthesis, called a vortek, serves as a source of food for an animal called a snive. The snive, in turn, is preyed upon by a kluke. There are 100 vorteks, 50 snives, and 25 klukes. The food chain may be diagrammed as follows:



SAMPLE FOOD CHAIN

Building a Food Pyramid

By completing the activity described below, you will better understand interactions occurring in food chains.

- On a blank sheet of paper, list the members of this food chain by:
 - placing them in order, with the members at the bottom of the chain near the bottom of the page;
 - spacing them 5 cm apart.
- For each, beginning with the bottom one draw a horizontal block around it to represent the numbers of each member inside the block following these guidelines:
 - height: Each block should be 5 cm tall, so that it touches the bottom of the block above it.
 - width: Make the width to scale according to the numbers of each organism in the food chain - 10 organisms in 1 cm. (The block around the vorteks, for example, will be 10 cm wide.)
 - centering: Center each block on the page.
- Draw lines to connect the edges of the blocks. What shape is formed?
- Each block represents a trophic level. Label the organisms in each trophic level as to which is a:
 - producer
 - primary consumer
 - secondary consumer.Explain why you choose these labels for each one.
- This food chain is similar to many on earth. What factors do you think cause certain food chains to have this shape?
- Turn your diagram upside down. Describe a food chain on earth that might have a shape similar to this one.
- How would the numbers of each member of the food chain - vorteks, snives, and klukes - change over the course of time in each following situation? Assume there are no other predators or food sources unless otherwise indicated.
 - the biologists visiting the planet consume all of the vorteks for food;
 - a deadly disease wipes out all the klukes;
 - animals called skunkolas travel to the area being studied from another region of the planet. The skunkolas prey upon the vorteks; the klukes, however, dislike the taste of skunkolas and refuse to eat them.
 - the biologists remove all the snives for study;
 - more vorteks are planted;
 - a tertiary consumer called a joon is introduced.
- It has been stated that it is more energy efficient to eat "lower on the food chain." Look again at the shape of the food chain you drew and explain why this statement is true.