

I. Trophic Structure and the Flow of Matter and Energy

A. Trophic (Feeding) Levels = organisms that are the

a. Primary producers (autotrophs) - sunlight into chemical bonds
of by

b. Primary, secondary & tertiary consumers - chemical bonds of
to get energy by

B. Matter and Energy

a. Flow of ecosystems

b. Are within ecosystems

c. Matter + Energy (() = Matter + Energy (()

C. Laws of Matter and Energy Apply to Trophic Structure

a. **Matter and energy cannot be created or destroyed.**

b. C, H, O, and N are (combine and recombine) to make new
as they move through ecosystems.

c. **There is a gradual loss of energy as it flows through ecosystems.**

d. Organisms use energy for
Or, it is to the environment.

II. Ecological Pyramids = (pictures) of
(feeding levels)

A. Three Types of Ecological Pyramids

a. Numbers Pyramid = represents the

b. Biomass Pyramid = represents the amount of
of living organisms in a given area at a given time

c. Productivity (Energy) Pyramid = represents the
through each trophic level at a fixed time

III. 10 % Rule

a. Only about
to the trophic level above.

b. **at each level**

c. Energy pyramids have a step-like pattern because
enters each trophic level up the food chain.