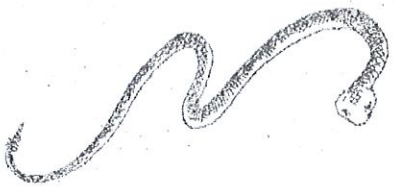
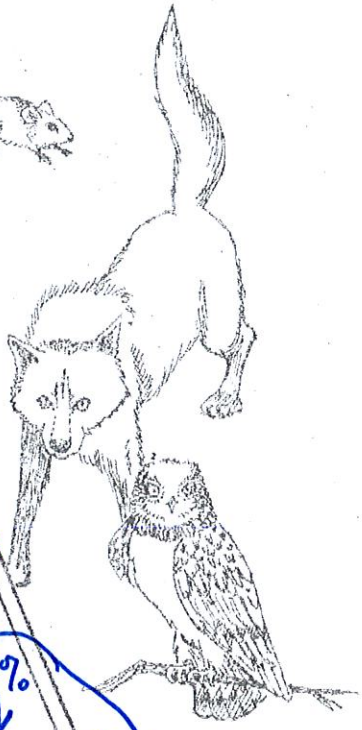
Energy Pyramid *

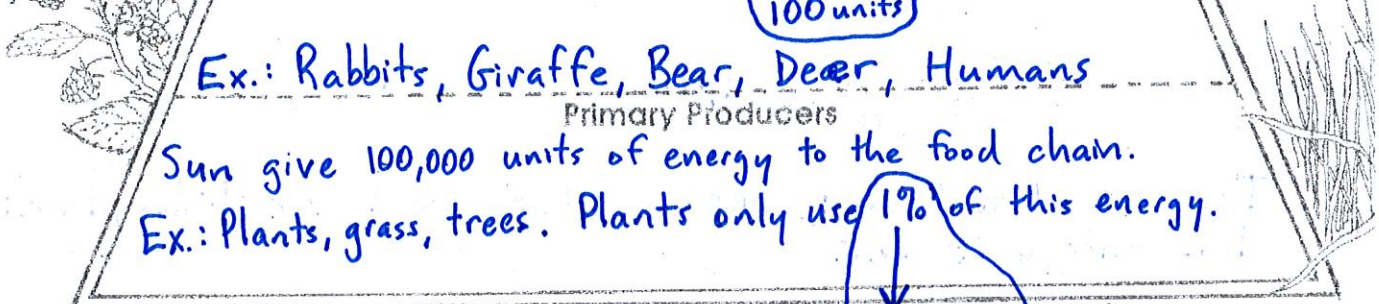
Name _____

* How energy flows through the food chain.

Write the names of the organisms pictured on this page where they belong on the energy pyramid. Some may be listed on more than one level.







3rd

Tertiary Consumers (carnivores)

Capture and consume 10% ↓ 1 unit of emergy from below.

Ex.: Tigers, Sharks, Humans

Secondary Consumers (carnivores) (omnivores)

2nd

Capture and consume about 10% ↓ 10 units of energy stored by primary consumers.

Primary Consumers (herbivores) (omnivores)

1st

Consume (use/eat) about 10% ↓ 100 units of plant mass.

Ex.: Rabbits, Giraffe, Bear, Deer, Humans

Primary Producers

Sun give 100,000 units of energy to the food chain.

Ex.: Plants, grass, trees. Plants only use 1% ↓ 1,000 units of this energy.

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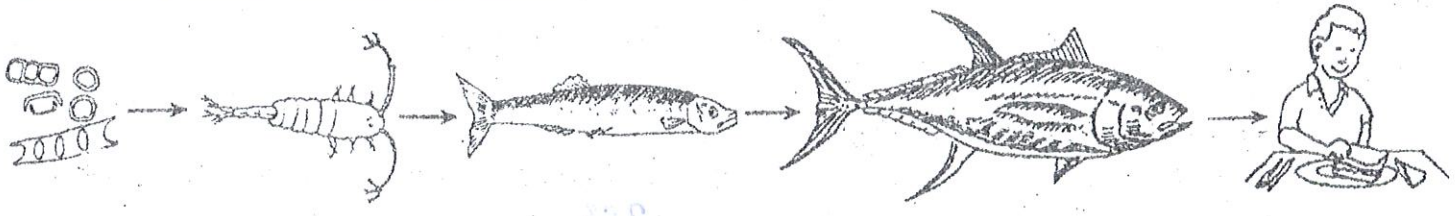
1,000 Pound Tuna Fish Sandwich

Name _____



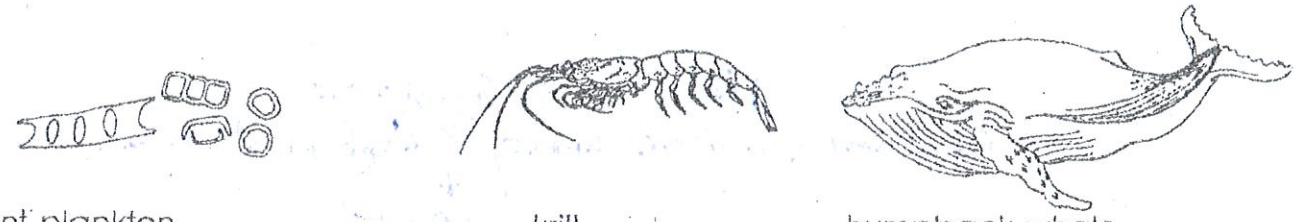
I am sure you did not have a 1,000 pound tuna fish sandwich in your lunch today. But did you know that for a tuna to gain one pound in weight, it has to eat 10 pounds of herring? The remaining 9 pounds of herring are used up as energy for swimming, breathing and other life activities. Some of these 9 pounds are not digestible. Those 10 pounds of herring have to eat 100 pounds of copepods to stay alive. The 100 pounds of copepods have to eat 1,000 pounds of plankton. Now you can see that more than 1,000 pounds of food have to be eaten by other organisms in the food chain so that a tuna can gain only one pound in weight.

Most scientists agree that each step in the food chain is only 10% efficient. That is, each step in the food chain actually utilizes only about 10% of the production of the previous step. That means that 90% of the food value is lost in each step of the food chain.

1. Calculate the amount of food used in each step of the food chains listed below.

plant plankton → krill → squid → seal → killer whale

10,000 lbs. | 1,000 lbs. | 100 lbs. | 10 lbs. | 1 lb.



plant plankton → krill → humpback whale

10,000 lbs. | 1,000 lbs. | 100 lbs.

2. Which of the two food chains uses the plant plankton energy more efficiently? Why?

The second food chain because there are fewer links, therefore less energy is lost.

Fascinating Fact! The blue whale has eyes as big as footballs.

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