METRIC UNITS AND U.S. EQUIVALENTS

Unit	*Abbreviation*	*Number of Meters*	*Approximate U.S. Equivalent*
kilometer	km	1,000	0.62 mile
hectometer	hm	100	328.08 feet
dekameter	dam	10	32.81 feet
meter	m	1	39.37 inches
decimeter	dm	0.1	3.94 inches
centimeter	cm	0.01	0.39 inch
millimeter	mm	0.001	0.039 inch
micrometer	µm	0.000001	0.000039 inch

MASS AND WEIGHT			
Unit	*Abbreviation*	*Number of Grams*	*Approximate U.S. Equivalent*
metric ton	t	1,000,000	1.102 short tons
kilogram	kg	1,000	2.2046 pounds
hectogram	hg	100	3.527 ounces
dekagram	dag	10	0.353 ounce
gram	g	1	0.035 ounce
decigram	dg	0.10	1.543 grains
centigram	cg	0.01	0.154 grain
milligram	mg	0.001	0.015 grain
microgram	µg	0.000001	0.000015 grain

Energy Flow Diagram

The sun gives off electromagnetic radiation that is converted into two useful forms of energy:

Thermal Energy

Thermal energy increases the vibration of electrons resulting in heat. It can also be re-radiated back to space. Thermal energy warms the earth, heats the atmosphere, drives the water cycle and produces air and water currents.

Chemical Energy

Chemical Energy: Some special molecules convert light energy into chemical energy by storing it in their chemical bonds (e.g., photosynthetic pigments absorb light energy and convert and store it in the chemical bonds of sugar).

Producers: Most of the energy produced by the plants is lost as heat energy. The remaining energy is stored as chemical energy in the bonds of organic molecules. This is the energy available to the herbivores and the decomposers when the plants are eaten.

Energy Loss:

Approximately 90% of the stored energy is lost as heat at each trophic level through homeostasis (e.g., respiration and digestion) as well as growth and reproduction.

First level consumers consume energy stored in plants. Most of the energy consumed is used for maintenance, growth and reproduction. The energy not respired (approximately 10%) is the stored biomass available to next level of the food chain.

Decomposers break down wastes and dead plants and animals.

Second level consumers obtain chemical energy from first level consumers.

Third level consumers

Student Challenge: Identify at least two marine organisms for each of the major groups: producers, each level of consumers, and decomposers.

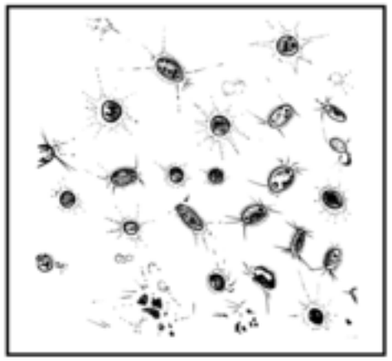
Passing on the Energy

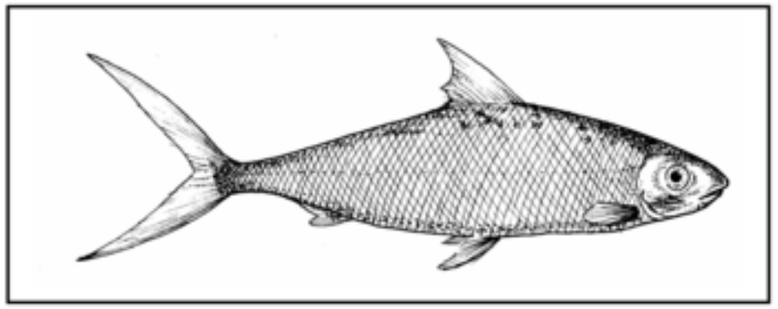
Learning Log - 3

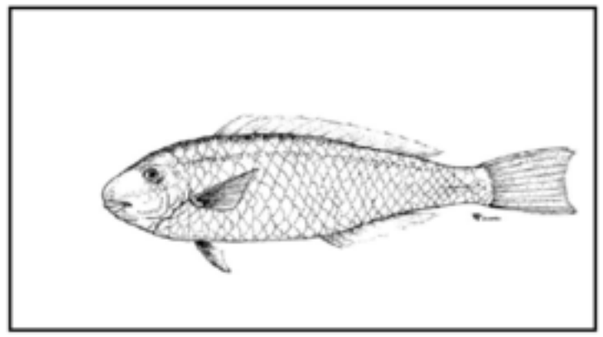
Name: _____

Date: _____

- Use a solid arrow → to show the direction of the flow of energy from one organism to another in the coral reef food web.
- Use a dashed arrow ---> to show the flow of "Used Energy" for each organism.

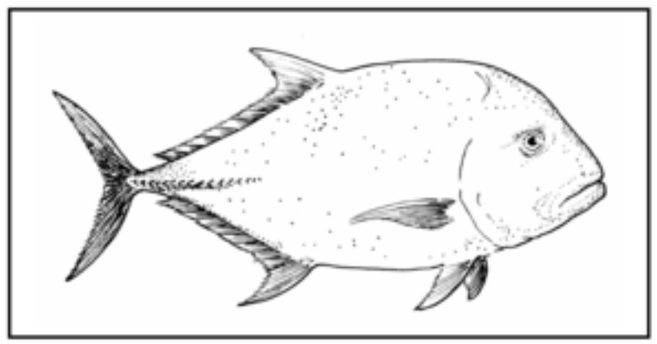


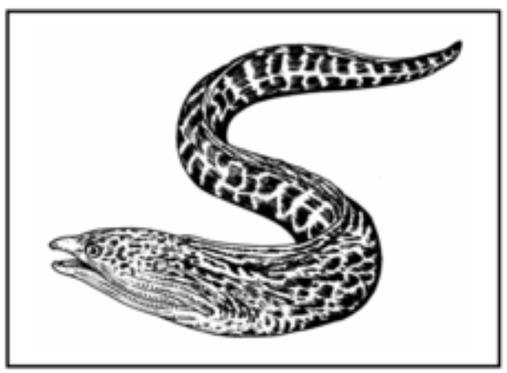




Used Energy

% of energy used for cellular respiration at each level in the food web = ____





Passing on the Energy

Learning Log - 3

1. Explain how energy moves through the coral reef food web.

2. Describe the role of photosynthesis in the flow of energy.

3. Describe the role of cellular respiration in the flow of energy.

4. Write a math statement that explains the percentage of energy used for cellular respiration and the percentage of energy passed on to each level in the food chain.

5. Describe what makes Hawaiian fishponds such an efficient way of producing fish.