APES -VS- EVERYBODY

APES Unit 1 Study Guide

Ultimate Review Packet (1.1 - 1.3)

1.1 - Introduction to Ecosystems

a. **Explain** the difference between ecosystem, habitat, and environment:

b. **Explain** the difference between symbiosis and mutualism:

Relationship	+, -, 0 for Organism #1	+, -, 0 for Organism #2	**Example**
Mutualism	+	+	*Bees & plants they pollinate, coral & algae*
Predation			
Commensalism			
Competition			

1.2 - Terrestrial Biomes

a. Define biome:

b. **Identify** a biome with lower annual precip. and temp. averages than the tropical rainforest:

c. **Identify** a desert species and **describe** how it's adapted to the avg. annual temp. & precip of its biome:

d. **Describe** how a warming global climate may impact the distribution of tropical rainforests:

1.3 - Aquatic Biomes

a. **Describe** an adaptation of the mangrove tree that enables it to tolerate the salinity levels of estuaries

b. **Identify** TWO unique characteristics of estuaries

c. **Explain** why estuaries are highly biodiverse ecosystems:

APES Unit 1 Ultimate Review Packet (1.4 - 1.6)

Biogeochemical Cycle Terminology

- Reservoir:
- Source:
- Sink:

1.4 - Carbon Cycle

a. **Explain** why the atmosphere is a consequential carbon reservoir:

b. **Explain** the difference between carbon sources and sinks

c. **Identify** a carbon source and a carbon sink

d. **Explain** why the carbon released from burning fossil fuels has a different effect on atmospheric carbon levels than the carbon released from cellular respiration:

1.5 - Nitrogen Cycle

a. **Describe** TWO ways that the N cycle differs from the C cycle:

b. **Describe** nitrogen fixation:

c. **Identify** a biotic and abiotic form of N fixation

d. **Describe** assimilation:

e. **Describe** ammonification:

f. **Describe** nitrification:

g. **Describe** denitrification:

1.6 - Phosphorus Cycle

a. **Describe** TWO ways that the P cycle differs from both the N and C cycles:

b. **Describe** the difference between weathering and erosion, in the context of the phosphorus cycle:

c. **Explain** how one of these differences from above makes phosphorus a limiting nutrient in many ecosystems:

APES Unit 1 Ultimate Review Packet (1.7 - 1.10)

1.7 - Hydrologic Cycle

a. **Identify** the source of energy driving the hydrologic cycle:

b. **Identify** a step of the hydrologic cycle and **explain** how the sun's energy drives that step

c. **Describe** how vegetation density influences infiltration and transpiration in a given ecosystem:

d. **Identify** the largest freshwater reservoir on earth:

1.8 - Primary Productivity

a. **Define** Primary Productivity:

b. **Identify** the units used to measure primary productivity:

c. **Define** respiration loss:

d. Write out the formula for calculating NPP:

e. **NPP Practice Problems** Show your work and include units in your setup and answer
(g C refers to grams of Carbon biomass)

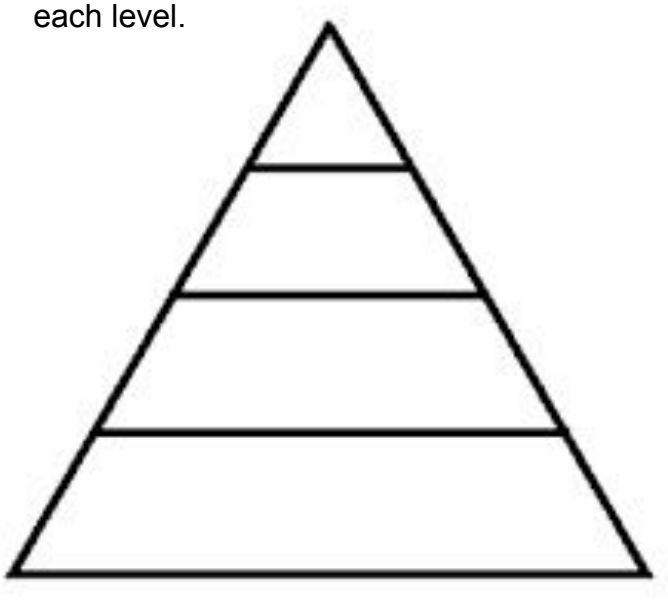
i. Fremont High School's football field has a GPP of 1221 g C/m^2/yr and a respiration loss equivalent to 450 g C/m^2/yr. **Calculate** the NPP

ii. The Fremont Links Golf Course has an NPP of 1,100 g C/m^2/yr and a respiration loss equivalent to 350 g C/m^2/year. **Calculate** the GPP.

iii. Mr. Smedes' alfalfa patch has an NPP of 304 kcal/m^2/yr and a GPP of 421 kcal/m^2/yr. **Calculate** the respiration loss.

1.9 & 1.10 - Trophic Levels & 10% Rule

a. Create a trophic pyramid below with organisms found in a tropical rainforest. Label each level.



b. Starting with 10,000 kcal of energy at the producer level, identify the level of energy available at each level.

c. **Explain** the 2nd law of thermodynamics as it to trophic pyramids and the 10% rule:

d. **Explain** why it takes a very large amount of land to support tertiary consumers :

1.11 - Food Webs

a. **Describe** what the arrows in a food web indicate:

b. **Describe** how a decrease in the populations of secondary consumers in an ecosystem would impact both the primary consumer level and the primary producer level:

c. **Identify** an organism that is both a tertiary and quaternary consumer in the food web below:

d. **Identify** an organism that is only a secondary consumer in the food web below: