APES Living World Test 2 Review

1. Determine the diversity index using the Species Richness, Shannon-Weiner, and Simpson scales for the following populations. ***Show all work!!***

**Remember:**

* ***Species Richness***, **R**, is the number of different species.
* The ***Shannon-Wiener Diversity Index***, **H**, is calculated using the following equation: **H = –** ∑ **[(ni /N) x ln(ni /N)]**
* The ***Simpson Diversity Index***, **D**, is calculated using the following equation: **D = 1 –** ∑ **[(ni /N)2]**





1. Compare the diversity of the communities from #1 based on each of those three scales.
2. What is the difference between species richness and evenness?
3. What are the equations for photosynthesis and respiration?
4. Where do the light-dependent and light-independent reactions of photosynthesis take place?
5. The portion of photosynthesis directly responsible for the formation of glucose is —
6. What are the three “steps” of cellular respiration?
7. Which step produces the most ATP?
8. How do photosynthesis and respiration contribute to the carbon cycle?
9. The net annual primary productivity of a particular wetland ecosystem is found to be 8,000 kcal/m2. If respiration

by the aquatic producers is 12,000 kcal/m2 per year, what is the gross annual primary productivity for this ecosystem, in kcal/m2 per year?

1. What are the mechanisms of evolution?
2. What factors affect the biodiversity on islands and habitat fragments?
3. What does biodiversity provide us with?
4. What is an allele? What is the source of new alleles?
5. When faced with changing environmental conditions, what three possibilities do organisms have?
6. Coevolution is defined as the influence of closely associated species on each other in their evolution. Name or look up an example of organisms who have coevolved with another organism.
7. What are the three types of natural selection? Describe their effects on a population.
8. What is fitness?
9. Compare microevolution (changes in allele frequencies) and macroevolution (speciation).
10. What is adaptive radiation?
11. Describe artificial selection (AKA selective breeding).
12. Do you think breeding current organisms with ancestral strains could help reduce problems with pests?