Name: _____

How Biodiverse is Lake Superior?

Five lakes form what is called the Great Lakes: Huron, Ontario, Michigan, Erie, and Superior. Being so large they have tides and waves, and they are often called inland seas. Lake Superior is the deepest out of the Great Lakes, and the coldest. It is estimated that 53 species of fish inhabit Lake Superior, which includes both native and non-native species. This increases to 88 when you include the wetlands and estuaries. How biodiverse is this?

Biological diversity, or biodiversity, refers to the abundance of species in an area. This can be measured either by counting the number of species (the more biodiverse a region is, the more species that can be found there) or by looking at the chance of finding a new species with each sample (the higher a chance of finding a new species, the more biodiverse the region is).

Write a report that answers the following questions. Be sure to explain all answers and show all work in calculations. Cite all references for any information you had to look up.

1. If you were to measure biodiversity by how many species are in an area, what is a possible way to calculate the baseline (expected) biodiversity?

2. Using your answer from question 1, what is the expected biodiversity of Lake Superior? You may have to do some research to get the needed information.

3. Find the actual biodiversity of Lake Superior, using the same method you used to calculate your expected biodiversity.

4. Based on your numbers, how would you describe the biodiversity of Lake Superior? Explain.

5. Lake Superior is known to be oligotrophic, meaning that there is a deficiency of plant nutrients. Does this information change your interpretation of your data? Explain.

6. What are some possible downsides to the method you used to calculate biodiversity?

7. Could there be an alternate way to calculate? Explain what this could be.

8. What concepts from algebra did you use to get your calculations?