

Quiz B: Environmental Concepts Study Guide

Name: _____

Date: _____

Directions: These questions will be multiple choice on the quiz. 8 points required to pass. Bonus questions don't count against your score.

Study Tips: look in your notes and the articles for the answer to each question. Write full sentence answers in your notebook. 2 days before the quiz, try to answer all the questions and grade yourself based on the answers you wrote before.

1. Mims and Mims also sampled air on a day with no smoke. The air on that day came from the same direction as on the smoke day. Why did they do this?

2. Why do scientists compare a control group to an experimental group, instead of only testing the experimental group?

BONUS: Imagine Mims and Mims only sampled air on the smoke day and found 52 spores. Why would that number alone not prove that smoke carries spores?

3. The map from Suarez, Holway, and Case shows that in about 100 years, Argentine ants reached six continents and faraway islands like Hawaii and New Zealand. On their own, ant colonies spread only about 150 meters per year by walking. How did the ants most likely reach these islands?

4. Suarez, Holway, and Case found that Argentine ants spread in two ways: slowly walking to nearby spots, and rare long jumps when people carry them. Why should scientists treat these as two separate ways of spreading?

BONUS: On the Suarez, Holway, and Case map, new ant populations show up in Madeira (1882), South Africa (1901), Australia (1939), and Japan (1993). These places did not get ants in order of how close they are to South America. What does this pattern suggest?

5. The National Geographic article says extra nitrogen in Lake Erie causes harmful algae blooms. Mathewson and colleagues found that extra nitrogen from salmon helps forests grow. Why can the same nutrient have such different effects?

6. In the Mathewson study, bears carry salmon from the river into the forest. The fish rot and feed the plants. What idea does this best show?

BONUS: Fertilizer in the Lake Erie article and rotting salmon in the Mathewson study seem very different. Both are a major source of which nutrient?

7. In the Mathewson study, salmon cannot swim past a certain waterfall. Why did the researchers compare plants just above the waterfall with plants just below it?

8. Why did Mathewson and colleagues study seven different kinds of plants instead of just one?

BONUS: Suppose Mathewson and colleagues only tested plants below the waterfall, where the salmon are. Why would their results be hard to trust?

9. Ripple and Beschta studied Yellowstone after wolves returned. In 1998, elk had eaten from 100% of the young aspen trees. By 2010, that dropped to under 25%. Over the same years, young aspen grew from under 50 cm to over 200 cm tall. What do these numbers show together?

10. Before saying wolves helped the aspen grow, Ripple and Beschta checked whether snow depth or soil quality could explain it instead. Why?

BONUS: Ripple and Beschta describe two ways wolves can affect elk. They can kill elk, so there are fewer of them. Or elk can change where they eat to stay away from wolves. Why does the second way matter?

Density Mediation - killing elk

Behavioral Mediation - Wolves scare away the elk