

Problem Set #1 (Pp. 80-88). Biodiversity to How Earth Changes over time.

1. Core Case Study: What ecological services do sharks provide for their ecosystems?
2. What two criteria are necessary for an organism to be a part of a species?
3. Look at Figure 4-2, what is the difference between species diversity, genetic diversity and ecological diversity?
4. Science focus: Identify and explain one ecological service that insects provide for our planet.
5. Look at figure 4-5, what biome do you live in? What biome is Baltimore?
6. Edward O. Wilson (E.O Wilson) is famous. Explain why.
7. Why are fossils important for humans today?
8. Charles Darwin and Alfred Wallace are famous for their theory of evolution via natural selection. Explain in your own words how natural selection works.
9. COPY and fill in the blank for the following sentence: “_____ not _____ evolve by becoming genetically different.”
10. How do mutations occur naturally?
11. What other ways can mutations occur?
12. Explain in your own words the example of natural selection of the Grey wolf in the reading
13. **Summarize the process of biological evolution by natural selection (hint: memorize the italics), *Genes mutate, individuals are...*
14. What three adaptations help explain why humans are such a well-adapted species?
15. **Draw Figure 4-7 (a-d) on a separate sheet of paper** and staple it to your problem sets. This is an excellent example of natural selection and explains how “super pests” are formed.
16. What are the two limits to evolution via natural selection?
17. Explain the three common myths about evolution via natural selection

Problem Set #2 (Pp. 88-93). Geologic Processes and Human Activity effecting Biodiversity

1. What are tectonic plates? Why are they important?
2. What is Pangea? (see figure 4-8)
3. What causes earthquakes?
4. Science Focus: Explain how the distance of the Earth from the sun and the size of the Earth make it just right for life to thrive.
5. What is speciation?
6. How does speciation occur? (See your answer to Problem set 1 Question #2, hopefully it makes more sense now)
7. What is the most common way for speciation to occur?
8. What is the difference between geographic isolation and reproductive isolation? (you might have to read through the paragraph a couple of times)
9. What is the difference between biological extinction vs local extinction?
10. When environmental conditions change, what are the three options for a species?
11. Why are endemic species more susceptible to extinction?
12. What is the difference between background extinction and mass extinction?
13. What is the difference between mass extinction and biological extinction?
14. Science Focus: Answer the critical thinking questions (pg. 92)

ATTACH ME TO THE FRONT OF YOUR WORK

Problem Set #3 (Pp.93-101) Speciation, Extinction, and Biodiversity

1. What is the difference between species evenness and species richness?
2. Science Focus: Answer the critical thinking question (pg. 94)
3. What are the most species rich (highest biodiversity) biomes?
4. Why is it important for species richness? (there are two hypotheses, summarize them)
5. What is an ecological niche? What does it encompass?

6. Give examples of generalists and explain why they are called generalists
7. Give examples of specialists and explain why they are called specialists
8. If you could pick be either a generalist or a specialist which would you be? Explain why
9. What are the reasons why cockroaches are nature's ultimate survivors? (4 reasons)
10. What are the specific roles that species play within ecosystems?

11. What happen to the African honeybees? Summarize what happened
12. How do birds act as an indicator species? **OR** How do butterflies act as an indicator species?
13. Why are amphibians vanishing? (give three reasons)
14. What ecological services do amphibians provide for ecosystems?
15. What is a keystone? What is a keystone species?

16. How is the American Alligator a keystone species?
17. What is the difference between keystone species and foundation species?
18. Answer AP Review Questions for Chapter 4 (page 103A-103B) (Answer Choices only)