**Unit 1 Concepts a-e Study Guide**

**Levels of organization:**

1. What are the levels of ecological organization? And label which is the smallest and which is the largest.

2. What is the difference between biotic and abiotic factors? Give 3 examples of each.

3. What is an organism?

What is a population?

What is a community?

What is an ecosystem?

What is a biome?

What is the biosphere?

What does interdependence of the trophic levels mean?

**Energy flow**

4. What percent of energy is passed on from one trophic level to the next?

5. What percent of energy is lost from one trophic level to the next?

6. What is the difference between an autotroph and a heterotroph? Give 3 examples of each.

7. Where does the origin of the energy for most ecosystems come from?

8. What do the arrows in a food chain/web represent?

9. Which trophic level can hold the largest population? Which one has the smallest population?

10. What is the difference between a food web and a food chain?

11. Where do producers get their energy from in a food web/chain?

12. List what each of the following types of organisms eat:

Herbivore

Carnivore

Omnivore

Detritivore

13. What are the laws of Thermodynamics and how does it apply to the flow of energy and matter within an ecosystem?

14. Draw and label an energy pyramid. Be sure to identify producer, primary consumer, secondary consumer, tertiary consumer, quaternary consumer in a food chain/web.

15. Draw and label a biomass pyramid, identifying each level.

16. What are the steps involved in the water cycle? Be sure to include terms: condensation, evaporation, transpiration, precipitation, water vapor, major source/body of water, sunlight, ect

17. Most substances that move in biogeochemical cycles travel through the atmosphere as well as through soil and water. Which of the following cycles involve only **soil and water**?

18. Which of the following correctly explains how atmospheric nitrogen is converted to nitrogen compounds used by living organisms?

* 1. Sunlight converts atmospheric nitrogen to a form usable by protists.
  2. Plant leaves convert atmospheric nitrogen to a form usable by animals.
  3. Invertebrate animals in soil convert atmospheric nitrogen to a form usable by fungi.
  4. Bacteria in soil convert atmospheric nitrogen to a form usable by plants.

19. Draw the carbon cycle and explain each step to how atmospheric carbon is converted and used in the environment.

20. Most substances that move in biogeochemical cycles travel through the atmosphere as well as through soil and water. Which of the following cycles involve only soil and water?

a. Carbon cycle b. Nitrogen cycle c. Phosphorus cycle d. Water cycle

21. Which of the following correctly explains how atmospheric nitrogen is converted to nitrogen compounds used by living organisms?

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d. Bacteria in soil convert atmospheric nitrogen to a form usable by plants.

**Terrestrial biomes:**

**For the following terrestrial biomes answer the following: Where is it located? What is the average temperature? What is the average precipitation?**

* 1. **TROPICAL RAINFOREST**
  2. **DESERT**
  3. **CHAPARRAL**
  4. **SAVANNA**
  5. **GRASSLAND**
  6. **DECIDUOUS FOREST**
  7. **TAIGA**
  8. **TUNDRA:**

**Aquatic Biomes:**

1. What are the 2 types of aquatic biomes?

2. What are the 6 different abiotic factors that influence the water ecosystems?

3. What are the different types of “freshwater” ecosystems?   
  
  
  
4.  Of all water on earth, \_\_\_\_% is freshwater and \_\_\_\_% is salt water.

5.  Name the zones of the ocean. Why is there so little life in the Benthic zone of the ocean?

6.  Name the biome that is a mixture of salt and fresh water.  What is the importance of this biome?   
  
  
7. Why are most of the plants and animals found in the upper layer of a lake or pond?

8. Explain why reefs are so important to preserve. What are some of the dangers to coral reefs?

9. What are 2 benefits/importance’s that wetlands provide?

10. Name the Fresh Water biome described:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ this biome has constantly flowing water  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ this biome has shallow, standing water  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ this biome has still, calm water that is typically deeper  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ this fresh water biome is a breeding ground for many plants and animals  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the lower layer of this biome is decaying, decomposing matter

11. How does pollution and eutrophication affect the aquatic ecosystems?

12. Where would you find an estuary? What type of organisms would you expect to find there?

13. What is the source of oxygen used by aquatic organisms?

14. In which zone would you expect to find the most dissolved oxygen?

15. Explain why the level of oxygen is low when the water is polluted with organic matter.