**Science 3 Ch. 12: Matter and Energy in the Environment Study Guide**

**Modified True/False -** *Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.*

\_\_\_\_ 1. Humans are an ecosystem. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 2. The source of almost all energy on Earth is the climate. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 3. Soil is made up of rocks and sand. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 4. Elements such as oxygen, nitrogen, and carbon cycle through a system once. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 5. Carbon is an essential part of proteins and is part of DNA. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 6. The amount of oxygen in Earth’s atmosphere has been a constant for millions of years. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 7. Energy, just like water, cycles through ecosystems. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 8. Chemosynthesis and photosynthesis are both processes to produce food. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 9. Consumers produce their own food. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 10. Energy cycles through ecosystems because it returns to the Sun. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 11. Available energy increases as it is transferred from one organism to another in a food chain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 12. The steps of a food web are called trophic levels. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 13. The atmosphere is composed mostly of carbon dioxide. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 14. Nitrogen, as it is found in the atmosphere, can be used by plants and animals. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_ 15. Production of food from chemicals is called photosynthesis. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Multiple Choice -** *Identify the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. Which of the following is a biotic factor?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Fish | c. | lake |
| b. | Pond | d. | ocean |

\_\_\_\_ 2. Which of the following is an abiotic factor?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | amoeba | c. | shell |
| b. | lichen | d. | mold |

\_\_\_\_ 3. Which of the following is NOT a part of climate?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | temperature | c. | soil |
| b. | moisture | d. | wind |

\_\_\_\_ 4. The atmosphere protects living things from harmful rays that come from \_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | water | c. | the Sun |
| b. | Heat | d. | soil |

\_\_\_\_ 5. Which of the following is NOT part of the water cycle?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | nitrogen fixation | c. | condensation |
| b. | evaporation | d. | precipitation |

\_\_\_\_ 6. Which of the following would eat a dead rabbit?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | carnivore | c. | herbivore |
| b. | detritivore | d. | omnivore |

\_\_\_\_ 7. Chemosynthesis may use all of the following except \_\_\_\_\_ to make food.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | carbon dioxide | c. | light energy |
| b. | chemical energy | d. | water |

\_\_\_\_ 8. Which of the following steps is second in this food chain?

|  |  |
| --- | --- |
| a. | The snake obtains energy by eating the mouse. |
| b. | Plants make energy-rich food using sunlight. |
| c. | The Sun emits energy. |
| d. | The hawk obtains energy by eating the snake. |

*Use the figure to answer the following questions*.



\_\_\_\_ 9. In the food web, what eats the squid?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | diatoms | c. | leopard seal |
| b. | squid | d. | orca |

\_\_\_\_ 10. Which is a model of feeding relationships?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | protein building | c. | food web |
| b. | food map | d. | sugar molecules |

**Completion -** *Complete each statement.*

 1. A rotting log can be an example of a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 2. When you breathe, you are interacting with a(n) \_\_\_\_\_\_\_\_\_\_ factor that is necessary for life.

 3. The water level goes down in a glass left on the counter because of \_\_\_\_\_\_\_\_\_\_\_.

 4. Archaeologists can use \_\_\_\_\_\_\_\_\_\_ for some of their work because it is in every organism.

 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are not capable of photosynthesis.

 6. Nitrogen fixation is performed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 7. The bottom layer of an energy pyramid represents \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the first feeding level.

 8. In a food chain, the lowest level of consumers eat \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 9. Overlapping food chains make a food \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Matching -** *Match whether each process puts carbon compounds into the atmosphere or into the water or soil.*

|  |  |  |  |
| --- | --- | --- | --- |
| a. | atmosphere | b. | water or soil |

\_\_\_\_ 1. Photosynthesis \_\_\_\_ 4. burning coal

\_\_\_\_ 2. Combustion \_\_\_\_ 5. seashells break down into sand

\_\_\_\_ 3. formation of fossils

**Short Answer**

 1. Name three of the nonliving parts of an ecosystem.

 2. Explain the process in the figure.



 3. What are the three common systems used for modeling ecosystems?

 4. If the first trophic level in an energy pyramid receives 1,000 units of energy from the Sun, how much energy is available for the third trophic level?

 5. Draw a basic diagram of the water cycle