**Writing with the Four C’s: Matter Cycles and Energy**

Organisms need chemicals and energy. Explain why carbon and nitrogen are recycled and energy is not.

1. Carbon goes back into the dirt or air when the creature dies. Also nitrogen goes back into the dirt or air when the creature dies. But energy is allowed to escape into the atmosphere and then space as heat.
2. The Earth is a closed system and needs to recycle the chemical elements. But energy is from the Sun, not the Earth, and cannot be created or destroyed. It’s usually lost as heat from the organisms and only 10% is passed to the next trophic level.
3. In photosynthesis, carbon (as carbon dioxide) is taken in from the atmosphere and combined with water to make carbohydrates. Cellular respiration reverses this process, so the carbon is recycled. It is used in one molecule and then another, but never destroyed. However, the energy comes in as light from the Sun, is stored as food and eventually released as heat and but does not come back.
4. Nitrogen is recycled because through a cycle of organisms. Plants take nitrogen from the air and make nitrates. These get eaten by consumers and eventually end up in poop or dead bodies which the decomposers turn into nitrates so they can be used again. Energy cannot be recycled.
5. Nitrogen and carbon are recycled because there are organisms that can do this. Plants trap light energy in carbohydrates and some of this energy is passed up to the next trophic levels but 90% of it is lost going up – mostly as heat. This means that the chemical elements are recycled but the energy is not.

**Complete**: What three main points should be made? Make a check where you see one of these.

**Correct**: Make an X when something wrong is said.

**Concise**: Put a line through words that are not needed.

**Clear**: Put a question mark if it is not clear.

Write a 5/5 answer below using fewer than thirty words.

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