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Initials

Environmental Literacy Carbon Assessment: --- High School Level, Form C ---

Science is easier to understand if you can make connections between what you know now and the new ideas that you are studying. This is a test that will help us to understand what you know now. Please answer these questions as carefully and completely as you can. If you are not sure of the answer, please write about any thoughts that you have. If you can help us to understand how you think about these questions, then we can do a better job of explaining science in ways that make sense to you.

Please put your initials (not your full name) in the boxes

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First Middle Last

Date _____

Class _____ Teacher _____

1. Your body needs heat to keep its normal temperature. Where does the heat mainly come from? Please choose ONE answer that you think is best.

- a. The heat mainly comes from sunlight.
- b. The heat mainly comes from the clothes you are wearing.
- c. The heat mainly comes from the foods you eat.
- d. When people exercise, their bodies create heat.

Please explain why you think that the answer you chose is better than the others. (If you think some of the other answers are also partially right, please explain that, too.)

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2. A scientist made three groups A, B, and C, like the following:

- A. Sugar, meat, bread
- B. Water, limestone, sand
- C. Coal, gasoline, wood

a) What makes each group go together?

Group A:
Group B:
Group C:

b) Why would water go with limestone and sand rather than sugar and meat?

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c) Does it seem to you that groups A and C have anything in common? Yes / No

Please explain your answer. If no, explain why you think these groups are different. If yes, explain what the groups have in common.

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3. When you are riding in a car, the car burns gasoline to make it run. Eventually the gasoline tank becomes empty.

a) What happens to the matter the gasoline is made of?



b) When the gasoline tank becomes empty and the car stops, what happens to the **energy** of gasoline? Where does it go? Do you think the **energy** of gasoline still exists somewhere? Please explain your answers.

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c) Do cars need air in order to run? Yes / No
Please explain your answer.

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4. A tropical rainforest is an example of an ecosystem. Which of the following statements about matter and energy in a tropical rainforest is the most accurate? Please choose ONE answer that you think is best.

- a. Energy is recycled, but matter is not recycled.
- b. Matter is recycled, but energy is not recycled.
- c. Both matter and energy are recycled.
- d. Both matter and energy are not recycled.

Please explain why you think that the answer you chose is better than the others. (If you think that some of the other answers are partially right, please explain that, too.)

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5. A burning candle is put into an air-tight container. After some time, the candle stops burning.



a) How does the air change while the candle is burning?

b) As the candle burns, it gets shorter in height. What happens to the matter in the wax after it melts and is burned? Please explain your answer.

c) Where does the energy for burning come from? Please explain your answer.

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6. Compared with incandescent light bulbs, fluorescent light bulbs have higher energy efficiency and can save 66% to 75% of the energy that the bulb uses. Do you think that using fluorescent light bulbs instead of incandescent light bulbs can contribute to slowing global warming? Yes / No



Incandescent light bulb



Fluorescent light bulb

Please explain your answer.

7. Where does your body store energy for later use? Please choose the ONE answer that you think is best.

- a. Energy is stored in the form of matter.
- b. Energy is stored in the form of chemical energy.
- c. Energy is stored in the cell, but is separated from the matter of the cell.
- d. Energy is stored among the cells.
- e. The body does not store energy. Energy is produced when you need it.
- f. Other _____

Please explain why you think that the answer you chose is better than the others. (If you think some of the other answers are also partially correct, please explain that, too.)

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8. A tree falls in the forest. After many years, the tree will appear as a long, soft lump barely distinguishable from the surrounding forest floor.



a) The mass of the lump on the floor is less than the mass of the original tree. Where do you think that the matter that is no longer in the lump has gone? In what form?

b) What caused the changes in the wood? How did those changes happen? Give as many details as you can about what is breaking the wood down, and how.

c) Do you think that the process of decay involves energy? Yes / No
Please explain your answer?

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9. Grandma Johnson had very sentimental feelings toward Johnson Canyon, Utah, where she and her late husband had honeymooned long ago. Because of these feelings, when she died she requested to be buried under a creosote bush in the canyon. Describe below the path of a carbon atom from Grandma Johnson's remains, to inside the leg muscle of a coyote. **NOTE:** The coyote does not dig up and consume any part of Grandma Johnson's remains.



10. Do you think that a muscle cell is a mixture of different substances? YES / NO

Please explain your ideas about what makes up a muscle cell.

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11. An apple is eaten by a child and digested in his body.

a) What happens to the substances in the apple when it is digested?

b) How can the child's body use the substances in the apple to help his feet grow?

12. Explain how are the following living things connected with each other:

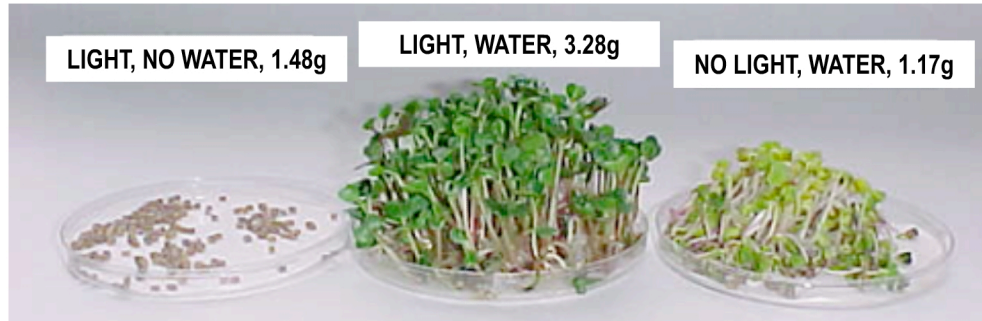
- (a) Grass.
- (b) Cows.
- (c) Human beings.
- (d) Decomposing bacteria.

Please tell as much as you can about matter and energy in your explanation.

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13. Three batches of radish seeds, each with a starting weight of 1.5g (dry) were placed in Petri dishes and provided only with light or water or both, as shown in the photo. After 1 week, the material in each dish was dried and weighed. The results (masses after drying) are shown below.



a) Which of the following processes contributed the MOST to the increased dry mass of the “Light, Water” treatment?

- a) Absorption of mineral substances by the roots.
- b) Absorption of organic substances by the roots.
- c) Absorption of carbon dioxide gas from the air by green leaves.
- d) Absorption of water by roots.
- e) Absorption of sunlight by leaves.

b) Explain why you think your choice contributed the most to the increase in mass. (If other processes also contributed to the mass, explain which ones they are, too.)

c) The “No Light, Water” treatment lost mass (from 1.50g to 1.17g). What do you think happened to the mass that was lost?