

Teacher _____ Grade ____ Period ____ Date _____ Your initials ____

ECOSYSTEMS UNIT PRE- AND POST-TEST

Lesson 1, Activity 1

1. Think about what might happen to carbon atoms and to energy in a forest. Decide whether each of the following pathways is possible or not:

Carbon atoms could leave the forest after they have been used by plants or animals.	Possible	Impossible
After carbon atoms have been used by plants or animals they could be recycled and used again by plants or animals .	Possible	Impossible
Energy could leave the forest after it has been used by plants or animals.	Possible	Impossible
After energy has been used by plants or animals it could be recycled and used again by plants or animals	Possible	Impossible

Explain your thinking. How are the possible pathways for carbon atoms and for energy alike and different?

2. Your muscles are made of proteins, fats, and other materials that contain many carbon atoms. Think about where those carbon atoms came from.

Which of the following statements is true? Circle the letter of the correct answer.

- | |
|--|
| a. ALL of the carbon atoms came into your body in food, OR
b. SOME of the carbon atoms were made by your muscles when your muscle cells grew and divided. |
|--|

Circle the best choice to complete each of the statements about possible places where the carbon atoms in your muscles might have come from.

How many of the carbon atoms were once in the AIR?	All	Most	Some	None
How many of the carbon atoms were once in PLANTS?	All	Most	Some	None
How many of the carbon atoms were once in ANIMALS?	All	Most	Some	None
How many of the carbon atoms were once in DECOMPOSERS?	All	Most	Some	None

Explain your choices. How might the carbon atoms have gotten to your muscles?

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3. In a forest ecosystem, how would you expect the amount of carbon dioxide in the air to change in the **summer**. The amount of carbon dioxide in the forest air (circle one):

- a. Would increase
- b. Would decrease
- c. Would stay about the same

Explain your answer. What would cause the amount of CO₂ in the forest air to change during the summer?

4. In a forest ecosystem, how would you expect the amount of carbon dioxide in the air to change in the **winter**. The amount of carbon dioxide in the forest air (circle one):

- a. Would increase
- b. Would decrease
- c. Would stay about the same

Explain your answer. What would cause the amount of CO₂ in the forest air to change during the winter?

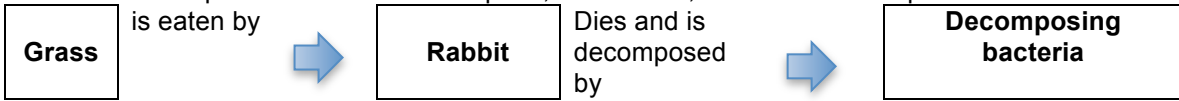
5. A remote island in Lake Superior is uninhabited by humans. The primary mammal populations are white-tailed deer and wolves. The island is left undisturbed for many years. Select the best answer(s) below for what will happen to the average populations of the animals over time.

- _____ a. On average, there will be more deer than wolves.
- _____ b. On average, there will more wolves than deer
- _____ c. On average, the populations of each would be about equal.
- _____ d. The populations will fluctuate, with sometimes more deer, sometimes more wolves
- _____ e. None of the above.

Please explain your answer to what happens to the populations of deer and wolves.

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6. Here is a simple food chain with one plant, one animal, and some decomposers:



Answer true or false to the following questions:

True	False	The molecules in the rabbit came from the grass without changing.
True	False	The atoms in the rabbit came from the grass without changing.
True	False	The energy in the rabbit came from the grass without changing.
True	False	The bacteria recycle molecules from the dead rabbit back to the grass.
True	False	The bacteria recycle atoms from the dead rabbit back to the grass.
True	False	The bacteria recycle energy from the dead rabbit back to the grass.

Explain your answers: How do **molecules** move through the ecosystem that this food chain is part of?

Explain your answers: How do **atoms** move through the ecosystem that this food chain is part of?

Explain your answers: How does **energy** move through the ecosystem that this food chain is part of?

7. Answer these true-false questions:

True	False	Carbon is a kind of atom.
True	False	Carbon is a kind of molecule.
True	False	There is carbon in the air.
True	False	There is carbon in pure water.
True	False	There is carbon in the soil.