Carbon's Travel Itinerary: A Mammoth Event

Name: _____

Final Assessment – Carbon During the Ice Age (CER)

Observe and analyze the data provided in these links to help you explain potential causes and effects of the carbon cycle during the Ice Age.	Restoring the Arctic Landscape to a Time When Mammoths Roamed Could Protect Thawing Permafrost | Opinion https://tinyurl.com/48d2d33f Could resurrecting mammoths help stop Arctic emissions? https://tinyurl.com/39hb4h46

Question: How did Ice Age ecosystems affect where carbon was stored on Earth?

Step 1: Claim
Circle one: During the Ice Age, carbon was stored mostly in the

- Atmosphere
- Soil (permafrost/geosphere)
- Plants (biosphere)

Complete:
Ice Age ecosystems cased carbon to be stored mainly in the _____ because

_____.

Step 2: Evidence
Fill in the blanks using readings and the graph:

1. The article explains that Arctic permafrost contains_____.
2. If permafrost thaws, microbes release _____ and _____ into the atmosphere.
3. Mammoths helped maintain_____ ecosystems instead of forests.
4. Grasslands reflect more _____ and keep soils _____.
5. The carbon graph shows that during the Ice Age, atmospheric carbon levels were _____ compared to today.

Step 3: Reasoning – Explain Why (Complete the Cause & Effect Chain):

1. Photosynthesis removes carbon from the _____ and stores it in the _____.
2. During the Ice Age, grasslands had deep _____ that stored carbon in the _____.
3. Mammoths helped keep the ecosystem as _____ instead of forests.
4. Grasslands reflect more _____, which keeps the soil _____.
5. Cold soil prevents _____ from thawing.
6. When permafrost stays frozen, carbon remains in the _____ instead of being released into the _____ through _____ and _____.
7. Because more carbon stayed stored in soil, atmospheric carbon levels _____.

Now, combine your answers into a paragraph explaining the full cause-and-effect relationship on the back of this paper.

3D-RST is supported by the NSF under grant number #DRL-2101383