

Cycles of Matter Research & Diagram

Food chains, food webs, and ecological pyramids are all models that show how energy moves in only one direction through the trophic levels of an ecosystem. Matter, in the form of nutrients, also moves through, or is a part of, all organisms at each trophic level. But matter is cycled and is not replenished like the energy from sunlight. There is a finite amount of matter. The atoms of carbon, nitrogen, and other elements that make up the bodies of organisms alive today are the same atoms that have been on Earth since life began. Matter is constantly recycled. It is never lost.

Objective: Create a visual that reflects your understanding to the cycle of matter assigned to you.

Possible Cycles of Matter: Water, Carbon, Nitrogen, Phosphorous

Requirements on the front (15 points):

- Sketch a diagram of your cycle found in the textbook (Chapter 2 pg. 53-57).
- You may be creative with the pictures, but you must have the correct words that describe the steps.
- MUST be colored and should take up the entire front side.

Requirements on the back (15 points):

- 3-5 sentence summary of how your cycle works. This should reflect your understanding of what you drew on the front side. Use the textbook to help!
- Answer the following questions based on your specific cycle of matter:
 - Water cycle:
 - In what ways does water leave Earth's surface and enter the atmosphere?
 - How does water return to the Earth's surface?
 - What is the major reservoir for this molecule?
 - Why is this cycle important to an ecosystem?
 - What is the difference between evaporation and transpiration?
 - Identify two ways humans may impact the cycle. Be sure to clarify if the human impact is positive or negative.
 - Carbon cycle:
 - List the biotic components of the cycle.
 - List the abiotic components of the cycle.
 - What is the major reservoir of carbon?
 - Plants remove CO₂ from the atmosphere through what process?
 - Plants and animals release CO₂ into the atmosphere through what process?
 - How is carbon returned to the atmosphere?
 - Why is this cycle important to an ecosystem?
 - Identify two ways humans may impact the cycle. Be sure to clarify if the human impact is positive or negative.

See next page for nitrogen and phosphorous cycle

- Nitrogen cycle:
 - List the biotic components of the cycle.
 - List the abiotic components of the cycle.
 - What is the major reservoir of nitrogen?
 - What happens to nitrogen stored in dead plants and animals?
 - Plants use nitrogen in the form of what?
 - Why is this cycle important to the ecosystem?
 - Identify two ways humans may impact the cycle. Be sure to clarify if the human impact is positive or negative.
- Phosphorous cycle:
 - List the biotic components of the cycle.
 - List the abiotic components of the cycle.
 - What is the major reservoir of phosphorous?
 - What is the difference between the short- term and long- term cycle?
 - Why is this cycle important to the ecosystem?
 - Identify two ways humans may impact the cycle. Be sure to clarify if the human impact is positive or negative.