

Carbon Energy Loop

Trace matter and energy through organisms.

MS-LS1-6 "Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms..."

NAME _____

DATE _____

1 LABEL THE MODEL _____ Word bank below

Write one word-bank process in each numbered box. Then use the completed model as evidence for your explanation.

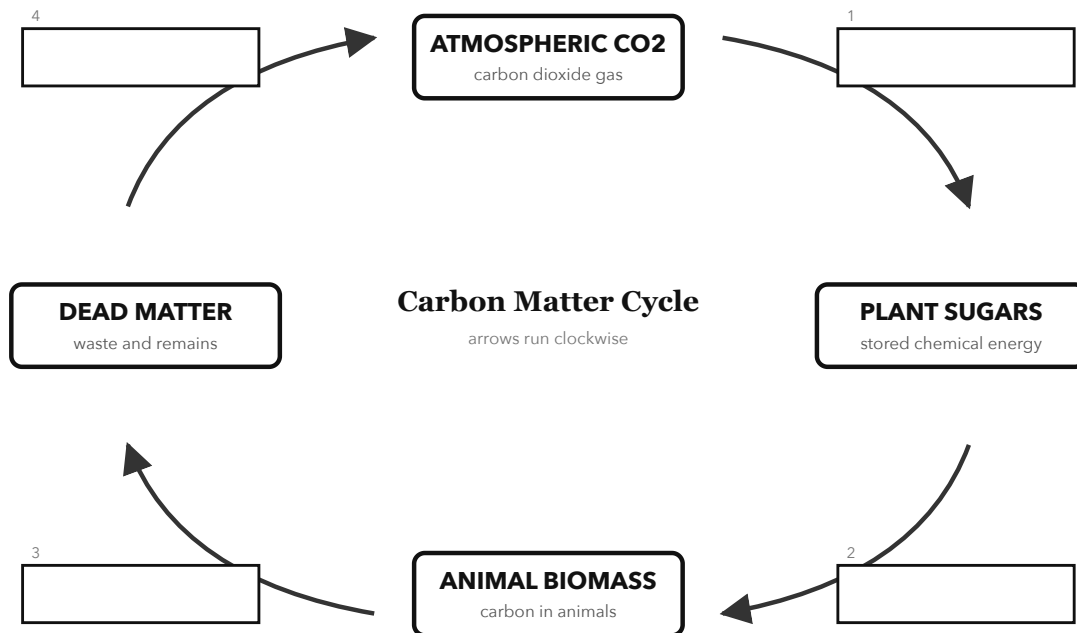
WORD BANK

death and waste

decomposition and respiration

feeding

photosynthesis



2 RUN THE MODEL Use your finished diagram

1 Which process belongs in Box 1, and what material does it make?

2 Start at PLANT SUGARS. Name the next two stages and the processes that move matter to each stage.

3 Write exactly 3 sentences to construct a scientific explanation. Make a claim about photosynthesis, use two labeled arrows as evidence, and explain how energy enters and later leaves organisms.

3 CHECK IT Before you turn it in

☐ I placed one word-bank process in every box.

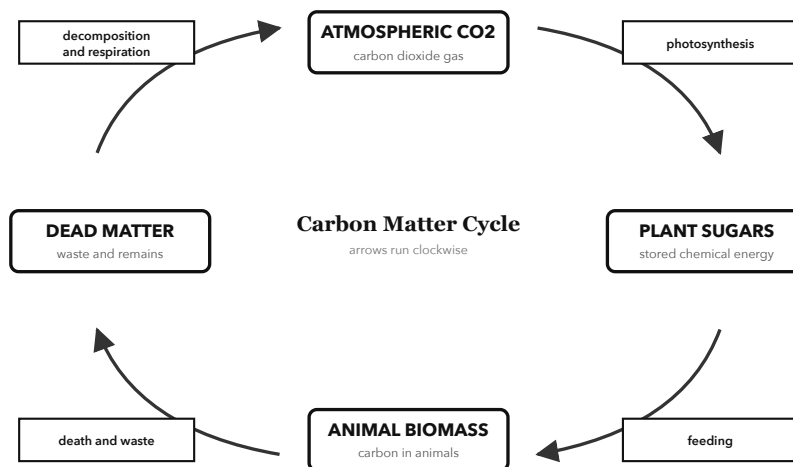
☐ I traced carbon through the whole loop.

☐ I used model evidence in my explanation.

TEST THE MODEL

What important movement of matter or energy does this model leave out? Name one and describe where it would fit.

PART 1 • COMPLETED MODEL



PART 2 • RUN THE MODEL

1. **Photosynthesis.** It uses carbon dioxide, water, and light to make plant sugars. (Which process belongs in Box 1, and what material does it make?)
2. **ANIMAL BIOMASS through feeding, then DEAD MATTER through death and waste.** (Start at PLANT SUGARS. Name the next two stages and the processes that move matter to each stage.)
3. **Photosynthesis moves carbon from atmospheric CO₂ into plant sugars, so it helps cycle matter through organisms. The photosynthesis arrow and the feeding arrow show that carbon and stored chemical energy move first into plants and then into animals. Light energy enters plants during photosynthesis, and energy leaves organisms as heat during cellular respiration.** (Write exactly 3 sentences to construct a scientific explanation. Make a claim about photosynthesis, use two labeled arrows as evidence, and explain how energy enters and later leaves organisms.)

TEST THE MODEL (SAMPLE ANSWERS)

- It leaves out plant cellular respiration. An arrow from PLANT SUGARS to ATMOSPHERIC CO₂ would show carbon dioxide leaving plants.
- This model leaves out heat released by animals during cellular respiration. That energy would leave ANIMAL BIOMASS and would not return to the cycle.

This loop tracks carbon matter. Energy enters as sunlight and exits organisms as heat, so energy flows rather than cycles.