

Carbon Loop Lab

Trace carbon through air, water, life, and soil.

HS-LS2-5 "Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere..."

NAME _____

DATE _____

1 LABEL THE MODEL _____ Word bank below

Write one process from the word bank in each numbered arrow box. Use each process once.

WORD BANK

cellular respiration

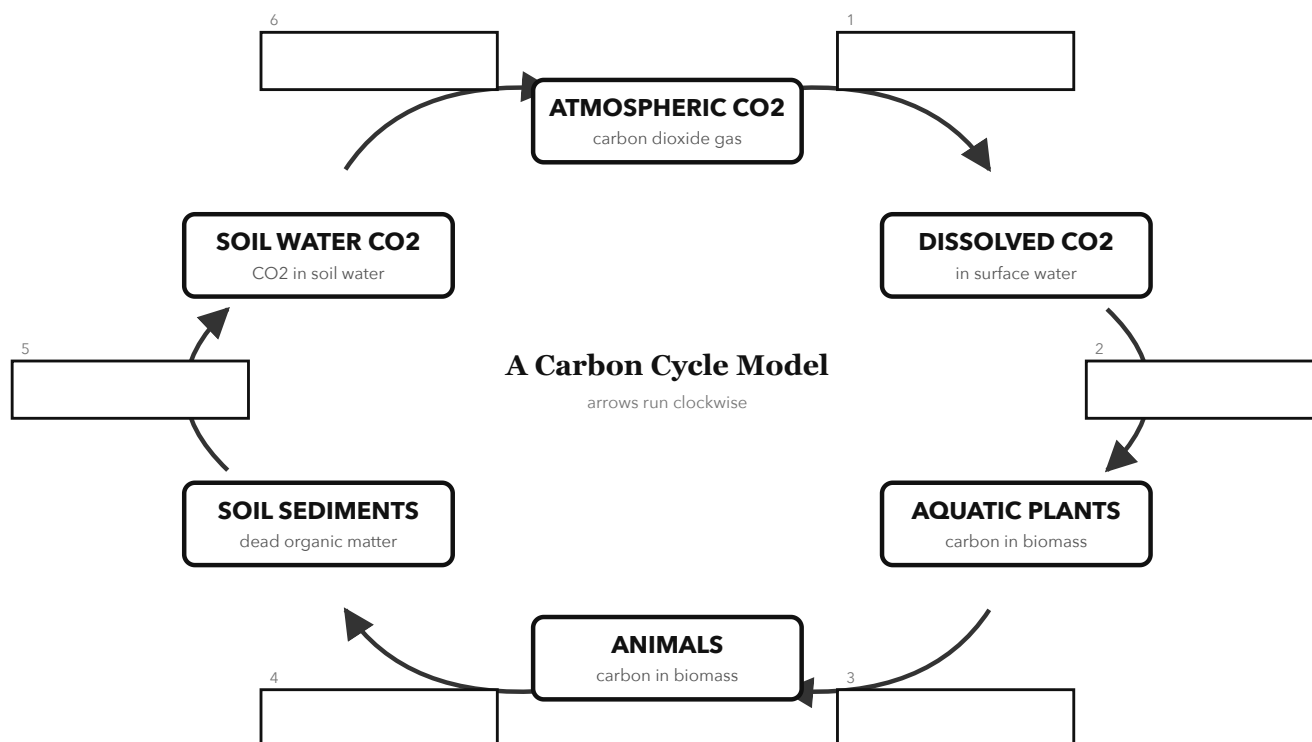
death and waste

dissolving

feeding

outgassing

photosynthesis



2 RUN THE MODEL Use your finished diagram

1 Which numbered process puts carbon from dissolved CO₂ into aquatic plants?

2 Starting at ANIMALS, list the next three stages carbon reaches in this model.

3 How do processes 2 and 5 change the form or location of carbon?

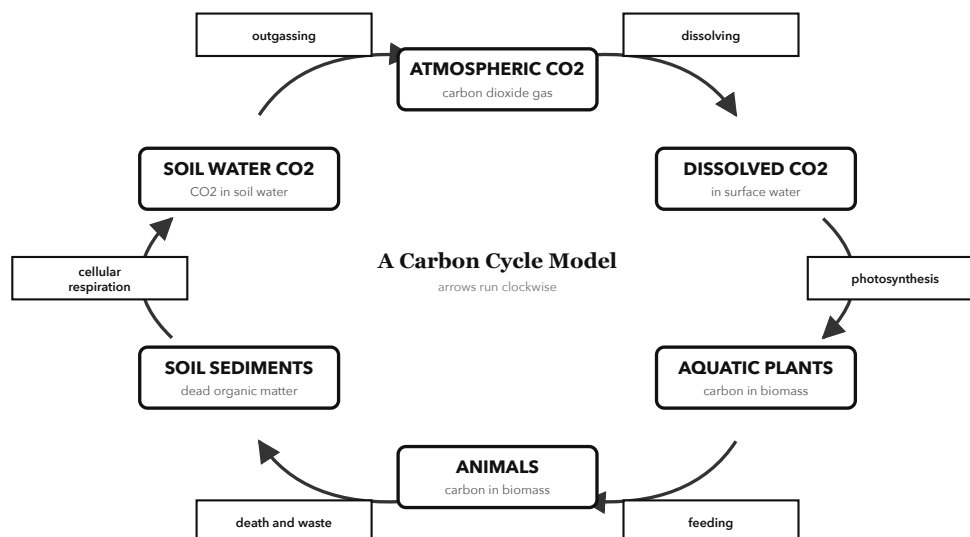
3 CHECK IT Before you turn it in

- ☐ I used each process once.
- ☐ I traced carbon through all four spheres.
- ☐ I can compare photosynthesis and cellular respiration.

TEST THE MODEL

Name one real carbon pathway or process that this model leaves out.

PART 1 • COMPLETED MODEL



PART 2 • RUN THE MODEL

- Process 2, photosynthesis.** (Which numbered process puts carbon from dissolved CO₂ into aquatic plants?)
- SOIL SEDIMENTS, SOIL WATER CO₂, then ATMOSPHERIC CO₂.** (Starting at ANIMALS, list the next three stages carbon reaches in this model.)
- Photosynthesis moves carbon from dissolved CO₂ into plant biomass. Decomposers use cellular respiration to release carbon from dead organic matter as CO₂ in soil water.** (How do processes 2 and 5 change the form or location of carbon?)

TEST THE MODEL (SAMPLE ANSWERS)

- Animals can release carbon dioxide directly to the atmosphere through cellular respiration.
- Carbon can be buried and form fossil fuels over millions of years.

Arrow key: 1 dissolving, 2 photosynthesis, 3 feeding, 4 death and waste, 5 cellular respiration, 6 outgassing. This pathway includes atmospheric, hydrospheric, biospheric, and geospheric carbon, but it is a simplified model.