

Carbon Loop Quest

Track cycling carbon and flowing energy.

S7L4.b "Develop a model to describe the cycling of matter and the flow of energy among biotic and abiotic components of an ecosystem."

NAME _____

DATE _____

1 LABEL THE MODEL _____ Word bank below

Write one process from the word bank in each numbered arrow box. Follow the arrows to show how carbon moves through the ecosystem.

WORD BANK

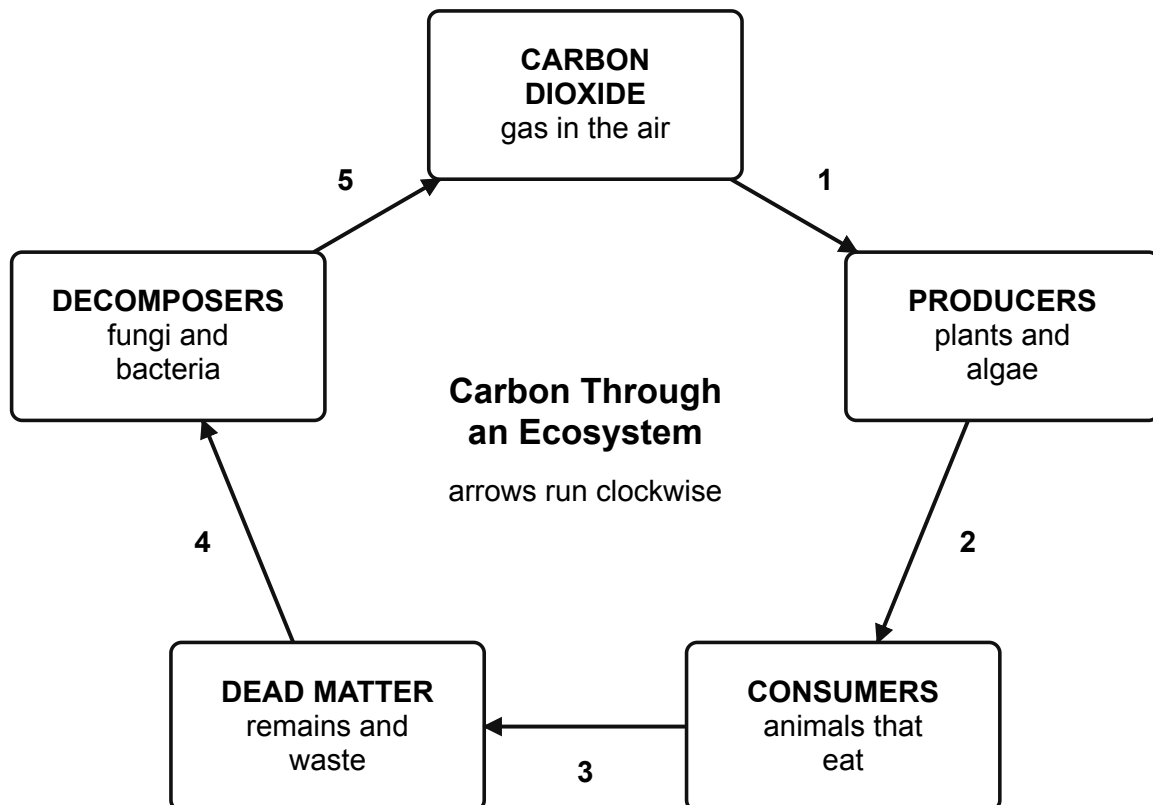
cellular respiration

death and waste

decomposition

feeding

photosynthesis



Arrow numbers match the response boxes on the next student section.

Label the arrows

Use the word bank to write the process for each numbered arrow.

Arrow 1

Arrow 2

Arrow 3

Arrow 4

Arrow 5

2 RUN THE MODEL _____ Use your finished diagram

1 Which process moves carbon from producers to consumers?

2 Which stage first captures light energy, and which process does it use?

3 How is energy different from carbon in this model?



CHECK IT

Before you turn it in

☐ I matched each arrow to a process.

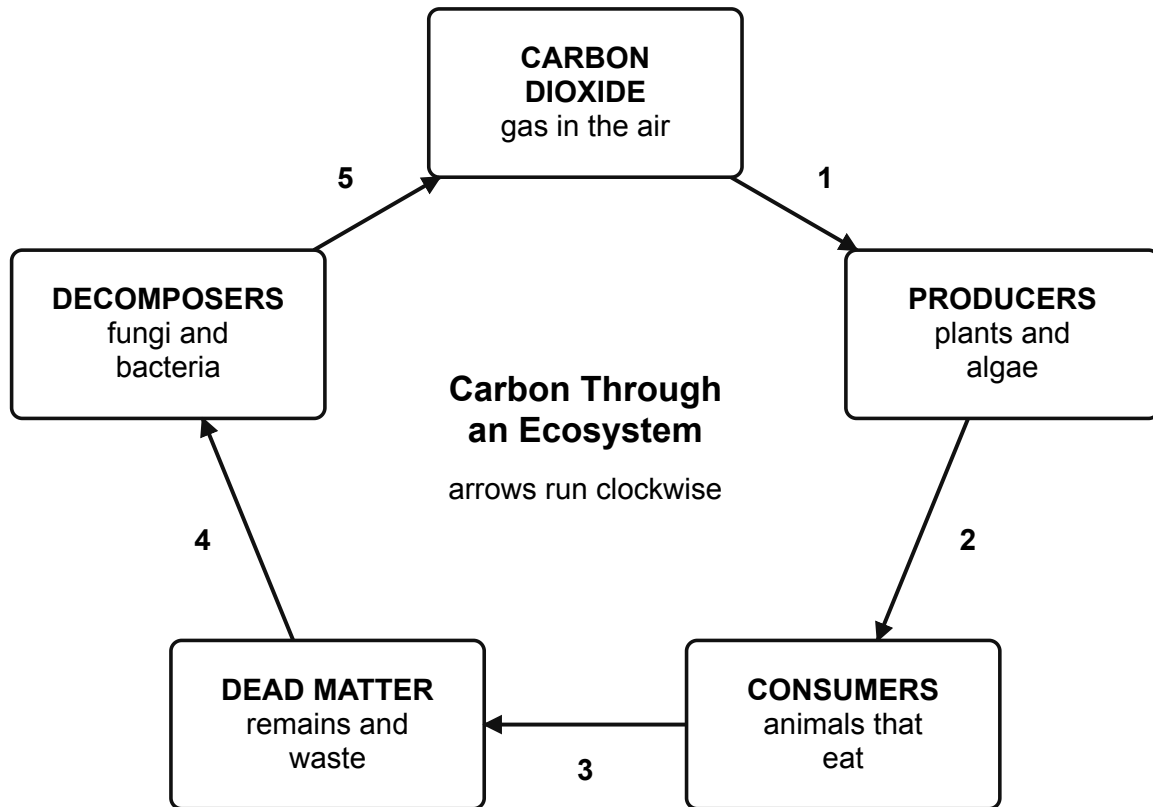
☐ I traced carbon around the loop.

☐ I explained that energy flows one way.

TEST THE MODEL

What is one part of a real ecosystem that this model leaves out?

PART 1 • COMPLETED MODEL

**Arrow 1**

photosynthesis

Arrow 2

feeding

Arrow 3

death and waste

Arrow 4

decomposition

Arrow 5

cellular respiration

PART 2 • RUN THE MODEL

1. **feeding** (Which process moves carbon from producers to consumers?)
2. **Producers capture light energy through photosynthesis.** (Which stage first captures light energy, and which process does it use?)
3. **Carbon cycles through the loop. Energy enters producers, moves through organisms, and leaves as heat.** (How is energy different from carbon in this model?)

TEST THE MODEL (SAMPLE ANSWERS)

- It leaves out carbon dioxide released by producers and consumers during cellular respiration.
- It leaves out sunlight entering producers and heat leaving organisms.

The loop tracks carbon matter. Photosynthesis captures light energy in producers, then energy moves through feeding and is released as heat, so energy does not cycle.