

Exercise walk-through

The Carbon Cycle ■ 1.4

eXercise

You must be able to

- name the processes that move carbon (**photosynthesis, respiration, decomposition, combustion**)
- identify carbon **reservoirs** 碳库
- explain how humans disturb the cycle

Method — Moving carbon

The **carbon cycle** moves carbon between the atmosphere, organisms, oceans, and rocks:

- **Photosynthesis** removes CO_2 from the air.
- **Respiration** and **decomposition** return CO_2 .
- **Combustion** (burning fossil fuels) releases stored carbon.

Method — Reservoirs

Carbon is stored in **reservoirs**: the atmosphere (CO_2), organisms, the ocean (dissolved), soil, and rocks/fossil fuels (the largest, slowest store).

Method — Human disturbance

Burning **fossil fuels** adds CO₂ far faster than natural processes remove it, raising atmospheric CO₂ and driving climate change. Deforestation also reduces CO₂ uptake.

Method — A worked link

A tree takes in CO_2 (photosynthesis); when it burns or decays, that carbon returns to the atmosphere.

Practice 2.1 ■ 1 mark

Which process removes CO₂ from the atmosphere?

Solution 2.1

Method: Moving carbon

Worked steps

Photosynthesis **B1**.

Practice 2.2 ■ 2 marks

Name two processes that return CO_2 to the atmosphere.

Solution 2.2

Method: Moving carbon

Worked steps

Any two: respiration, decomposition, combustion **B1** **B1**.

Practice 2.3 ■ 1 mark

Name the largest, slowest carbon reservoir.

Solution 2.3

Method: Reservoirs

Worked steps

Rocks / fossil fuels (sediments) **B1**.

Exam-style 3.1 ■ 1 mark

The process that removes carbon dioxide from the air is

- A** respiration
- B** combustion
- C** photosynthesis
- D** decomposition

Solution 3.1

Method: Moving carbon

- A respiration
- B combustion
- C photosynthesis
- D decomposition



Worked steps

C — photosynthesis.

Exam-style 3.2 ■ 2 marks

Humans burn large amounts of fossil fuels.

- (a) Explain how this disturbs the carbon cycle.
- (b) State one other human activity that affects the cycle.

Solution 3.2

Method: Moving carbon

Worked steps

(a) Burning fossil fuels releases stored carbon as CO_2 far faster than natural processes remove it, raising atmospheric CO_2 **M1** **A1**. (b) Deforestation (reduces CO_2 uptake) **B1**.

Exam-style 3.3 ■ 2 marks

Explain why atmospheric CO_2 is rising even though photosynthesis removes CO_2 .

Solution 3.3

Method: Moving carbon

Worked steps

Humans release CO_2 (burning fossil fuels, deforestation) faster than photosynthesis and the oceans can absorb it, so the net amount in the atmosphere increases

M1 A1.