

# 19.3 Nutrient cycles

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Total: 8 marks**

**KEY WORDS** nitrogen cycle 氮循环 • nitrogen fixation 固氮作用 • nitrate ions 硝酸根离子  
• nitrification 硝化作用 • ammonium ions 铵离子

## Objective

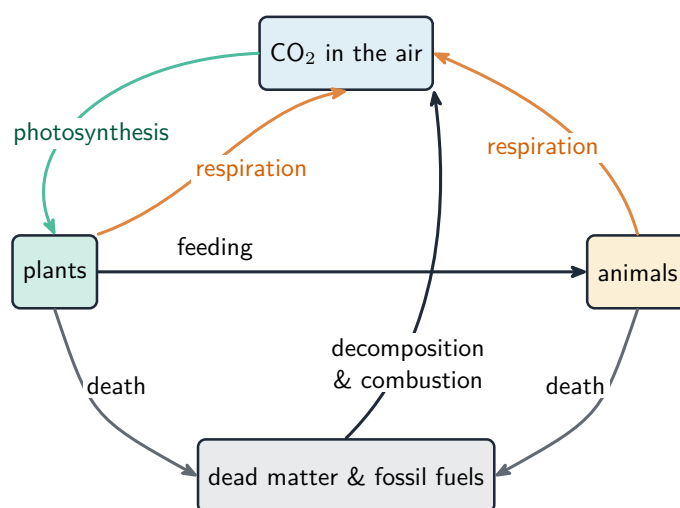
Build the skills to answer exam questions on **nutrient cycles** 营养循环 — the **carbon cycle** 碳循环 and the **nitrogen cycle** 氮循环.

**You must be able to:**

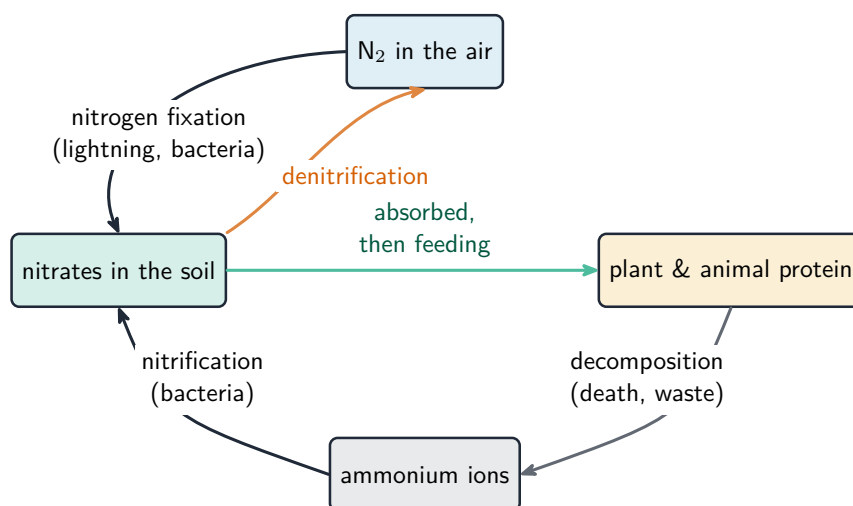
- describe the carbon cycle (photosynthesis, respiration, combustion, decay)
- describe the nitrogen cycle and the roles of microorganisms
- contrast nutrient recycling with one-way energy flow

## 1 Worked examples

### ■ Carbon and nitrogen cycles



*Photosynthesis removes CO<sub>2</sub>; respiration, combustion and decay return it*



*Microorganisms: decomposition, nitrification, nitrogen fixation, denitrification*

## 2 Practice

**2.1** Name the process that removes carbon dioxide from the air, and name one process that returns it. [2]

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**2.2** Name two processes that return carbon dioxide to the air. [2]

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## 3 Exam-style questions

**3.1** In the nitrogen cycle, bacteria that turn ammonium ions into nitrate ions carry out: [1]

|   |   |
|---|---|
| A | B |
| C | D |

**A** nitrogen fixation

**B** nitrification

**C** denitrification

**D** decomposition

**3.2** The carbon cycle keeps carbon moving.

(a) Describe how carbon passes from a plant to a consumer. [1]

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(b) Explain how burning fossil fuels affects the carbon cycle. [2]

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