

Exercise walk-through

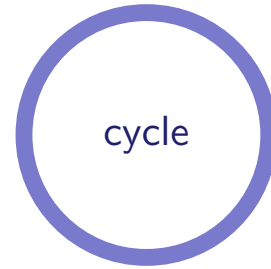
1.7

The Hydrologic (Water) Cycle

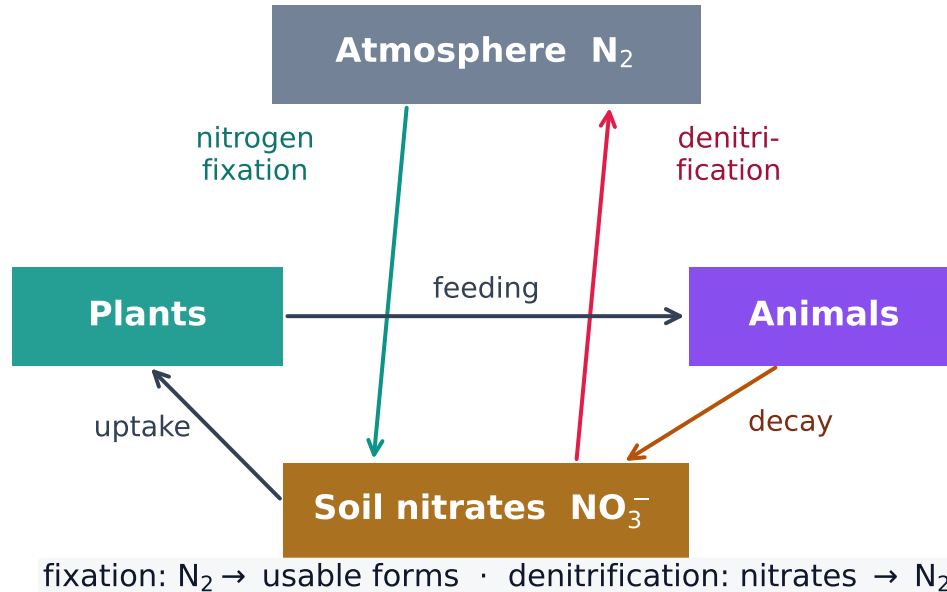
AP Environmental Science

What we will cover

- 1 Ecosystems and niches
- 2 Biomes
- 3 Biogeochemical cycles
- 4 The water cycle
- 5 Primary productivity
- 6 Energy flow and food webs



Nitrogen and phosphorus, in detail



Nitrogen cycles through the **air**, phosphorus only through **rock** and water. An excess of either causes **eutrophication**.

Exam tips

- Remember **energy flows and is lost** (the 10% rule) while **matter cycles** (carbon, nitrogen, phosphorus, water).
- Apply the 10% rule down a food chain and know **$\text{NPP} = \text{GPP} - \text{respiration}$** (only NPP is available to consumers).
- Learn each biogeochemical cycle's stores and how humans disturb it (burning fossil fuels adds CO_2 ; fertiliser adds nitrogen/phosphorus).
- Producers are most abundant because so little energy reaches the top.
- Use correct units and show your arithmetic on the free-response math questions (no calculator – keep numbers round).

Exercises 2.1-2.3

2.1 What is transpiration?

[1]

2.2 What process soaks water into the ground?

[1]

2.3 Name the largest reservoir of water.

[1]

Exercises 2.1-2.3

2.1 What is transpiration? [1]

2.1

- Evaporation of water from plant leaves
-

2.2 What process soaks water into the ground? [1]

2.2

- Infiltration
-

2.3 Name the largest reservoir of water. [1]

2.3

- The oceans

Exercise 3.1

3.1 Water evaporating from plant leaves is called

[1]

☐

A precipitation

B infiltration

C transpiration

D runoff

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3.1 Water evaporating from plant leaves is called

[1]

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A precipitation

B infiltration

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D runoff

3.1 C

- transpiration

Exercise 3.2 (a)

3.2 A city paves over a large grassy area.

(a) Explain the effect on runoff and infiltration.

[2]

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3.2 A city paves over a large grassy area.

(a) Explain the effect on runoff and infiltration.

[2]

(a)

- Paving increases runoff (water flows over the hard surface) and reduces infiltration (less soaks in)

Exercise 3.2 (b)

3.2 A city paves over a large grassy area.

(b) State one consequence of increased runoff.

[1]

Exercise 3.2 (b)

3.2 A city paves over a large grassy area.

(b) State one consequence of increased runoff.

[1]

(b)

- Any one: flooding, less groundwater recharge, more erosion/pollution carried to rivers

Exercise 3.3

3.3 Explain how deforestation changes the local water cycle.

[2]

Exercise 3.3

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[2]

3.3

- Fewer trees means less transpiration and less infiltration (roots no longer hold water), so more water runs off quickly and groundwater recharge falls