

Exercise walk-through

Earth's Atmosphere ■ 4.4

eXercise

You must be able to

- name the atmospheric **layers** 大气层 (troposphere, stratosphere)
- state the main gases
- locate the **ozone layer** 臭氧层 and weather

Method — Composition

The atmosphere is about **78% nitrogen**, **21% oxygen**, and small amounts of argon, CO₂, and water vapor.

Method — The layers (bottom to top)

- **Troposphere** — lowest; where **weather** happens and we live; temperature falls with height.
- **Stratosphere** — above it; contains the **ozone layer**, which absorbs harmful UV; temperature rises with height here.
- (Higher: mesosphere, thermosphere.)

Method — The ozone layer

The **ozone layer** in the stratosphere absorbs most of the Sun's harmful **ultraviolet (UV)** radiation, protecting life.

Method — A worked identification

Weather and clouds occur in the **troposphere**; the protective ozone layer sits in the **stratosphere** above.

Practice 2.1 ■ 2 marks

What are the two most abundant gases in the atmosphere?

Solution 2.1

Worked steps

Nitrogen (~78%) and oxygen (~21%) **B1** **B1**.

Practice 2.2 ■ 1 mark

In which layer does weather occur?

Solution 2.2

Method: A worked identification

Worked steps

The troposphere **B1**.

Practice 2.3 ■ 1 mark

In which layer is the ozone layer found?

Solution 2.3

Worked steps

The stratosphere **B1**.

Exam-style 3.1 ■ 1 mark

The ozone layer protects life by absorbing

- A** visible light
- B** ultraviolet (UV) radiation
- C** carbon dioxide
- D** oxygen

Solution 3.1

Method: The ozone layer

- A visible light
- B ultraviolet (UV) radiation
- C carbon dioxide
- D oxygen



Worked steps

B — ultraviolet (UV) radiation.

Exam-style 3.2 ■ 2 marks

A weather balloon rises from the ground into the stratosphere.

- (a) Name the two layers it passes through.
- (b) State what important feature it reaches in the stratosphere.

Solution 3.2

Method: The layers (bottom to top)

Worked steps

(a) Troposphere then stratosphere **B1** **B1**. (b) The ozone layer **B1**.

Exam-style 3.3 ■ 2 marks

Explain why the ozone layer is important for living things.

Solution 3.3

Worked steps

It absorbs most of the Sun's harmful UV radiation, which would otherwise damage DNA and cause skin cancer and harm other organisms **M1** **A1**.