

4.4 Earth's Atmosphere

Name: _____ Class: _____ Date: _____

Total: 10 marks

Objective

Build the skills to answer exam questions on **Earth's atmosphere**.

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

1 Worked examples

Study these first. Each one shows the method for a question type used later —follow the steps and you can do the Practice and Exam-style questions yourself.

■ Composition

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

■ 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.)

■ The ozone layer

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

■ A worked identification

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

2 Practice

Now apply the methods above.

2.1 What are the two most abundant gases in the atmosphere? [2]

2.2 In which layer does weather occur? [1]

2.3 In which layer is the ozone layer found? [1]

3 Exam-style questions

3.1 The ozone layer protects life by absorbing [1]

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

3.2 A weather balloon rises from the ground into the stratosphere.

(a) Name the two layers it passes through. [2]

(b) State what important feature it reaches in the stratosphere. [1]

3.3 Explain why the ozone layer is important for living things. [2]

4 Go further

You are now ready for the real exam questions on this subtopic:

- work through the **4.4 Earth's Atmosphere** lesson on the **Learn** page;
- read the **Earth's Atmosphere** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 Nitrogen (~78%) and oxygen (~21%).

2.2 The troposphere.

2.3 The stratosphere.

3.1 B —ultraviolet (UV) radiation.

3.2 (a) Troposphere then stratosphere. (b) The ozone layer.

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