

4.8 Earth's Geography and Climate

Name: _____ Class: _____ Date: _____

Total: 10 marks

Objective

Build the skills to answer exam questions on **Earth's geography and climate**.

You must be able to:

- explain the **rain shadow effect** 雨影效应
- describe how large water bodies moderate climate
- link elevation and latitude to climate

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.

■ The rain shadow effect

When moist air meets a mountain, it **rises**, cools, and drops rain on the **windward** side (wet). The now-dry air descends the **leeward** side, creating a dry **rain shadow** (often a desert).

■ Water moderates climate

Large bodies of water heat and cool slowly, so **coastal** areas have milder, more stable temperatures than inland areas, which have larger swings.

■ Elevation and latitude

Temperature **falls** with higher **elevation** and higher **latitude**. A tall tropical mountain can have cold, even snowy, peaks.

■ A worked link

A desert on the leeward side of a mountain range forms because the air lost its moisture climbing the windward side —a rain shadow.

2 Practice

Now apply the methods above.

2.1 On which side of a mountain does rain fall (rain shadow effect)? [1]

2.2 How do large water bodies affect nearby temperatures? [1]

2.3 What happens to temperature as elevation increases? [1]

3 Exam-style questions

3.1 A rain shadow desert forms on the mountain's [1]

- **A** windward (wet) side
 - **B** leeward (dry) side
 - **C** summit only
 - **D** base only
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3.2 Moist air blows over a mountain range.

(a) Describe what happens to the air on the windward and leeward sides. [3]

(b) State the type of ecosystem likely on the leeward side. [1]

3.3 Explain why a coastal city has smaller temperature swings than an inland city at the same latitude. [2]

4 Go further

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

- work through the **4.8 Earth's Geography and Climate** lesson on the **Learn** page;
- read the **Earth's Geography and Climate** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 The windward side.

2.2 They moderate them —milder, more stable temperatures nearby.

2.3 It falls (decreases).

3.1 B —the leeward (dry) side.

3.2 (a) On the windward side the air rises, cools, and drops rain; the dry air then descends the leeward side, warming and staying dry. (b) A desert (dry ecosystem).

3.3 Water heats and cools slowly, so the nearby coast stays milder; inland areas lack this buffer and have larger day-night and seasonal swings.