Read the text below. Answer the questions that follow.

Understanding Climate Zones

Earth's surface is divided into different climate zones. A climate zone is a region of Earth that has similar long-term patterns of temperature, precipitation, and seasons. These zones help scientists and students describe why places feel and look so different — from hot rainforests to cold ice-covered lands.

One major factor that affects climate zones is latitude. Latitude is the distance north or south of the equator measured in degrees; places near the equator get more direct sunlight year-round. Because of latitude, the area around the equator tends to be tropical. The tropical zone is a warm climate zone near the equator with high temperatures year-round and often heavy rainfall. Many tropical places have lush rainforests and lots of animal life because warm temperatures and plenty of precipitation support growth.

Outside the tropical zone are the temperate zones. Temperate climates have moderate temperatures and distinct seasons — spring, summer, fall, and winter. Precipitation in temperate zones can vary: some temperate areas are fairly humid, with frequent rain, while others are drier. People and plants in temperate zones must adapt to both warm and cold times of the year.

At the highest latitudes are the polar climate zones near the poles. The polar zone is a very cold climate zone near the poles with long, harsh winters and short, cool summers. Polar regions get less sunlight and often have large ice sheets and tundra biomes where only hardy plants and animals survive.

Besides latitude, altitude (elevation) also affects climate. Altitude means height above sea level; higher altitude usually means cooler temperatures and different climate conditions. For example, a mountain near the equator might be cold at its peak because the altitude is high enough to lower the temperature. This change in climate with height can create different plant and animal life on the same mountain slope.

How close a place is to the ocean matters too. A continental climate is influenced by being far from the ocean, often producing larger temperature differences between summer and winter.

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In contrast, a maritime climate is influenced by a nearby ocean or sea, usually causing milder temperatures and more consistent precipitation. Coastal cities often have smaller temperature swings because the ocean warms and cools more slowly than land.

Some places are very dry and are called arid. An arid climate is a dry climate where evaporation exceeds precipitation, producing deserts and very little plant growth. Arid regions can be hot deserts, like the Sahara, or cold deserts where low precipitation still limits life.

Humidity describes how much moisture is in the air. A humid climate characteristic has high levels of moisture in the air, often leading to frequent rain or fog. Humid tropical areas are especially wet and support rainforests. Precipitation — any form of water (rain, snow, sleet, hail) that falls from the atmosphere to Earth's surface — is a key part of whether a place is humid or dry.

Some weather patterns bring dramatic changes in precipitation. For example, a monsoon is a seasonal wind pattern that brings a marked change in precipitation, often causing heavy rains during one part of the year and drier weather at other times. Monsoons are important for farming in many countries because they deliver most of the yearly rainfall.

Geography can create small-scale differences in climate called microclimates. A microclimate is the climate of a small, specific area that can differ from the surrounding region (for example, a city block or valley). Urban areas often become warmer than nearby rural areas because buildings and pavement absorb heat; this is called an urban heat island, a kind of microclimate.

Mountains can change precipitation patterns too. When moist air moves toward a mountain range, it rises, cools, and drops moisture on the windward side. The other side, called the rain shadow, becomes dry because the mountains block moist air and cause reduced precipitation. Areas in a rain shadow may be much drier than areas just a short distance away.

All these climate factors — latitude, altitude, distance from the ocean, wind patterns like monsoons, and mountain effects such as rain shadows — help shape the world's biomes. A biome is a large ecological area with characteristic plant and animal life that is shaped by the region's climate (for example, tundra, rainforest, desert). For instance, tropical rainforests form in warm, humid climates with heavy precipitation; deserts form in arid zones; and tundra biomes appear in cold polar regions.

Understanding climate zones helps people predict weather, choose crops, and plan cities. It also shows why different parts of the world have different plants and animals. When you study a

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place, look at its latitude and altitude, whether it is near the ocean or inland, and whether winds or mountains affect precipitation. Those clues will tell you a lot about which climate zone that place belongs to and which biome it supports.

1. According to the text, what is a climate zone and what are the three major types of climate zones described?

2. The text states that places near the equator get more direct sunlight year-round. How does this fact explain why the tropical zone tends to be warm?

3. The text says that tropical areas are "lush" and have "lots of animal life." What does the word "lush" suggest about how plants grow in tropical zones, and why might the author have chosen this word instead of simply saying "plants grow well"?

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4. According to the text, what happens when moist air moves toward a mountain range, and how does this create a rain shadow?

5. How do temperate zones and polar zones differ in terms of temperature patterns and seasons?

6. Based on the text's description of how altitude affects climate, why might a scientist studying climate zones need to consider both latitude and altitude when predicting what plants might grow in a region?

7. According to the text, which of the following factors does **not** directly affect climate zones?

a. Distance from the ocean

b. Wind patterns like monsoons

c. The number of cities in a region

d. Altitude or elevation

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8. Describe the sequence of events that causes a maritime climate to have milder temperatures than a continental climate, based on how the ocean and land heat and cool differently.

9. The text describes both hot deserts like the Sahara and cold deserts. Using information from the text, explain why both of these places are classified as arid climates despite their temperature differences.

10. The text states that "understanding climate zones helps people predict weather, choose crops, and plan cities." Using specific examples from the text, provide evidence for how knowing a place's climate zone would help with at least one of these tasks.

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