



ANSWER KEY

Exercise: 1

Instructions: Idaho's climate can vary a lot. Our climate is influenced by storm patterns from the Pacific, changes in the jet stream, and is greatly influenced by Idaho's extremely varied topography. There are also many other factors that influence our climate including latitude, altitude, distance from the ocean, and wind. By doing this exercise, you will get an understanding of some of these factors and the general processes that bring about our climate.

1. How does air temperature change with changes in latitude, altitude, and distance from the ocean? Generally, the farther a place is from the equator, the cooler the average temperature will be. On average the higher above sea level a place is, the cooler the temperature will be. Areas that are closer to the ocean have a smaller temperature range because the large body of water can hold a lot of heat energy and has a lot of thermal inertia.
2. Just by looking on a map, can you predict which city has a greater temperature range, Pocatello, Idaho or San Diego, California? How did you decide this? Pocatello has a greater temperature range because San Diego is near the ocean. Oceans keep the temperature more stable because of their large heat capacity.
3. Why is there so much more precipitation in Northern Idaho when compared with Southern Idaho? Northern Idaho receives more precipitation because there are fewer high mountains blocking wet air masses that would blow in from the ocean. The southern area is protected on all sides by mountains that can cause a rain shadow. As a result, there is less precipitation.
4. Why does the climate in Idaho vary so much from place to place? One big reason the climate varies so much from place to place in Idaho is because the topography is so different. Topography affects climate in all of the ways mentioned above.
5. What does it mean to say that the climate in an area is temperate? When an area is considered temperate, it means that there are four seasons with large temperature changes between summer and winter.
6. What is the orographic effect and why does it occur? Could this help to explain why there is so little precipitation in Southern Idaho? The orographic effect results from moist air encountering a mountain that causes the air to rise. As it rises, it expands because there is less atmospheric pressure at high altitudes. Expanding air cools and as it cools it loses its ability to hold moisture. This moisture falls as rain snow, or some other form of precipitation. As the air comes back down off the mountain on the other side it is compressed, it warms back up, and is dryer. There is now little chance for precipitation to form. This is one of the major reasons why there is little rain in southern Idaho.
7. If you are standing on top of a tall mountain, which side should receive more rain, the side where the clouds are coming from or the side where the clouds are leaving? The side where the clouds are coming from should receive more rain.
8. What is the hottest temperature recorded in Idaho, what is the coldest? Where did these temperatures occur? The lowest recorded temperature was minus 60 degrees Fahrenheit recorded at the Island Park Dam in 1943. The highest temperature was 118 degrees Fahrenheit recorded in Orofino on July 28, 1934.