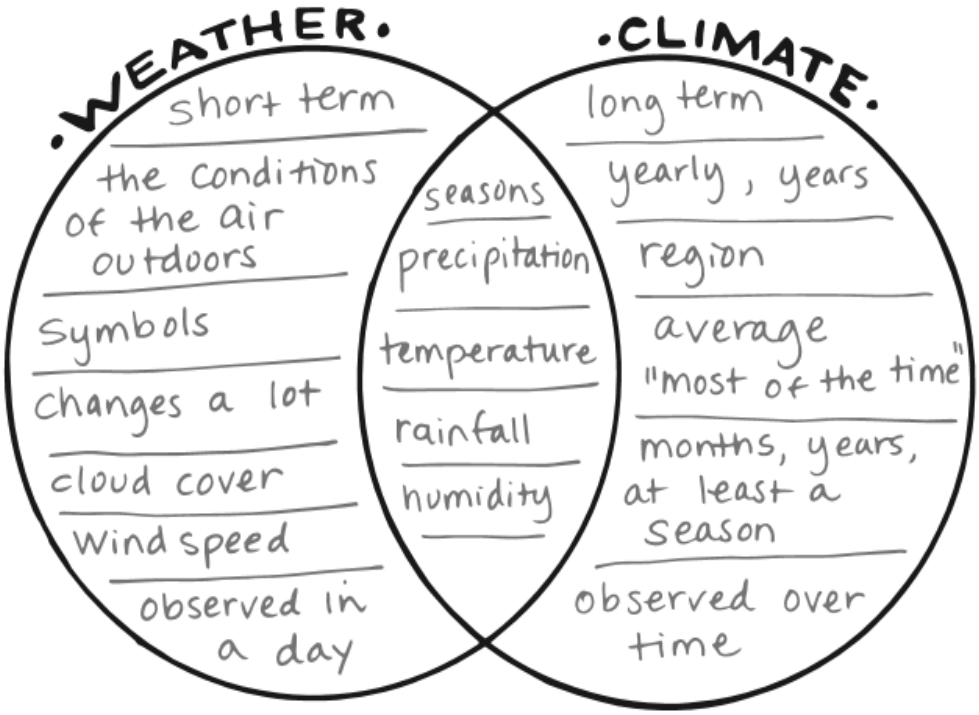
WEATHER VS CLIMATE, WEATHER TOOLS, AND GEOGRAPHICAL INFLUENCES STUDY GUIDE

Climate is mainly determined by temperature and rainfall, and weather influenced by temperature, water vapor, wind, and precipitation. However, the geography of an area also influences weather and climate. The presence of mountains, large bodies of water, and wind can both influence weather and climate.



MOUNTAINS

Mountains can affect an areas climate by influencing the temperature and precipitation. Temperatures in mountainous areas tend to be lower than those in flat areas. This is because the temperature of the air decreases as elevation increase. Elevation describes that height of a mountain above Earth's surface. The atmosphere at higher elevations is thin, so it cannot hold very much heat from the sun.

Mountains can also affect climate by influencing patterns of rain fall. One example of a mountains influence on rain patterns is called the Rain Shadow Effect. Think of a warm air mass moving toward a mountain. As the air mass approaches the mountain, it is forced to move upward because of the shape of the mountain. As the air mass moves upward, it cools. So the moisture in the air mass condenses and falls as precipitation.

The air mass has released all of its moisture. The dry air mass now moves over the mountain to the other side. The cool, dry air begins to sink. AS it sinks, it absorbs moisture and heat form the land. This often produces a desert on one side of a mountain.

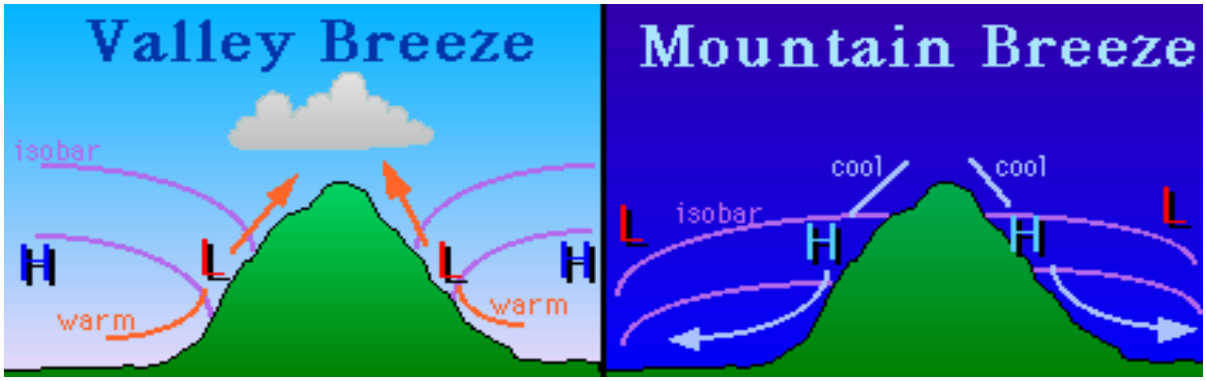
BODIES OF WATER

Water warms and cools much more slowly than land warms and cools. So the temperature of water does not change as quickly as the temperature on land does. Areas of land that are close to large bodies of water have milder weather because of the waters influence on the weather.

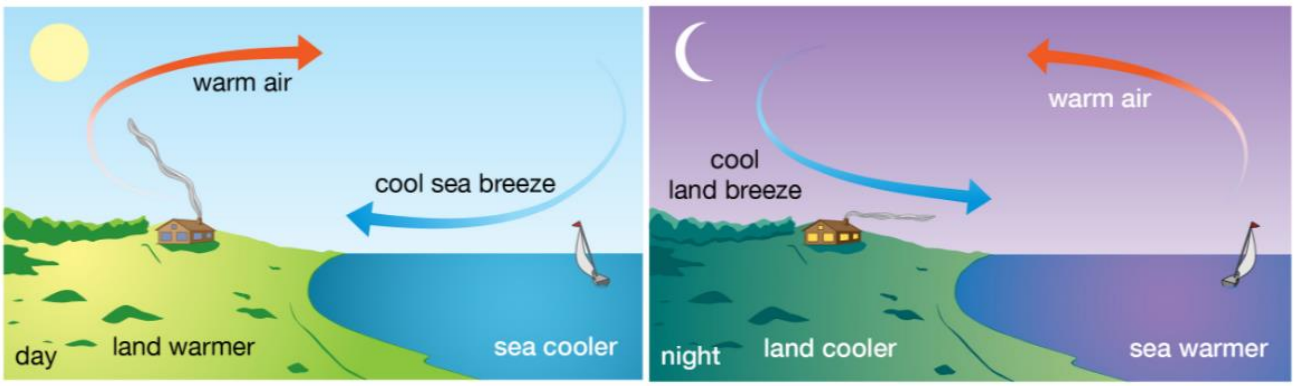
An area of land near a lake, such as land near the Great Lakes in North America, will experience milder temperate than other areas of land at the same latitude. These milder temperatures occur because the water in the lake helps to moderate the temperatures on land. The nearby water causes an increase in the moister of the air, so in the winter these areas experience heavy snowfall.

WINDS AND BREEZES

Both mountains and large bodies of water cause temperature differences, which in turn, cause local winds. Mountain and valley breezes occur each day in mountainous areas. The Sun warms the air above the valley during the day. The warm air rises and flows up the mountain, creating a valley breeze. At night, the mountains cool down faster than the valleys do because of their elevation. The cool air sinks and flows down the mountain. This movement causes a mountain breeze.



Land breezes and sea breezes are an example of how large bodies of water influence local winds. During the day, air over the ocean is cool. Cool air masses form areas of high pressure. Air over the land is warmer, and as if rises, it creates an area of low pressure. The cool, high pressure air over the ocean now flows toward the land, creating a sea breeze. At night, the air over the ocean is warmer than the air over the land. The warm air over the ocean rises, creating an area low pressure. The cool air over the land forms an area of high pressure and moves toward the ocean, producing a land breeze.



WEATHER TOOLS

Anemometer	An instrument used to measure wind speed.	
Thermometer	An instrument used to measure temperature.	
Hygrometer	An instrument used to measure humidity = the amount of water vapor in the air.	
Wind Vane	An instrument used to show the direction of the wind.	
Barometer	An instrument used to measure atmospheric pressure = high and low pressure.	
Rain Gauge	An instrument used to measure rain.