

Sun, Land, Water

Trace how uneven heating shapes local weather and climate patterns.

S6E4 "Obtain, evaluate, and communicate information about how the sun, land, and water affect climate and weather."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline three cause-and-effect statements that explain how the Sun, land, or water changes weather or climate. Write S, L, or W beside each statement to name the cause.

Heating a Place

- ① Weather describes conditions over hours or days, such as a rainy afternoon or a windy morning. Climate is the usual pattern of weather in a place over many years. The Sun supplies energy that starts many weather changes. Its rays heat Earth unevenly because sunlight strikes different places at different angles. Areas receiving more direct sunlight usually warm more. Differences in heating can create differences in air temperature and pressure, causing air to move as wind.
- ② Land and water do not warm and cool at the same rate. On a sunny day, dry land often warms faster than a nearby lake. Air above the warmer land rises, and cooler air from above the water can move inland. This local wind is called a lake breeze. At night, land loses heat faster, while water stays warmer longer. Water can therefore reduce temperature swings near a coast or large lake.
- ③ Over many years, nearby water can shape climate as well as daily weather. Coastal places often have cooler summers and milder winters than inland places at the same latitude because the ocean changes temperature slowly. Mountains and plant cover also affect local heating, but land and water are major influences. Scientists compare long-term temperature and precipitation records to identify climate patterns. A single cold day does not prove that a region has a cold climate.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How can differences in sunlight heating lead to wind?

2 How do land and water differ in the way they warm and cool?

3 During a lake breeze, which way does the cooler air move, and why?

4 A student says that one cold day proves a place has a cold climate. What evidence from the passage challenges this claim?

3 YOUR TURN _____ Your own words

Create a name for a town beside a large lake. Write three sentences explaining one daytime weather effect, one nighttime weather effect, and one long-term climate effect the lake could have on the town.

PART 1 • READ AND MARK

Underline three cause-and-effect statements that explain how the Sun, land, or water changes weather or climate. Write S, L, or W beside each statement to name the cause. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How can differences in sunlight heating lead to wind?	More direct sunlight warms some areas more than others. Uneven heating creates differences in air temperature and pressure, causing air to move as wind.
2	How do land and water differ in the way they warm and cool?	Dry land usually warms faster during the day and loses heat faster at night. Water warms and cools more slowly.
3	During a lake breeze, which way does the cooler air move, and why?	Cooler air moves from above the water inland because air above the warmer land rises.
4	A student says that one cold day proves a place has a cold climate. What evidence from the passage challenges this claim?	Climate is the usual weather pattern over many years, based on long-term temperature and precipitation records. One cold day does not prove a cold climate.

PART 3 • YOUR TURN (SAMPLE ANSWER)

In Lakeview, land warms faster than the lake during the day, so cooler air can move from the lake toward town. At night, the lake stays warmer than the land, which can make nearby air warmer. Over many years, Lakeview may have smaller temperature swings than an inland town at the same latitude.

Accept scientifically accurate three-sentence responses that include a daytime effect, a nighttime effect, and a long-term climate effect of nearby water. Students may use different town names and equivalent cause-and-effect wording.