Where Heat Goes

Trace how evidence and transitions build an explanation

10.CL.9.b "Write explanations and expositions that incorporate relevant evidence, using effective transitions that objectively introduce and develop topics."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the main point of each paragraph, circle transitions that connect ideas, and number two details that support the explanation.

Why One Walkway Feels Hotter

1 On a sunny afternoon, a blacktop court can feel hotter than the nearby lawn. This difference is not just a matter of color. When sunlight strikes dark pavement, much of its energy is absorbed and later released as heat. Grass also receives sunlight, but water evaporating from its soil and leaves uses some of that energy. In addition, a tree can block direct sunlight before it reaches the ground. These processes help explain why two places only a few steps apart may feel different. They also show why a useful explanation must distinguish surface temperature from the temperature of the surrounding air.

2 Evidence from the U.S. Environmental Protection Agency supports this explanation. The agency reports that trees cool streets by shading surfaces and releasing water vapor through their leaves. For example, a sidewalk beneath a broad canopy receives less direct sunlight than an exposed section of the same sidewalk. As a result, its surface may store less solar energy during the day. However, shade and evaporation are different processes: shade keeps some sunlight from reaching the pavement, while evaporation uses energy as water changes to vapor. Naming both processes gives readers a clearer reason for the contrast than simply saying trees are cooler.

3 Still, planting a tree is not an instant solution for every hot walkway. A young tree may cast little shade, and a tree needs enough soil and water to grow. Another option is a lighter-colored surface, which reflects more sunlight than typical dark pavement. Yet reflection does not provide the same benefits as a tree canopy, such as shade over people waiting outside. Therefore, a school comparing cooling options should consider both the material underfoot and the conditions above it. This conclusion follows from the evidence about sunlight and evaporation, rather than from an assumption that one choice always works best.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which two details in paragraph 1 explain why the court and lawn may have different surface temperatures?

2. How does “As a result” connect the sidewalk example to the next sentence in paragraph 2?

3. What does the information from the U.S. Environmental Protection Agency add to the explanation in paragraph 2?

4. Why is the conclusion in paragraph 3 more objective than claiming trees are always the best choice? Use two details from the passage.

3 YOUR TURN

Your own words

Write a 90 to 110 word paragraph explaining how a school could fairly test whether shade lowers the surface temperature of a walkway. Describe what to compare and measure, use two details from the passage to support your prediction, include at least two transitions, and acknowledge one limit of the test.

ANSWER KEY

Where Heat Goes

GRADE 10 · 10.CL.9.b

PART 1 · READ AND MARK

Underline the main point of each paragraph, circle transitions that connect ideas, and number two details that support the explanation. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which two details in paragraph 1 explain why the court and lawn may have different surface temperatures?	**Dark pavement absorbs sunlight and later releases heat. Evaporation from the lawn's soil and leaves uses some solar energy.**
2	How does “As a result” connect the sidewalk example to the next sentence in paragraph 2?	**It signals that receiving less direct sunlight may cause the shaded sidewalk to store less solar energy.**
3	What does the information from the U.S. Environmental Protection Agency add to the explanation in paragraph 2?	**It provides evidence for two cooling processes, shade and evaporation, before the writer applies them to a sidewalk.**
4	Why is the conclusion in paragraph 3 more objective than claiming trees are always the best choice? Use two details from the passage.	**It weighs limits and alternatives: young trees may cast little shade or need adequate soil and water, while lighter surfaces reflect more sunlight.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A school could compare two sections of the same paved walkway, one under a tree and one in direct sun. First, students could use an infrared thermometer to record each surface temperature at the same time on several clear afternoons. The shaded section should be cooler because the tree blocks some sunlight before it reaches the pavement. In addition, the passage explains that trees release water vapor as water changes form, a process that uses energy and may contribute to cooling. However, differences in wind or moisture could affect the readings, so this test alone could not show how much cooling came from shade.

Accept other accurate evidence and transition explanations supported by the passage. For Part 3, look for a controlled comparison, two relevant passage details, two effective transitions, and a stated limitation.