# Where Shade Matters

Connect explanations, measurements, and decisions in an informational text.

**RI.11-12.10** "Routinely and flexibly develop and apply background knowledge along with a variety of comprehension strategies to understand and analyze grade-appropriate, complex informational text independently."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline one explanation of how trees cool a street and one limit of satellite measurements, circle two details about when or where people face heat, and draw an arrow connecting evidence in paragraph 1 or 2 to a decision in paragraph 3.

### Reading a City's Heat

1 On a July afternoon, two people can walk the same distance through a city yet experience different heat. Sunlit asphalt absorbs solar energy and later releases it; a leafy street intercepts some sunlight before it reaches the pavement. Leaves also release water vapor, a process called transpiration, which can cool nearby air as water evaporates. These effects help explain why neighborhoods with less tree cover often face greater heat exposure. Yet "tree cover" is not a thermometer: tall buildings, wind, traffic, and the time of day also shape what a person feels. A street's design can change an ordinary walk into a health risk.

2 To locate hot spots, researchers often use satellites that detect heat radiating from the ground. A satellite image might show a parking lot hotter than a nearby park, but it usually reports surface temperature, not the air temperature a person breathes. Asphalt in direct sun may register especially hot even when air temperatures at the two sites differ less sharply. Researchers can pair those images with shaded air thermometers and observations of when people actually use a space. This comparison matters because a map of hot surfaces alone cannot tell a city which bus stop needs shade most urgently.

3 Planting trees seems like an obvious response, but choosing sites requires more than finding the hottest pixels. A young tree provides little immediate shade, and trees need soil, water, and maintenance to survive. A shelter at a busy bus stop could protect riders sooner, while mature trees may cool a wider area over time. Cities must also ask who bears the heat: a cooler private lawn is not a substitute for shade along a route used by people without cars. The strongest plan joins physical evidence about heat with local knowledge about where and when people are exposed.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. Why might a leafy street feel cooler than a sunlit asphalt street? Use two processes explained in the passage.

2. A planner says a satellite image proves the air above a parking lot is hotter than the air above a park. What should the planner check before accepting that claim, and why?

3. A map shows a very hot private parking lot and a slightly cooler bus stop. Why might the bus stop still deserve attention first? Connect evidence from two paragraphs.

4. What does the phrase “tree cover is not a thermometer” warn you against assuming? Name two other factors the passage says can affect what a person feels.

## 3 YOUR TURN

Your own words

Write a brief note to a neighborhood committee choosing between adding a shelter at a school pickup spot now and planting trees beside a little-used parking area. Identify one assumption you would check, then make a provisional choice using two different kinds of evidence from the passage.

ANSWER KEY

# Where Shade Matters

HIGH SCHOOL · RI.11-12.10

## PART 1 · READ AND MARK

Underline one explanation of how trees cool a street and one limit of satellite measurements, circle two details about when or where people face heat, and draw an arrow connecting evidence in paragraph 1 or 2 to a decision in paragraph 3. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | Why might a leafy street feel cooler than a sunlit asphalt street? Use two processes explained in the passage. | **Leaves block some sunlight from reaching pavement, and water evaporating from leaves can cool nearby air.** |
| 2 | A planner says a satellite image proves the air above a parking lot is hotter than the air above a park. What should the planner check before accepting that claim, and why? | **The planner should compare shaded air thermometer readings because satellite images usually show surface temperature, which may differ from air temperature.** |
| 3 | A map shows a very hot private parking lot and a slightly cooler bus stop. Why might the bus stop still deserve attention first? Connect evidence from two paragraphs. | **A surface heat map does not show how many people use a site or when they use it. Riders may wait in the heat at the bus stop, where a shelter could provide immediate shade.** |
| 4 | What does the phrase “tree cover is not a thermometer” warn you against assuming? Name two other factors the passage says can affect what a person feels. | **It warns against assuming tree cover alone determines a person's heat exposure. Accept any two of tall buildings, wind, traffic, and time of day.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

I would first check whether families wait at the pickup spot during the hottest hours, rather than assuming it needs help because it is paved. If they wait there in direct sun, I would add a shelter first. It would provide shade right away, while young trees offer little immediate shade. I would also measure air temperature near the waiting area, since a satellite reading of the ground would not show exactly what people experience. Trees beside the parking area could be a later project.

Accept other defensible choices in Part 3 if students identify an assumption to check and support their choice with two distinct kinds of passage evidence, such as heat measurements, cooling mechanisms, timing, or human exposure.