The Shade Question

Use a focused question to find and interpret evidence.

10.6.R.1 "Students will find and comprehend information about a topic, using their own viable research questions."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline details that could help answer a question about heat at bus stops, and circle limits on what those details can prove. Number two kinds of evidence a researcher could collect.

A Cooler Place to Wait?

1 On a hot afternoon, two bus stops a few blocks apart may offer very different waits. One bench sits beneath a tree; another faces open pavement. Shade blocks direct sunlight from reaching people and the ground. Pavement in full sun can become much hotter than nearby shaded pavement, but a cooler surface does not automatically mean cooler air across the neighborhood. A rider might care about both the heat of the bench and the sunlight on their skin. To understand these differences, a researcher must decide whether to study surfaces, air, or the conditions people experience while waiting.

2 Several kinds of evidence could help. A transit agency's stop inventory may identify which stops have shelters, while a city tree inventory may show trees near those stops. Neither list proves that a waiting area is shaded at a particular hour. A researcher could visit stops at the same time of day and record whether sunlight reaches each bench. An infrared thermometer can measure a surface's temperature, such as a bench or pavement, but it does not measure air temperature. For a fair comparison, readings should be taken during similar weather and at stops with similar exposure to wind.

3 Even careful observations have limits. If a sheltered bench measures cooler than an exposed one, the result describes those benches at the time measured; it does not establish that every shelter is cooler all day. A shelter can cast shade in one direction in the morning and another in the afternoon as the sun's position changes. Researchers could repeat measurements at several hours and on several days to look for a pattern. They could also ask riders when they use each stop, but a survey of riders' preferences would not replace temperature measurements. Each source helps answer a different part of the question.

2 ANSWER WITH EVIDENCE

Use the passage

1. You want to investigate whether shaded pavement is cooler than sunlit pavement at nearby stops. Which instrument and comparison conditions described in the passage would you use?

2. You want to find stops with shelters and nearby trees. Which two records could you consult, and what would you still need to check in person?

3. Could a cooler pavement reading answer whether shade lowers air temperature across a whole neighborhood? Use two passage details to explain.

4. Replace “Why are bus stops uncomfortable?” with one focused research question that the passage's methods could help investigate. Name a passage detail that makes your question testable.

3 YOUR TURN

Your own words

Write a new, focused research question about bus stops that the passage does not answer. In three sentences, explain two sources or observations you would use, what you would compare, and one limit on what your findings could prove.

ANSWER KEY

The Shade Question

GRADE 10 · 10.6.R.1

PART 1 · READ AND MARK

Underline details that could help answer a question about heat at bus stops, and circle limits on what those details can prove. Number two kinds of evidence a researcher could collect. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	You want to investigate whether shaded pavement is cooler than sunlit pavement at nearby stops. Which instrument and comparison conditions described in the passage would you use?	**Use an infrared thermometer to measure both surfaces at the same time of day, during similar weather and with similar wind exposure.**
2	You want to find stops with shelters and nearby trees. Which two records could you consult, and what would you still need to check in person?	**Consult the transit agency's stop inventory and the city tree inventory. Visit the stops to check whether sunlight reaches the waiting area at the hour being studied.**
3	Could a cooler pavement reading answer whether shade lowers air temperature across a whole neighborhood? Use two passage details to explain.	**No. A cooler surface does not automatically mean cooler neighborhood air, and an infrared thermometer measures surface temperature rather than air temperature.**
4	Replace "Why are bus stops uncomfortable?" with one focused research question that the passage's methods could help investigate. Name a passage detail that makes your question testable.	**Are sheltered benches cooler than exposed benches at 4 p.m. on hot days? The passage says an infrared thermometer can measure bench surfaces and that researchers can repeat measurements on several days.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Do stops with shelters have more riders waiting at 4 p.m. than nearby stops without shelters on hot weekdays? I would use the transit agency's stop inventory to identify the two groups and count waiting riders at each stop on several hot weekdays. I would compare stops on similar routes at the same hour so differences in schedules are less likely to affect the counts. Those counts could show a pattern, but they would not prove that riders chose a stop because of its shelter.

Accept other focused questions and evidence plans grounded in the passage. For Part 3, the question should require new information, and the stated limit should match what the proposed evidence can establish.