Shade Under Question

Use a research question to connect claims, evidence, and limits.

8.6.R.1 "Students will find and comprehend information (e.g., claims, evidence) about a topic, using their own viable research questions."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline one claim supported by the sidewalk readings, circle the four sidewalk temperature readings, and number two details that limit what the students can conclude.

How Cool Is the Shade?

1 At 2 p.m. on a clear June afternoon, eighth graders Maya and Leo carried an infrared thermometer along one block. They wanted to know whether tree shade changed how hot the sidewalk's surface became. They chose two patches of the same concrete sidewalk, one in direct sun and one beneath a leafy tree. The sunny patch measured 49°C; the shaded patch measured 34°C. Both patches were measured within five minutes, so the sun's position had changed little. Their readings support a narrow claim: the shaded concrete was cooler at that time.

2 Maya and Leo also checked the air temperature one meter above each patch with a separate thermometer. It read 31°C in both places. The next clear afternoon at 2 p.m., they repeated the sidewalk measurements: the sunlit concrete was 47°C, the shaded concrete was 36°C, and the air was 30°C at both spots. These results do not show that shade cooled the air on their block. They do show a surface difference on two afternoons. The students kept the surface readings separate from the air readings because the two kinds of measurements answered different questions.

3 Their investigation left important questions open. The class measured only one block, one tree, and two afternoons. They did not measure asphalt, check early-morning temperatures, or return after sunset. Those gaps matter: asphalt may absorb sunlight differently from concrete, and the amount of shade changes as the sun moves. A useful next question would name a surface, a place, and a time, then ask for measurements that could answer it. Without those new measurements, the class cannot claim that every shaded street is cooler all day.

2 ANSWER WITH EVIDENCE

Use the passage

1. What claim about the concrete sidewalk can the students support? Give one pair of readings as evidence.

2. Could the students claim that shade lowered the air temperature at their two spots? Use the air readings to explain.

3. Could these results answer the question, "Are all shaded streets cooler all day?" Explain using two limits of the investigation.

4. A classmate asks, "Does the shaded sidewalk stay cooler after sunset?" What passage evidence makes this worth asking, and what measurements are missing?

3 YOUR TURN

Your own words

Write one new, specific research question about shade and a surface other than concrete. In two sentences, explain which passage evidence prompted your question and what measurements you would need to answer it.

ANSWER KEY

Shade Under Question

GRADE 8 · 8.6.R.1

PART 1 · READ AND MARK

Underline one claim supported by the sidewalk readings, circle the four sidewalk temperature readings, and number two details that limit what the students can conclude. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What claim about the concrete sidewalk can the students support? Give one pair of readings as evidence.	**The shaded concrete was cooler than the sunlit concrete at 2 p.m. For example, the first afternoon's readings were 34°C in shade and 49°C in sun.**
2	Could the students claim that shade lowered the air temperature at their two spots? Use the air readings to explain.	**No. The air measured 31°C at both spots on the first afternoon and 30°C at both spots on the second.**
3	Could these results answer the question, "Are all shaded streets cooler all day?" Explain using two limits of the investigation.	**No. The students measured only one block and one tree, and they took readings at 2 p.m. on only two afternoons.**
4	A classmate asks, "Does the shaded sidewalk stay cooler after sunset?" What passage evidence makes this worth asking, and what measurements are missing?	**The shaded concrete was cooler at 2 p.m. on both afternoons. The class would need to measure shaded and sunlit concrete after sunset to find out whether the difference remains.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Is asphalt beneath a tree cooler than nearby sunlit asphalt at 2 p.m.? On the first afternoon, shaded concrete measured 34°C while sunlit concrete measured 49°C. I would measure shaded and sunlit asphalt on the same block at the same time to test whether that pattern holds.

Accept research questions about any surface other than concrete if they are specific and answerable with measurements. The explanation should cite passage evidence and identify measurements that would answer the new question.