Follow the Heat

Use multiple sources to shape a focused research question.

9-10.WHST.7 "Conduct short as well as more sustained research; narrow or broaden the inquiry when appropriate; demonstrate understanding of the subject under investigation using multiple sources."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the researcher's first and narrowed questions, circle each published source, and number two places that explain what a source can or cannot show.

A Hot Spot at the Bus Stop

(1) On a September afternoon, I noticed that the blacktop near our school's bus stop felt much hotter than the grass beside it. My first question was, "Why is our whole town getting hotter?" That question mixed daily weather, long-term climate, and one small patch of pavement. I narrowed it to, "How might pavement and nearby trees affect heat at our bus stop on sunny afternoons?" I recorded where the shade fell at dismissal, but touch alone could not measure temperature. I needed published research to explain the pattern and local measurements to test whether it happened here.

(2) The U.S. Environmental Protection Agency's heat island guidance explains that roads and buildings absorb and reemit more of the sun's heat than natural surfaces. It also explains that trees cool places through shade and evapotranspiration, the release of water vapor from leaves. NASA's Landsat program provides satellite observations that researchers use to estimate land-surface temperature. Those sources fit together: the EPA offers possible causes, while Landsat could help compare larger paved and planted areas. However, a satellite image would not show exactly how hot the air feels to students waiting under one particular tree.

(3) Next, I checked National Weather Service records for air temperature on recent September afternoons. Those records describe area weather, not conditions at the bus stop, so I would also measure air temperature at the same height in sun and shade over several afternoons. If a cloudy day erased the difference, I would broaden the inquiry to ask how cloud cover changes the effect of shade. I cannot claim that trees lower air temperature at this stop yet. Together, the published explanations, regional weather records, and repeated local measurements could support a more careful answer than any one source alone.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the narrowed question make the research more manageable than the first question?

2. How could the EPA guidance and Landsat observations contribute different kinds of evidence to the inquiry?

3. Why would the researcher need local measurements as well as National Weather Service records?

4. What result would lead the researcher to broaden the inquiry, and what would the broader question investigate?

3 YOUR TURN

Your own words

Investigate a different school location, such as an outdoor lunch area. In 70 to 110 words, pose a focused heat question, use two named sources from the passage to form a tentative explanation, identify local evidence you would collect, and explain how you might narrow or broaden your question afterward.

Follow the Heat

PART 1 · READ AND MARK

Underline the researcher's first and narrowed questions, circle each published source, and number two places that explain what a source can or cannot show. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the narrowed question make the research more manageable than the first question?	**It shifts from the whole town and several possible causes of heat to pavement, trees, and one bus stop on sunny afternoons.**
2	How could the EPA guidance and Landsat observations contribute different kinds of evidence to the inquiry?	**The EPA guidance explains possible causes of heat and cooling. Landsat observations could help compare surface temperatures across larger paved and planted areas.**
3	Why would the researcher need local measurements as well as National Weather Service records?	**Weather Service records describe area air temperature, while local measurements could compare air temperature in sun and shade at the bus stop.**
4	What result would lead the researcher to broaden the inquiry, and what would the broader question investigate?	**If a cloudy day erased the temperature difference, the researcher would investigate how cloud cover changes the effect of shade.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

How does shade affect air temperature at our outdoor lunch tables on sunny days? The EPA's heat island guidance suggests that nearby pavement absorbs heat while trees provide shade and cooling. National Weather Service records could show whether the afternoons I compare had similar air temperatures across the area. Neither source measures conditions at our tables, so I would measure air temperature in sun and shade there at the same height and time on several days. If some tables receive shade only briefly, I would narrow the question to tables that stay shaded throughout lunch.

Accept other accurate comparisons of the sources' uses and limits. For the open task, look for a question about a new location, accurate use of two named sources, a feasible local evidence plan, and a justified change in scope.