Heat Map Detectives

Use context to build vocabulary across scientific and professional settings.

9.L.V.1.a "Acquire a range of general, academic, disciplinary, technical, and professional vocabulary through grade-level print, digital, and/or multimodal texts or content. (I)"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline words that name specialized ideas, methods, measurements, or professional actions. Circle nearby words that help you infer each underlined word's meaning.

Tracking City Heat

1 On a July afternoon, a student research team walked three routes through Riverton, carrying small temperature sensors. Their goal was to investigate the urban heat island effect, the tendency for built-up areas to stay warmer than nearby greener places. At each stop, the team recorded air temperature, surface temperature, cloud cover, and wind. A shaded park path felt cooler, but the data would show whether that impression was reliable. Back at school, the students uploaded their readings to a shared spreadsheet and labeled each location with a time and a brief description.

2 To compare the routes fairly, the team followed a protocol. They paused for two minutes at every site and held each sensor one meter above the ground, away from walls and car exhaust. This consistent procedure reduced variables that could distort the results. In the spreadsheet, they calculated the mean temperature for each route rather than relying on one measurement. A city planner later reviewed the map. She noted that dark pavement absorbed solar energy, while trees provided shade and released water vapor. Her professional recommendation was to add tree canopy and lighter roofing in the hottest blocks.

3 The map revealed a pattern, a repeated relationship in the evidence. Stops beside large parking lots had higher surface temperatures than stops under mature trees, especially after noon. The students did not claim that pavement alone caused every difference. Wind, building shade, and the time of day also mattered. Instead, their conclusion was cautious: the measurements supported a connection between less shade and hotter surfaces along these routes. The team presented its findings at a neighborhood meeting, where residents asked how the data might guide future street repairs. The project turned observations into evidence that could inform a public decision.

2 ANSWER WITH EVIDENCE

Use the passage

1. What does the term “urban heat island effect” mean in paragraph 1? Name the phrase that helps define it.

2. What does “protocol” mean in paragraph 2? Use two details from the passage to explain it.

3. In this investigation, what does “mean temperature” mean, and why did the students calculate it?

4. What does “recommendation” mean in the city planner’s professional role? What did she recommend?

3 YOUR TURN

Your own words

Write a three-sentence field-note entry about a different observation on school grounds, such as noise, runoff, or light. Use one general word, one academic word, one technical or disciplinary term, and one professional word so that context helps show each word’s meaning.

ANSWER KEY

Heat Map Detectives

GRADE 9 · 9.L.V.1.a

PART 1 · READ AND MARK

Underline words that name specialized ideas, methods, measurements, or professional actions. Circle nearby words that help you infer each underlined word's meaning. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What does the term "urban heat island effect" mean in paragraph 1? Name the phrase that helps define it.	**It means built-up areas stay warmer than nearby greener places. The defining phrase is "the tendency for built-up areas to stay warmer than nearby greener places."**
2	What does "protocol" mean in paragraph 2? Use two details from the passage to explain it.	**A protocol is a set procedure for collecting data. The team paused for two minutes at every site and held sensors one meter above the ground, away from walls and car exhaust.**
3	In this investigation, what does "mean temperature" mean, and why did the students calculate it?	**Mean temperature is the average temperature for a route. They calculated it so they would not rely on only one measurement.**
4	What does "recommendation" mean in the city planner's professional role? What did she recommend?	**A recommendation is a suggested action. She recommended adding tree canopy and lighter roofing in the hottest blocks.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

At lunch, the courtyard was loud, and a sound meter recorded 78 decibels near the loading area. This evidence supported our conclusion that delivery trucks raised the noise level. Our recommendation to the facilities manager is to schedule deliveries before students arrive.

Accept accurate paraphrases that use passage context to explain each term. For Part 3, accept varied topics and vocabulary if the response has exactly three sentences and uses all four vocabulary types with understandable context clues.