

Heat Map Decisions

Track how evidence, language, and structure shape an explanation.

10.RI.2 "Craft and Style Analyze how authors use structure to explain relationships among concepts in a text, including how key sentences, paragraphs, and sections of texts contribute to the whole. Analyze key terms (e.g., words and phrases...)"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline one key sentence in each paragraph that advances the author's explanation, circle technical terms, and put a star beside a comparison or exaggeration that shapes your response. The council-meeting speakers and quotation are fictional examples of rhetorical choices.

Mapping City Heat

- ① On a July afternoon, asphalt can become far hotter than the air above it. This difference helps create an urban heat island, a city area that absorbs and holds more heat than nearby rural land. Dark roofs, parking lots, and scarce tree cover intensify the effect. In Phoenix, planners use temperature sensors and satellite images to locate blocks where heat is especially severe. Their maps do more than display hot spots. They show which neighborhoods may face higher energy bills, greater risk of heat illness, and fewer shaded routes to schools or bus stops.
- ② To interpret those maps, researchers compare land-surface temperature, the temperature of surfaces such as roofs and pavement, with air temperature, the temperature of the air near people. A satellite records thermal radiation, energy emitted by warm surfaces, while ground sensors check conditions near street level. The two measurements are not interchangeable. A metal roof may blaze in the satellite data, yet a shaded sidewalk nearby can feel cooler. For analysts, a temperature map is like a medical scan: it reveals patterns that need further diagnosis. They combine the map with tree-canopy data, income data, and reports from residents before recommending where to add shade.

- ③ Still, maps cannot measure every part of a heat emergency. They may miss a bus rider waiting beside traffic, an older resident afraid to run an air conditioner, or a tenant whose landlord will not repair a window unit. A city may be rich in data and poor in shade. At a council meeting, one resident called an unshaded block “a furnace that could cook the whole neighborhood.” Other speakers described years of requests for trees and safer bus stops. When officials choose sites for trees, cooling centers, or reflective roofs, they must weigh sensor readings alongside the experiences the readings cannot capture.

2 ANSWER WITH EVIDENCE _____ Use the passage

- ① How does paragraph 2 develop the explanation introduced in paragraph 1?

- ② What does the sentence “The two measurements are not interchangeable” clarify about land-surface temperature and air temperature?

- ③ What is the effect of comparing a temperature map to a medical scan? How does this comparison support the author’s purpose?

- 4** How do the statements “A city may be rich in data and poor in shade” and “a furnace that could cook the whole neighborhood” shape the reader’s understanding of the issue?

3 YOUR TURN _____ Your own words

Choose a scientific or technical topic not in the passage. Write exactly four sentences: introduce a problem or process, explain it using one precise technical term, use an analogy, hyperbole, or paradox, and explain how that technique supports your purpose.

Write your four-sentence explanation

Check that your four sentences introduce the topic, use a precise technical term, include a rhetorical technique, and explain its effect on your purpose.

PART 1 • READ AND MARK

Underline one key sentence in each paragraph that advances the author's explanation, circle technical terms, and put a star beside a comparison or exaggeration that shapes your response. The council-meeting speakers and quotation are fictional examples of rhetorical choices. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How does paragraph 2 develop the explanation introduced in paragraph 1?	Paragraph 1 identifies urban heat islands and their effects on neighborhoods. Paragraph 2 explains how researchers measure heat and why they must use several kinds of evidence to interpret the maps.
2	What does the sentence "The two measurements are not interchangeable" clarify about land-surface temperature and air temperature?	It clarifies that surface temperature and the air temperature near people can differ, so one measurement cannot stand in for the other.
3	What is the effect of comparing a temperature map to a medical scan? How does this comparison support the author's purpose?	The comparison presents a map as a useful tool for revealing patterns, not as a complete diagnosis. It supports the author's purpose of showing that planners need additional evidence before making decisions.
4	How do the statements "A city may be rich in data and poor in shade" and "a furnace that could cook the whole neighborhood" shape the reader's understanding of the issue?	The first statement highlights the contrast between having information and providing protection. The exaggerated furnace image conveys the severe, frustrating conditions residents experience, reinforcing the need to consider lived experience with data.

PART 3 · YOUR TURN (SAMPLE ANSWER)

An oil spill can spread across a coastline after a tanker leaks. Booms, floating barriers that contain oil, can slow the slick near shore. A boom is like a fence on water, guiding oil away from marshes. This analogy helps explain why responders place booms before oil reaches fragile habitats.

Accept responses that accurately explain relationships among paragraphs, evidence, and ideas using details from the passage. For Part 3, accept varied topics and techniques when the response has exactly four sentences, includes a precise term, and clearly explains the technique's purpose. Surface temperature and air temperature are different measurements, not interchangeable names for heat. NASA explanation: <https://science.nasa.gov/earth/earth-observatory/global-maps/land-surface-temperature/> . The unchanged four-sentence boom model is 50 words. NOAA describes floating barriers that contain or deflect oil away from sensitive sites; performance depends on conditions: <https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/spill-containment-methods.html> .