City Heat Clues

Notice how precise details build a clear explanation.

CCSS.ELA-Literacy.W.8.2b "Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline facts, definitions, and concrete details that explain either how heat islands form or how cities can reduce them. Number the three details that make the explanation clearest.

Why Cities Stay Hot

1. On a summer afternoon, a city block can feel much hotter than a nearby park. An urban heat island is a built-up area that is warmer than nearby places with more plants and open soil. Dark roofs, asphalt streets, and parking lots absorb sunlight and store heat. Unlike grass or tree leaves, these surfaces do not cool the air by releasing much water vapor. The stored heat can continue warming the neighborhood after sunset, which is why nighttime temperatures in dense cities often remain higher than temperatures in nearby rural areas.

2. City design can increase or reduce this effect. A black roof may reach temperatures far above the surrounding air in direct sun, then release heat slowly. Trees change the conditions in two ways: their canopies shade pavement, and water evaporating from soil and water vapor leaving leaves through transpiration carries heat away. Light-colored roofs reflect more sunlight than dark ones. In one neighborhood, a row of trees, a pale roof, and a small planted area can create cooler surfaces than an uncovered asphalt lot.

3. Heat islands matter because very hot nights can make it harder for people and buildings to cool down. Air conditioners may run longer, increasing electricity demand during heat waves. Heat also affects health, especially for older adults, young children, and people who work outdoors. Cities can map surface temperatures to find the hottest blocks and place cooling resources there. Adding shade at bus stops, planting trees where they can survive, and using reflective paving are specific choices that can lower heat exposure.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the definition of an urban heat island connect to the example of a city block and a park in paragraph 1?

2. Which surface details explain why a heat island can stay warm after sunset? Explain the connection.

3. Why is the explanation of trees in paragraph 2 stronger than simply saying that trees cool cities? Use two details from the passage.

4. Which details in paragraph 3 show why reducing heat islands matters? Give one affected group and one effect.

3 YOUR TURN

Your own words

Write a 70 to 90 word explanatory paragraph proposing one way to reduce heat near a school or community building. Include one precise observation about a surface, two concrete details about the change, and an explanation of how those details reduce heat.

ANSWER KEY

City Heat Clues

GRADE 8 · W.8.2b

PART 1 · READ AND MARK

Underline facts, definitions, and concrete details that explain either how heat islands form or how cities can reduce them. Number the three details that make the explanation clearest. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the definition of an urban heat island connect to the example of a city block and a park in paragraph 1?	**An urban heat island is a built-up area warmer than nearby places with more plants and open soil, so the hotter city block and cooler park illustrate the definition.**
2	Which surface details explain why a heat island can stay warm after sunset? Explain the connection.	**Dark roofs, asphalt streets, and parking lots absorb and store sunlight. The stored heat continues warming the neighborhood after sunset.**
3	Why is the explanation of trees in paragraph 2 stronger than simply saying that trees cool cities? Use two details from the passage.	**The passage explains that tree canopies shade pavement and that evaporation from soil and transpiration from leaves carry heat away.**
4	Which details in paragraph 3 show why reducing heat islands matters? Give one affected group and one effect.	**Accept older adults, young children, or people who work outdoors as an affected group. Effects include harder-to-cool hot nights, longer air-conditioner use, higher electricity demand, and health risks.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Installing shade trees beside a school parking area could reduce heat on the pavement. In direct sun, black asphalt absorbs energy and becomes much hotter than the air. Broad tree canopies would block some sunlight before it reached the ground. Leaves release water vapor through transpiration, and water evaporating from nearby soil can help cool the surrounding air. Cooler pavement could make the walk from buses safer and less uncomfortable on hot afternoons.

Accept answers that accurately connect relevant passage details to the explanation of heat islands or cooling strategies. For Part 3, look for a clear proposal supported by precise, relevant details and an explanation of how those details reduce heat.