Heat by Design

Analyze how an informational text builds a connected explanation.

10.RI.1.A "Explain how authors organize an analysis or series of ideas or events, including the order in which points are made, how they are introduced and developed, and the connections that are drawn among them."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the sentence that introduces the main topic, number the signal words that move the explanation forward, and circle sentences that connect a cause to an effect or a solution.

Why Cities Stay Hot

1 On a summer afternoon, a city block can be far hotter than a nearby park. This difference, called the urban heat island effect, is not simply caused by a crowded population. It develops because cities replace soil and plants with materials that absorb and store solar energy. Dark roofs, asphalt streets, and brick walls warm in sunlight. After sunset, they release some of that stored heat slowly, so neighborhoods may remain warm through the night. The effect matters most during heat waves, when hot nights can prevent people and buildings from cooling down.

2 To explain the process, scientists often begin with the land surface. Trees cool an area by shading pavement and by moving water from leaves into the air, where evaporation uses heat. When development removes trees, less shade and evaporation are available. Next, paved surfaces take in more sunlight than many planted areas, especially when they are dark. Finally, the built environment can trap warmth: closely spaced buildings reduce air movement, and vehicles, air conditioners, and industry add waste heat. These linked causes explain why dense districts commonly heat up faster and cool more slowly.

3 The same chain of ideas points toward solutions. Planting and protecting trees addresses the first cause by restoring shade and evaporation. Cool roofs, which reflect more sunlight than traditional dark roofing, limit the heat absorbed by buildings. City planners can also preserve open corridors for breezes and reduce waste heat through efficient equipment and cleaner transportation. These actions do not work as isolated fixes. A reflective roof lowers surface heating, for example, while trees can make sidewalks safer for walking and lessen the need for air conditioning. By ending with connected responses, the explanation shows that a city's design shapes both heat exposure and possible relief.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does paragraph 1 introduce the topic and establish why it matters?

2. What order does paragraph 2 use to explain why dense city areas become warmer?

3. How does the first sentence of paragraph 3 connect the new paragraph to paragraph 2?

4. Why does the author include the example of a reflective roof and trees working in different ways?

3 YOUR TURN

Your own words

Create a three-part outline of the passage, using one sentence to summarize the role of each paragraph. Then write two sentences explaining how the shift from causes to solutions helps readers understand the topic.

ANSWER KEY

Heat by Design

GRADE 10 · 10.RI.1.A

PART 1 · READ AND MARK

Underline the sentence that introduces the main topic, number the signal words that move the explanation forward, and circle sentences that connect a cause to an effect or a solution. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does paragraph 1 introduce the topic and establish why it matters?	**It contrasts a hotter city block with a cooler park, names the urban heat island effect, and explains that it is especially serious during heat waves because hot nights limit cooling.**
2	What order does paragraph 2 use to explain why dense city areas become warmer?	**It begins with the loss of tree cooling, moves next to heat absorbed by paved surfaces, and ends with heat trapped or added by the built environment.**
3	How does the first sentence of paragraph 3 connect the new paragraph to paragraph 2?	**The phrase "The same chain of ideas" links the earlier causes to the solutions that follow.**
4	Why does the author include the example of a reflective roof and trees working in different ways?	**The example develops the idea that solutions are connected rather than isolated, showing how different actions reduce heat and its effects.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

1. The writer opens by contrasting a hot city block with a cooler park, names the urban heat island effect, and establishes its danger during heat waves. 2. The explanation then traces three linked causes in order: lost tree cooling, heat absorbed by pavement, and warmth trapped or added in dense districts. 3. The final paragraph turns to responses that match those causes, including trees, cool roofs, airflow, and reduced waste heat. The shift helps readers see why each solution is relevant instead of random. It also emphasizes that city design creates the problem and can reduce it through connected choices.

Accept equivalent descriptions of the paragraph sequence and connections, as long as students support them with details from the passage. For the open task, look for accurate paragraph roles and an explanation of why the cause-to-solution structure is effective.