Cooling the Block

Connect clues across a text to weigh solutions to urban heat.

RI.7.10 "Routinely and flexibly develop and apply background knowledge along with a variety of comprehension strategies to understand and analyze grade-appropriate, complex informational text independently."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two details that explain how heat builds up, circle a detail that limits a cooling solution, and number two details from different paragraphs that you can connect to explain a choice.

Why Shade Is Not Enough

1 At noon, two sidewalks on the same block can feel like different seasons. One lies beside a row of trees; the other runs past a wide parking lot. Sunlight warms both places, but dark pavement absorbs much of that energy and later releases it as heat. A tree's branches block some sunlight before it reaches the ground. This is why a shaded sidewalk may feel cooler than nearby pavement. Yet shade alone cannot explain every temperature difference, especially after the sun goes down.

2 Trees also move water from their roots to tiny openings in their leaves. As that water evaporates, it takes some heat from the surrounding air. This process, called transpiration, can add to the cooling provided by shade. But a tree needs water to keep moving it through its leaves. During a long dry spell, some trees lose leaves or close those tiny openings, so this cooling may weaken. Trees can still provide shade while releasing less water into the air, which makes the two effects important to consider separately.

3 Cities can reduce heat in other ways, too. A light-colored roof reflects more sunlight than a dark roof, although it does not shade people walking below. Replacing an asphalt play area with a pale surface might reduce how hot the ground becomes, but it would not give students shelter from direct sun. Planting trees near a walkway could address that problem, provided the trees have space to grow and enough water to survive. Choosing a solution means asking which kind of heat matters, where people spend time, and what the site can support.

2 ANSWER WITH EVIDENCE

Use the passage

1. Use the sidewalk comparison and what you know about sunlight to explain why the sidewalk by the parking lot may feel hotter at noon. Cite two details from paragraph 1.

2. What does *transpiration* mean in this passage? Explain which nearby clues help you understand it.

3. A reader might assume that a shaded place always gets both cooling benefits of trees. Which details challenge that idea, and how should the reader change that conclusion?

4. Connect details from paragraphs 1 and 3. Why would a pale play surface and trees near a walkway solve different parts of the heat problem?

3 YOUR TURN

Your own words

Your school has a sunny asphalt courtyard, a walkway students use at noon, and enough water to care for only a few trees. Write a short recommendation choosing two changes described in the passage. Explain what problem each change addresses and one limit your plan must account for.

ANSWER KEY

Cooling the Block

GRADE 7 · RI.7.10

PART 1 · READ AND MARK

Underline two details that explain how heat builds up, circle a detail that limits a cooling solution, and number two details from different paragraphs that you can connect to explain a choice. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Use the sidewalk comparison and what you know about sunlight to explain why the sidewalk by the parking lot may feel hotter at noon. Cite two details from paragraph 1.	**Dark pavement absorbs sunlight and releases it as heat, while the trees beside the other sidewalk block some sunlight from reaching the ground.**
2	What does *transpiration* mean in this passage? Explain which nearby clues help you understand it.	**It is the movement and evaporation of water through a tree's leaves. The nearby sentences describe water moving from roots to leaves and evaporating into the air.**
3	A reader might assume that a shaded place always gets both cooling benefits of trees. Which details challenge that idea, and how should the reader change that conclusion?	**During a long dry spell, trees may lose leaves or close openings in their leaves. A tree may still provide shade while cooling the air less through evaporation.**
4	Connect details from paragraphs 1 and 3. Why would a pale play surface and trees near a walkway solve different parts of the heat problem?	**A pale surface could reduce how hot the ground becomes, while trees could block sunlight from reaching people on the walkway. The pale surface would not shelter them from direct sun.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I recommend planting a few trees near the walkway so their branches can block sunlight where students walk at noon. I would also replace the courtyard's asphalt with a pale surface to reduce how hot the ground becomes. Because water is limited, the school should plant only as many trees as it can care for.

Accept explanations that accurately connect sunlight, shade, evaporation, and surface color to the heat problems described. For the recommendation, accept two passage-based changes if the student explains each one's purpose and accounts for a relevant limit.