Where Heat Lands

Trace how an explanation connects evidence, mechanisms, and decisions.

11.CL.11.b "Write explanations and expositions that examine and convey complex ideas or processes effectively, develop the topic utilizing and citing credible sources of information or data when relevant, use intentional transitions..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each paragraph's main claim, circle transitions that connect ideas, and box each source reference. Use your marks to trace how the explanation builds its case.

Choosing How to Cool a City

1 At noon, a bus stop beside a wide parking lot can feel hotter than a stop under trees. The difference is not simply a matter of comfort: pavement absorbs sunlight, while leaves block some sunlight before it reaches the ground. The U.S. Environmental Protection Agency (EPA), in its overview "Learn About Heat Islands," explains that buildings and roads absorb and re-emit more of the sun's heat than natural landscapes. As a result, neighborhoods with extensive pavement can retain more heat than nearby greener areas. To explain how a city might reduce this burden, it helps to separate the sources of heat from the ways different surfaces respond.

2 One response is to add trees near sidewalks and transit stops. According to the EPA's "Using Trees and Vegetation to Reduce Heat Islands," trees cool places through shade and evapotranspiration, a process in which plants release water vapor into the air. Shade reduces the sunlight striking a bench or pavement; evapotranspiration helps cool the surrounding air. By contrast, a reflective roof reduces the sunlight a roof absorbs. The EPA's "Using Cool Roofs to Reduce Heat Islands" describes this effect and notes that cool roofs can lower roof surface temperatures. Both approaches limit heat, but they act on different surfaces and should not be described as interchangeable.

3 These distinctions matter when a city decides where to spend limited funds. A reflective roof can benefit a building, yet it cannot shade a person waiting for a bus; a tree can shade that person, yet it needs space to grow and ongoing care. Therefore, a plan for a bus stop should specify its goal before naming a solution: reduce heat on the waiting area, lower a building's roof temperature, or do both. The EPA sources establish how the strategies work, not which block should receive funding first. That decision also requires local evidence about existing shade, available planting space, and who uses the stop.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the second paragraph develop the problem introduced in the first?

2. What comparison does “By contrast” signal in the second paragraph?

3. What do the EPA sources support, and what decision does the writer say they cannot settle?

4. Why is “roof surface temperatures” more precise than simply saying “temperatures” in the second paragraph?

3 YOUR TURN

Your own words

Write one 90- to 110-word paragraph for your principal explaining an approach to a hot schoolyard. Cite at least one named EPA source from the passage, explain how your approach works, use at least two intentional transitions, and identify local information the school still needs.

ANSWER KEY

Where Heat Lands

GRADE 11 · 11.CL.11.b

PART 1 · READ AND MARK

Underline each paragraph's main claim, circle transitions that connect ideas, and box each source reference. Use your marks to trace how the explanation builds its case. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the second paragraph develop the problem introduced in the first?	**The first paragraph explains why paved areas retain heat. The second explains two ways to limit heat and distinguishes the surfaces each approach affects.**
2	What comparison does "By contrast" signal in the second paragraph?	**It shifts from trees, which provide shade and cool through evapotranspiration, to reflective roofs, which reduce the sunlight absorbed by a roof.**
3	What do the EPA sources support, and what decision does the writer say they cannot settle?	**They support claims about how trees and cool roofs reduce heat. They do not establish which block should receive funding first.**
4	Why is "roof surface temperatures" more precise than simply saying "temperatures" in the second paragraph?	**It identifies what the cited cool-roof claim measures and avoids implying that a cooler roof necessarily shades people or cools every nearby surface.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Principal, a schoolyard plan should address the heat students encounter during recess, not just the temperature of the school roof. According to the EPA's "Using Trees and Vegetation to Reduce Heat Islands," trees provide shade and cool through evapotranspiration, the release of water vapor into the air. Therefore, planting trees beside the playground could reduce direct sunlight on students and pavement. By contrast, a reflective roof would reduce the sunlight absorbed by the roof, not shade the play area. Before choosing planting sites, however, the school needs local information about where students gather, where shade already falls, and whether there is room for roots.

Accept other accurately explained schoolyard approaches if the paragraph cites a named EPA source from the passage, uses transitions purposefully, and distinguishes supported claims from local information still needed.