

Connections That Cool

Trace how a model explanation links evidence, limits, and action.

CCSS.ELA-Literacy.WHST.11-12.2c "Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline transitions and label their relationships above the text: cause, contrast, example, addition or conclusion. Mark how the explanation connects physical mechanisms, practical choices and limits.

Cooling a Hot City

- ① Cities can be several degrees warmer than nearby rural areas, a pattern called the urban heat island effect. Dark roofs and asphalt absorb sunlight during the day, then release stored heat after sunset. Trees, by contrast, shade surfaces and cool air as water evaporates from leaves and soil. Because tree cover and access to cooling vary among neighborhoods, heat does not affect residents equally. Older adults, outdoor workers, and people without reliable air conditioning face greater risk during heat waves. Thus, reducing urban heat is not only a design issue, it is also a public-health and equity concern.
- ② City planners often respond by planting trees, installing reflective roofs, and replacing some pavement with lighter materials. These strategies work differently, yet each limits the amount of heat that surfaces hold or transfer. For example, a reflective roof reflects more incoming sunlight, whereas a shaded sidewalk remains cooler before pedestrians arrive. Such differences matter when officials choose projects for dense blocks, school grounds, or bus stops. However, cooling infrastructure alone cannot solve every problem. A neighborhood may receive new trees but still lack affordable housing, health care, or emergency information during extreme heat.

- ③ Therefore, effective heat planning combines physical changes with policies that reach the people most exposed. A city might map temperatures block by block; using that evidence, it could place shade structures near transit stops and direct outreach to buildings where residents lack cooling. At the same time, planners should ask residents which locations feel unsafe and which services are hardest to reach. This approach connects data to lived experience. Although no single project removes the danger of extreme heat, coordinated choices can lower exposure, improve access to help, and make public spaces safer over time.

2 ANSWER WITH EVIDENCE Use the passage

- 1 What cause-and-effect relationship does 'Because' establish in paragraph 1?

- 2 How does the sentence beginning "For example" in paragraph 2 clarify the idea that cooling strategies work differently?

- 3 How does "However" link the ideas before and after it in paragraph 2?

- 4 How do "Therefore," "At the same time," and "Although" organize paragraph 3?

3 YOUR TURN

Your own words

Simulated field notes: two nearby patches of the same paving material were measured with contact probes at 1 p.m. Patch A was sunlit; B was under a shade canopy. Day 1: A 44 C, B 32 C. Day 2: A 46 C, B 34 C. Air temperatures and costs were not measured. Write a 140-170-word scientific explanation in three paragraphs linking method, results, and limits with a next investigation. Use the passage's mechanism of shade and at least four transitions showing cause, example, contrast and conclusion.

Write and check three paragraphs

Use Celsius for surface temperatures and compare each day's pair. Vary sentence structures as well as transitions. Explain what the observations support and what remains uncertain; do not turn a surface difference into an air-temperature claim. Develop three connected paragraphs within 140-170 words.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

PART 1 • READ AND MARK

Underline transitions and label their relationships above the text: cause, contrast, example, addition or conclusion. Mark how the explanation connects physical mechanisms, practical choices and limits. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What cause-and-effect relationship does 'Because' establish in paragraph 1?	Differences in tree cover and access to cooling contribute to unequal heat effects across neighborhoods.
2	How does the sentence beginning "For example" in paragraph 2 clarify the idea that cooling strategies work differently?	It gives a comparison: a reflective roof reflects more incoming sunlight, whereas shade keeps direct sunlight from reaching a sidewalk. These are different ways to limit surface heating.
3	How does "However" link the ideas before and after it in paragraph 2?	It contrasts the benefits of cooling infrastructure with the limitation that physical improvements alone cannot meet every community need.
4	How do "Therefore," "At the same time," and "Although" organize paragraph 3?	"Therefore" introduces the conclusion, "At the same time" adds the need for resident input, and "Although" acknowledges a limit before presenting the benefit of coordinated action.

PART 3 · YOUR TURN (SAMPLE ANSWER)

Scientific explanation: The simulated notes compare two paved patches at the same afternoon time. Because the patches share a paving material and were measured with contact probes, the comparison controls some conditions while recording surface temperature. However, their different locations may introduce other differences that the notes do not describe.

On both days, the shaded patch was twelve degrees Celsius cooler than the sunlit patch. For example, the first readings were forty-four and thirty-two degrees. Shade blocks direct sunlight, so reduced surface heating is a plausible explanation. The repeated difference is consistent with this mechanism, but it does not isolate shade as the only cause.

Therefore, further investigation should repeat measurements at additional matched sites and times. Air temperature also requires separate measurement; surface readings cannot establish changes in the air people breathe. Although the comparison supports studying shade, it cannot yet predict citywide cooling or justify a project on cost grounds.

TEACHER ASSESSMENT NOTES

Require three real paragraphs and 140-170 words. Assess whether varied transitions and sentence structures connect method, results, mechanism and limits; transitions must express actual relationships. Both paired surface differences are 12 C: 44-32 and 46-34. These are simulated surface measurements, not real field data or air temperatures. Consistency supports investigating shade but two sites and two days do not isolate all causes or establish a citywide effect. Accept justified next measurements, such as more sites and times. Model uses Because, For example, However and Therefore, plus subordinate clauses and a compound sentence. Background sources: U.S. EPA, <https://www.epa.gov/heatislands/benefits-trees-and-vegetation> and <https://www.epa.gov/heatislands/using-cool-roofs-reduce-heat-islands>. Field notes are invented for this task.