Roof Heat Debate

Trace a claim from evidence to limits.

8.RI.1 "Key Ideas and Confirming Details Create a main idea statement and provide an accurate summary, clarifying the relationships among the key details and ideas or events..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the central claim, circle details that support it, and write 1, 2, or 3 in the margin to show whether each paragraph introduces the claim, develops the reasoning, or examines a limit.

Can Bright Roofs Cool Cities?

1. On hot summer days, dark roofs can reach temperatures far above the air. Because cities contain many roofs and paved surfaces, they often stay warmer at night than nearby rural areas. Some city planners argue that replacing dark roofing with reflective, or "cool," roofs can reduce this urban heat island effect. Their central claim is not that one roof will cool an entire city. Instead, they say that widespread use of reflective roofs can lower building temperatures and help reduce heat stored across a neighborhood.

2. Planners support this claim with measurements from individual buildings. A reflective roof absorbs less sunlight than a dark roof, so less heat moves into the building below. That change can lower a building's need for air conditioning during sunny weather, which also means air conditioners release less waste heat outdoors. Researchers can compare roof-surface temperatures, indoor temperatures, and energy use before and after a roof is changed. These comparisons explain a chain of effects, from sunlight reflected at the roof to less heat entering buildings and, potentially, less heat added to city streets.

3. However, the argument needs more than evidence from a few buildings. A neighborhood may have roofs of different sizes, materials, and conditions, and trees or tall buildings may shade some roofs. Cool roofs can also be less helpful in cold climates, where a roof that reflects winter sunlight may slightly increase heating needs. For this reason, planners should gather results from several neighborhoods and across seasons. The evidence in the passage strongly supports lower heat entering a treated building, but it only suggests, rather than proves, that a whole neighborhood will become cooler.

2 ANSWER WITH EVIDENCE

Use the passage

1. Write a main idea statement that summarizes the author's claim and its limit.

2. How does the author develop the argument across the three paragraphs?

3. What chain of effects connects a reflective roof to less heat added to city streets?

4. Which part of the claim is strongly supported by the evidence in the passage, and what additional evidence is needed to support the larger claim?

3 YOUR TURN

Your own words

Imagine your school is deciding whether to install a reflective roof on one building. Write a three-sentence recommendation that states a claim, uses two relevant details from the passage, and names one piece of additional evidence the school should collect.

ANSWER KEY

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GRADE 8 · 8.RI.1

PART 1 · READ AND MARK

Underline the central claim, circle details that support it, and write 1, 2, or 3 in the margin to show whether each paragraph introduces the claim, develops the reasoning, or examines a limit. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Write a main idea statement that summarizes the author's claim and its limit.	**Reflective roofs can reduce heat entering individual buildings and may help cool neighborhoods, but more evidence is needed to prove a neighborhood-wide effect.**
2	How does the author develop the argument across the three paragraphs?	**The author introduces the planners' claim, explains the cause-and-effect reasoning and building evidence, then identifies limits and calls for broader evidence.**
3	What chain of effects connects a reflective roof to less heat added to city streets?	**A reflective roof absorbs less sunlight, so less heat enters the building. The building may need less air conditioning, so air conditioners release less waste heat outdoors.**
4	Which part of the claim is strongly supported by the evidence in the passage, and what additional evidence is needed to support the larger claim?	**The evidence strongly supports that a treated building receives less heat. To support the neighborhood claim, planners need results from several neighborhoods and across seasons.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I recommend installing a reflective roof on the gym, where air-conditioning costs are high. Because reflective roofs absorb less sunlight and can reduce heat moving into a building, the gym may need less cooling on sunny days. Before expanding the project, the school should compare the gym's energy use and indoor temperature before and after installation.

Accept main idea statements that include both the possible benefit of reflective roofs and the limit of the evidence. For the open task, check for exactly three sentences, a clear recommendation, two accurate passage-based details, and a relevant additional measure or comparison.