# Roof Claims Under Review

Trace evidence, limits, and missing information in a technical account.

**CCSS.ELA-Literacy.RST.11-12.1** "Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Underline claims about what cool roofs can do, circle the evidence or conditions that limit each claim, and write 1 and 2 beside two gaps in the account. These marks will help you separate supported conclusions from broader claims the text does not fully prove.

### What a Cool Roof Can Show

(1) Cities often paint flat roofs white or cover them with reflective materials, a practice called cool roofing. On sunny days, a dark roof can absorb much more solar energy than a reflective roof, so its surface becomes hotter. Researchers measure this difference with surface thermometers or infrared sensors. A cooler roof surface can reduce the heat that moves into the building below, especially when the roof has limited insulation. However, surface temperature is not the same as indoor air temperature. Indoor conditions also depend on insulation, air leaks, windows, shade, occupancy, and air conditioning.

(2) Field measurements support the claim that reflective roofs lower roof-surface temperatures. In one common design, researchers compare matched sections of the same roof, leaving one dark and making the other reflective. The comparison controls for local weather because both sections receive the same sunlight and wind. Yet the results do not prove that every building will save the same amount of electricity. A heavily insulated building may already admit little roof heat, while a poorly insulated building may benefit more. In winter, a reflective roof can also absorb less solar warmth, which may increase heating demand in cold climates.

(3) Reports sometimes describe cool roofs as a way to lower a city's heat burden. That description needs care. A roof's surface can be far cooler than the surrounding air without noticeably changing the temperature on nearby streets. Citywide effects depend on how many roofs are converted, the materials used, building height, vegetation, and local weather. Studies that compare roof sections are useful for a building-level question, but they cannot by themselves show a citywide temperature change. Long-term results also remain incomplete: reflective coatings can weather, collect dirt, or be replaced, altering their reflectance over time.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. Quote the sentence that distinguishes a cooler roof surface from a cooler indoor space. What factors does the author name that can also affect indoor conditions?

2. How does comparing matched sections of one roof strengthen the evidence? Cite the detail that explains this, then state the conclusion the author says the comparison cannot prove.

3. What distinction does the author make between heavily insulated and poorly insulated buildings? Use a detail from the passage to explain why this distinction matters for a cool-roof claim.

4. Identify two gaps in the evidence about citywide or long-term effects. Cite the text to support each gap.

## 3 YOUR TURN

Your own words

Write a three-sentence recommendation for a school considering a reflective roof. Cite two exact details from the passage, and in your third sentence identify one distinction or evidence gap the school should consider before making a final decision.

ANSWER KEY

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HIGH SCHOOL · RST.11-12.1

## PART 1 · READ AND MARK

Underline claims about what cool roofs can do, circle the evidence or conditions that limit each claim, and write 1 and 2 beside two gaps in the account. These marks will help you separate supported conclusions from broader claims the text does not fully prove. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | Quote the sentence that distinguishes a cooler roof surface from a cooler indoor space. What factors does the author name that can also affect indoor conditions? | **"However, surface temperature is not the same as indoor air temperature." The factors are insulation, air leaks, windows, shade, occupancy, and air conditioning.** |
| 2 | How does comparing matched sections of one roof strengthen the evidence? Cite the detail that explains this, then state the conclusion the author says the comparison cannot prove. | **Because both sections receive "the same sunlight and wind," the comparison controls for local weather. It cannot prove that every building will save the same amount of electricity.** |
| 3 | What distinction does the author make between heavily insulated and poorly insulated buildings? Use a detail from the passage to explain why this distinction matters for a cool-roof claim. | **A heavily insulated building may already admit little roof heat, while a poorly insulated building may benefit more. Therefore, reflective roofs may not reduce energy use by the same amount in every building.** |
| 4 | Identify two gaps in the evidence about citywide or long-term effects. Cite the text to support each gap. | **Roof-section studies "cannot by themselves show a citywide temperature change." Long-term results are incomplete because coatings can weather, collect dirt, or be replaced, altering reflectance over time.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

The school should test a reflective roof section because matched sections receive "the same sunlight and wind," and field measurements support lower roof-surface temperatures. It should not predict a fixed electricity saving, because a heavily insulated building may "admit little roof heat." Before a full installation, the school should seek local long-term data because coatings can weather or collect dirt, altering reflectance.

Accept accurately quoted or clearly paraphrased evidence that supports the stated analysis. For the open task, require three sentences, two passage details, and a valid distinction or gap rather than an unsupported general claim.