Tracking Cooler Roofs

Use exact details to support an analysis of a science text.

CCSS.ELA-Literacy.RST.6-8.1 "Cite specific textual evidence to support analysis of science and technical texts."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline three details that could support a claim about how cool roofs affect buildings or city heat. In the margin, number them 1, 2, and 3 so you can cite them in your answers.

Can Roofs Cool a City?

(1) On a sunny day, a dark roof can become much hotter than the air around it. Dark materials absorb a large share of the Sun's energy, while light-colored surfaces reflect more sunlight. This difference matters in cities, where roofs cover broad areas. When many roofs store heat, the air near buildings can stay warmer, especially after sunset. Scientists call this pattern part of the urban heat island effect. Researchers study roof temperatures to learn which building choices may reduce heat.

(2) One tested option is a cool roof, which uses a coating or material designed to reflect sunlight and release absorbed heat. In one U.S. Department of Energy summary, a conventional dark roof may reach 150°F or more in summer sun. Under the same conditions, a reflective roof can stay more than 50°F cooler. A cooler roof transfers less heat into the building below. As a result, air-conditioning systems may run less often, lowering electricity use during hot weather.

(3) Cool roofs do not solve every heat problem by themselves. Their benefits depend on local climate, roof condition, and the building's design. In a cold climate, a roof that reflects winter sunlight might slightly increase heating needs. Roof coatings also need maintenance, and their reflectiveness can decrease as dirt collects. Still, cities such as Los Angeles have adopted rules requiring many new or replaced residential roofs to meet cool-roof standards. The rules aim to lower building energy demand and reduce neighborhood heat.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why might an area with many dark roofs stay warmer after sunset? Cite two specific details from the first paragraph.

2. What claim can you make about how cool roofs may affect electricity use in hot weather? Cite two details that support your claim.

3. What is one reason cool roofs may not have the same benefit in every place? Cite evidence from the passage.

4. What conclusion about Los Angeles's view of cool roofs is supported by its roof rules? Cite the evidence that supports your conclusion.

3 YOUR TURN

Your own words

Write a three- or four-sentence recommendation about whether cities should use cool roofs as part of a plan to reduce heat. State your claim, cite two different details from the passage, explain how the details support your claim, and include one limitation.

ANSWER KEY

Tracking Cooler Roofs

GRADE 7 · RST.6-8.1

PART 1 · READ AND MARK

Underline three details that could support a claim about how cool roofs affect buildings or city heat. In the margin, number them 1, 2, and 3 so you can cite them in your answers. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why might an area with many dark roofs stay warmer after sunset? Cite two specific details from the first paragraph.	**Dark materials absorb much of the Sun's energy, and when many roofs store heat, the air near buildings can stay warmer after sunset.**
2	What claim can you make about how cool roofs may affect electricity use in hot weather? Cite two details that support your claim.	**Cool roofs may lower electricity use because reflective roofs can stay more than 50°F cooler than dark roofs and transfer less heat into the building, so air-conditioning may run less often.**
3	What is one reason cool roofs may not have the same benefit in every place? Cite evidence from the passage.	**Benefits can vary by climate. In a cold climate, reflecting winter sunlight might slightly increase heating needs.**
4	What conclusion about Los Angeles's view of cool roofs is supported by its roof rules? Cite the evidence that supports your conclusion.	**Los Angeles views cool roofs as a useful way to reduce energy demand and neighborhood heat. The passage says the city requires many new or replaced residential roofs to meet cool-roof standards and that the rules aim to lower energy demand and reduce neighborhood heat.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Cities should use cool roofs as one part of a heat-reduction plan. The passage says that reflective roofs can stay more than 50°F cooler than dark roofs and transfer less heat into buildings, so they can reduce air-conditioning use. However, coatings need maintenance and can become less reflective when dirt collects, so cities should plan for upkeep.

Accept claims that are supported by accurate, specific details from the passage, not just general statements about roofs. For the open response, check for a clear recommendation, two cited details with explanations, and a limitation.