Roof Research

Use focused questions to find claims and evidence.

7.6.R.1 "Students will find and comprehend information (e.g., claims, evidence) about a topic, using their own viable research questions."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB As you read, underline a claim about cool roofs, circle evidence that could help test it, and number two details that might limit the claim.

Would a Cool Roof Help?

1. On a hot afternoon, two roofs can feel very different. A dark roof absorbs much of the sunlight that hits it. A light-colored roof reflects more sunlight, so its surface usually stays cooler. This is the idea behind a cool roof. The U.S. Department of Energy reports that cool roofs can lower a building's need for air conditioning. That claim does not mean every building saves the same amount of energy. Roof material, insulation, climate, and shade all affect the result.

2. To study one building, researchers could compare its electricity use before and after a roof change, while noting changes in weather. A fair comparison would include similar hot days, because a mild summer can lower cooling use even without a new roof. Surface temperature readings offer different evidence: they show whether a roof gets cooler, but they do not directly show an electricity bill shrinking. Electricity records paired with daily weather notes would help test a claim about energy savings for that building.

3. Cool roofs have limits. In cold places, reflecting winter sunlight can increase heating needs, although the effect depends on the building and climate. A roof also needs to suit its building: a reflective coating that works on one roof may not suit another roof's material or condition. Trees can shade a roof and reduce the sunlight it receives, changing how much a reflective surface helps. Before recommending cool roofs for a neighborhood, a reader should ask what season, type of building, and kind of cost a source measures.

2 ANSWER WITH EVIDENCE

Use the passage

1. Suppose your research question is, “Does a cool roof lower a building's summer electricity use?” Which two types of records would help you test it, and why do you need both?

2. For the question “Do light-colored roofs usually have cooler surfaces than dark roofs?”, what information in the passage suggests an answer?

3. A reader asks, “Does a cooler roof always mean a lower electricity bill?” Find a detail that helps answer this question and explain what it means.

4. For the question “Would a cool roof reduce a building's total energy use in a cold climate?”, which detail raises a concern? Explain the concern.

3 YOUR TURN

Your own words

Choose a building other than a school and write a focused research question about whether a cool roof would help it. Use two different details from the passage to explain why the question is worth asking, then name one piece of information you would still need.

ANSWER KEY

Roof Research

GRADE 7 · 7.6.R.1

PART 1 · READ AND MARK

As you read, underline a claim about cool roofs, circle evidence that could help test it, and number two details that might limit the claim. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Suppose your research question is, "Does a cool roof lower a building's summer electricity use?" Which two types of records would help you test it, and why do you need both?	**Compare electricity records from before and after the roof change, along with weather records. Weather records help show whether a change in electricity use might be due to different temperatures.**
2	For the question "Do light-colored roofs usually have cooler surfaces than dark roofs?", what information in the passage suggests an answer?	**Light-colored roofs reflect more sunlight, while dark roofs absorb more, so light-colored roof surfaces usually stay cooler.**
3	A reader asks, "Does a cooler roof always mean a lower electricity bill?" Find a detail that helps answer this question and explain what it means.	**Surface temperature readings can show that a roof is cooler, but they do not directly show that an electricity bill has decreased.**
4	For the question "Would a cool roof reduce a building's total energy use in a cold climate?", which detail raises a concern? Explain the concern.	**Reflecting winter sunlight can increase heating needs. That increase could affect total energy use, so summer cooling savings alone cannot answer the question.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Would a cool roof reduce summer cooling use at a sunny grocery store? The passage says light-colored roofs reflect more sunlight, but insulation affects energy savings. I would need to find out how much insulation the store already has.

Accept other passage details when students explain how they help answer the stated research question. For the open task, look for a focused question about a specific building, two relevant passage details, and one additional piece of information needed.