Cooling Claim Check

Use research and prior knowledge to test a city cooling idea.

8.T.RA.1.c "Draw from accumulated knowledge and research to analyze texts, supporting, challenging, or extending ideas and information. (C)"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the central expectation about reflective pavement. Circle two details that support, challenge, or limit that expectation, then number the detail that tells what research should happen next.

Can Reflective Pavement Cool a City?

1. On hot summer days, dark pavement can become much hotter than the air. Phoenix has tested a program that coats some streets with a light-colored material meant to reflect sunlight. Supporters expected cooler surfaces to make nearby neighborhoods safer. The idea comes from a well-known fact: light surfaces usually absorb less solar energy than dark ones. Yet a cooler surface does not automatically mean cooler air, because heat can move through wind, buildings, and pavement in different ways.

2. Researchers studying Phoenix compared air temperatures above coated streets with temperatures above ordinary asphalt. One peer-reviewed study found that the coating lowered surface temperatures during the day, but it did not show a clear reduction in air temperature at the height where people walk. At night, coated pavement sometimes remained warmer than uncoated pavement. This result challenges the simple claim that reflective pavement always cools a neighborhood. It also shows why a study's measurement, such as surface temperature or nighttime air temperature, matters when people interpret its results.

3. City leaders can use this research with other knowledge before deciding where to use reflective coatings. Trees provide shade and cool areas through evaporation, while building insulation can reduce indoor heat. A city might prioritize trees on sidewalks where residents wait for buses and test coatings on streets that receive intense sun. Before expanding either approach, leaders should collect local daytime and nighttime data, including air temperature and surface temperature. They should also ask residents whether the changes improve comfort, since instruments alone cannot measure every effect on daily life.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the Phoenix study challenge the expectation that reflective pavement will cool a neighborhood? Use two results from the study.

2. What prior knowledge supports the idea of testing light-colored pavement? Explain how that knowledge connects to the city's plan.

3. Why is surface temperature alone not enough evidence to decide whether a coating makes people safer or more comfortable?

4. What evidence should city leaders collect before expanding a cooling approach, and how would that evidence extend the Phoenix research?

3 YOUR TURN

Your own words

Choose one heat-reduction idea for your school, such as shade sails, trees, or a light-colored roof. Write exactly four sentences that state a claim, use one fact from the passage, describe research that could support or challenge your claim, and explain what leaders could do next based on the results.

ANSWER KEY

Cooling Claim Check

GRADE 8 · 8.T.RA.1.c

PART 1 · READ AND MARK

Underline the central expectation about reflective pavement. Circle two details that support, challenge, or limit that expectation, then number the detail that tells what research should happen next. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the Phoenix study challenge the expectation that reflective pavement will cool a neighborhood? Use two results from the study.	**It lowered surface temperatures during the day, but it did not clearly lower air temperature where people walk. Coated pavement was sometimes warmer than uncoated pavement at night.**
2	What prior knowledge supports the idea of testing light-colored pavement? Explain how that knowledge connects to the city's plan.	**Light surfaces usually absorb less solar energy than dark surfaces. This supports testing a light-colored coating because it may keep pavement surfaces cooler.**
3	Why is surface temperature alone not enough evidence to decide whether a coating makes people safer or more comfortable?	**A cooler surface does not necessarily mean cooler air where people walk, and nighttime conditions may be different. The passage also says resident comfort should be considered.**
4	What evidence should city leaders collect before expanding a cooling approach, and how would that evidence extend the Phoenix research?	**They should collect local daytime and nighttime air and surface temperatures and ask residents about comfort. This would test the approach in local conditions and add information about people's experiences.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Our school should add shade sails over the blacktop where students wait after school. The passage says that shade can cool areas, so the sails may lower heat exposure there. Before buying more sails, the school should compare air and surface temperatures in shaded and unshaded waiting areas during afternoon dismissal. If temperatures or student comfort do not improve, leaders could try trees or change the sails' location instead.

Accept responses that accurately connect a claim to relevant knowledge from the passage and propose evidence that could support or challenge the claim. For Part 3, accept different school ideas when the response has exactly four sentences and includes all required elements.