

Heat, Shade, Solutions

Study how a model explanation organizes causes, effects, and connected solutions.

CCSS.ELA-Literacy.W.9-10.2 "Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the main idea sentence in each paragraph. Then circle two precise details in each paragraph that explain a cause, effect, benefit, or limitation, showing how the writer develops the explanation.

Designing Cooler Cities

- ① City design can make urban neighborhoods several degrees hotter than nearby parks on summer afternoons. This difference, called the urban heat island effect, develops when dark roofs, pavement, and buildings absorb sunlight and release heat slowly. Trees and soil, by contrast, provide shade and cool the air as water evaporates from leaves. Heat islands matter because high temperatures can worsen air pollution, raise electricity use, and increase health risks during heat waves. The effect is not caused by cities alone. It results from particular materials and limited vegetation, which means city design can either intensify or reduce the problem.
- ② One response is a cool roof, a roof covered with a light-colored or specially coated surface that reflects more sunlight than conventional dark roofing. Reflecting sunlight keeps the roof surface cooler, so less heat moves into the building below. As a result, air-conditioning systems may run less often, reducing energy demand and indoor heat. Cool roofs are especially useful on large, low-slope buildings, such as warehouses and schools, where the roof covers a broad area. However, a cool roof does not cool sidewalks or add shade for pedestrians. For that reason, it works best as one part of a larger heat-reduction plan.
- ③ Cities also use trees to address heat, but trees operate differently from reflective roofs. A tree canopy blocks solar radiation before it reaches pavement, walls, or people. In addition, leaves release water vapor, a process that cools surrounding air. These benefits can make walking and waiting for buses safer during hot weather. Planting trees requires planning, though. Young trees need water and care, and crowded underground pipes or narrow sidewalks can limit planting sites. Therefore, city planners often combine strategies: they install cool roofs to lower building heat, preserve mature trees for shade, and select new planting locations where roots and branches have room to grow.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How does the first paragraph organize information to explain the urban heat island effect?

2 What cause-and-effect chain does the author use to explain how a cool roof can reduce energy demand?

3 Why does the author include the limitation that cool roofs do not cool sidewalks or provide shade?

4 How does the third paragraph distinguish tree planting from cool roofs while still connecting the two solutions?

3 YOUR TURN _____ Your own words

Write a 130 to 170 word informative explanation of how a school could reduce cafeteria food waste. Begin with a clear main idea, explain a process or cause-and-effect relationship using at least three specific details, include one limitation or condition, and end by explaining why the strategy should be combined with another action.

PART 1 • READ AND MARK

Underline the main idea sentence in each paragraph. Then circle two precise details in each paragraph that explain a cause, effect, benefit, or limitation, showing how the writer develops the explanation. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How does the first paragraph organize information to explain the urban heat island effect?	It begins with a city-to-park comparison, names and explains the effect, contrasts vegetation, gives consequences, and concludes that design choices can change the problem.
2	What cause-and-effect chain does the author use to explain how a cool roof can reduce energy demand?	A cool roof reflects more sunlight, which keeps the roof cooler and moves less heat into the building, so air-conditioning may run less often.
3	Why does the author include the limitation that cool roofs do not cool sidewalks or provide shade?	The limitation shows that cool roofs cannot solve every heat-related problem and supports the claim that they should be part of a larger plan.
4	How does the third paragraph distinguish tree planting from cool roofs while still connecting the two solutions?	It explains that trees block sunlight and cool air through water vapor, notes planting limits, and concludes that planners should combine trees with cool roofs.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Schools can reduce cafeteria food waste by measuring what students discard and using the results to adjust meals. For one week, staff can weigh unopened packaged items, whole fruit, and untouched entrees separately after each lunch period. This record shows whether waste comes from portion size, unpopular menu choices, or a lunch schedule that leaves too little time to eat. A share table can then allow students to leave unopened milk, fruit, or packaged snacks for other students, following local food-safety rules. The plan has a limit: it cannot redistribute food that has been opened or served on a student's tray. Therefore, tracking waste should be paired with surveys that ask students why they skip certain foods. Together, the data and surveys can help the cafeteria order and prepare food more carefully.

Accept equivalent descriptions of the passage's organization, evidence, and reasoning when they accurately connect details to the writer's explanation. For the open response, look for a focused main idea, logical organization, specific relevant details, an explained limitation, and a concluding connection between strategies.