

Heat Map Detectives

Combine details to explain how city heat forms and how communities can respond.

6.5.H "synthesize information to create new understanding; and"

NAME _____ DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline details that explain causes of city heat, circle details that show its effects, and number three solution details. Use your marks to connect ideas across the passage.

Why Some City Places Feel Hotter

- ① On a sunny afternoon, a city block can be much warmer than a nearby park. Scientists call this pattern an urban heat island. Dark roofs and asphalt streets absorb sunlight, then release heat slowly after sunset. Buildings can also block breezes that would carry warm air away. In the park, grass, trees, and soil shade the ground and release water vapor, which helps cool the air. These differences explain why temperatures can vary across one neighborhood on the same day.
- ② Heat affects more than comfort. When nighttime temperatures stay high, people's bodies have less time to cool down, especially during a heat wave. Hot pavement and roofs can make nearby homes need more air-conditioning. As electricity use rises, power plants may burn more fuel, depending on the energy source. Higher temperatures can also speed up the formation of ground-level ozone, a pollutant that can irritate lungs. Thus, a hotter block can connect to health, energy use, and air quality.
- ③ Cities can lower local temperatures by combining several choices. Planting and protecting trees adds shade, while parks and rain gardens provide cooler surfaces than pavement. Light-colored, or reflective, roofs absorb less solar energy than dark roofs. Some cities use lighter paving materials or replace unused pavement with planted areas. These steps work in different places, so city planners study maps of surface temperature, tree cover, and residents who may face the greatest risk. Together, the evidence helps planners choose solutions that improve both comfort and health.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Use details from paragraphs 1 and 2. How can a dark, paved block lead to greater electricity use?

2 What conclusion can you draw about why a nearby park and a city block can have different temperatures on the same afternoon?

3 Why would planners study both tree-cover maps and maps showing residents who may face the greatest risk before choosing a solution?

4 Name two solutions from paragraph 3 that could work together in an area with large unused paved lots. Explain how they address a cause of heat from paragraph 1.

3 YOUR TURN _____ Your own words

Imagine your school has a hot paved courtyard. Write exactly three sentences that recommend two changes, explain how each change would reduce heat, and state one benefit for people at the school.

PART 1 • READ AND MARK

Underline details that explain causes of city heat, circle details that show its effects, and number three solution details. Use your marks to connect ideas across the passage. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Use details from paragraphs 1 and 2. How can a dark, paved block lead to greater electricity use?	Dark pavement and roofs absorb and hold heat, making nearby homes hotter. Residents may use more air-conditioning, which increases electricity use.
2	What conclusion can you draw about why a nearby park and a city block can have different temperatures on the same afternoon?	The park has trees, grass, and soil that provide shade and cooling, while the city block has dark surfaces and buildings that trap and release heat.
3	Why would planners study both tree-cover maps and maps showing residents who may face the greatest risk before choosing a solution?	The maps help planners find hot areas with little shade and identify people who may need protection most, so solutions can improve health as well as comfort.
4	Name two solutions from paragraph 3 that could work together in an area with large unused paved lots. Explain how they address a cause of heat from paragraph 1.	Plant trees and replace unused pavement with planted areas. Trees shade the ground, and planted areas replace dark pavement that absorbs and releases heat.

PART 3 • YOUR TURN (SAMPLE ANSWER)

To cool our school courtyard, we should plant shade trees and replace an unused paved section with a rain garden. The trees would shade the ground, and the rain garden would replace a heat-absorbing hard surface with cooler plants and soil. These changes could make students more comfortable during hot weather.

Accept responses that connect at least two details to form a supported explanation, rather than listing isolated facts. For the open task, accept any two passage-based changes with accurate cause-and-effect reasoning and one clear benefit.