Unequal Heat

Trace how a heat wave affects neighborhoods differently

ES.9.a "Communicate scientific information about how environmental change may disproportionately impact people in certain socioeconomic groups or geographic locations."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two neighborhood features that increase heat exposure in East Flats, and circle two details about residents' access to cooling or daily travel. Number the steps in one cause-and-effect chain that links heat to a health risk.

One City, Different Heat Risks

1. On a hot July evening, the air in East Flats stays warm after sunset. Asphalt parking lots and dark roofs absorbed sunlight all day and now release heat. Across the same city, Hill Park has more trees, which shade pavement and cool the air as water evaporates from leaves. As heat waves become more frequent and intense with climate change, both neighborhoods face higher temperatures, but their surroundings can make exposure unequal. A heat wave does not strike every block in the same way. Temperature readings taken at the same time in both places could show how much local conditions differ.

2. Many East Flats residents rent older apartments without efficient cooling. Some households cannot afford the electricity needed to run an air conditioner for hours, even when one is installed. Hill Park households generally have higher incomes and more reliable home cooling. Heat can strain the heart and make it harder for the body to cool itself, especially during warm nights. A person who cannot cool their home has less time to recover between hot days, increasing the risk of heat illness. Income and housing conditions can therefore change how much harm the same heat wave causes.

3. Location and work schedules add another layer. East Flats has a large bus stop with little shade, and many residents travel by bus to jobs that require them to be outside. Waiting on hot pavement and working in direct sun extend exposure beyond the home. A city cooling center could help, but a center that closes before evening shifts end may miss the people who need it. Keeping it open later and placing one near bus routes could reduce risk. Comparing heat illness rates, shade, and access to cooling could reveal which residents face the greatest risk.

2 ANSWER WITH EVIDENCE

Use the passage

1. How could the surroundings in East Flats cause greater heat exposure than the surroundings in Hill Park?

2. Why might a household in East Flats face a higher risk of heat illness even if it has an air conditioner?

3. Why could a cooling center that closes before evening shifts end fail to protect some East Flats residents? Explain how one change described in the passage could help.

4. A resident says, "Everyone in the city faces the same risk because the heat wave covers the whole city." Use two different details from the passage to explain why this claim is incomplete.

3 YOUR TURN

Your own words

Imagine longer dry seasons reduce stream flow in a mountain region. One town has a large water storage system, while a remote settlement depends on a small stream with no backup supply. Write 4 to 5 sentences explaining which place faces greater risk, tracing the cause and effect, and naming one piece of evidence that could test your claim.

Unequal Heat

PART 1 · READ AND MARK

Underline two neighborhood features that increase heat exposure in East Flats, and circle two details about residents' access to cooling or daily travel. Number the steps in one cause-and-effect chain that links heat to a health risk. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How could the surroundings in East Flats cause greater heat exposure than the surroundings in Hill Park?	**East Flats has asphalt lots and dark roofs that release stored heat after sunset, while Hill Park's trees shade pavement and help cool the air.**
2	Why might a household in East Flats face a higher risk of heat illness even if it has an air conditioner?	**The household may be unable to afford the electricity to run it for hours. Without enough cooling, residents have less time to recover between hot days.**
3	Why could a cooling center that closes before evening shifts end fail to protect some East Flats residents? Explain how one change described in the passage could help.	**Residents working evening shifts may arrive after it closes. Later hours would give them access to a cool place after work.**
4	A resident says, "Everyone in the city faces the same risk because the heat wave covers the whole city." Use two different details from the passage to explain why this claim is incomplete.	**East Flats has surfaces that hold heat after sunset, while Hill Park has cooling shade from trees. East Flats residents may also lack affordable home cooling, so exposure and the ability to recover differ.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The remote settlement likely faces a greater risk of water shortages during longer dry seasons. Less water flowing in its only stream could leave too little for daily use. The town can draw on stored water when stream flow falls. Comparing the number of days each place lacks enough water would help test this claim.

Accept other accurate cause-and-effect explanations grounded in the passage. For the open task, accept evidence such as water supply records or stream-flow measurements if the student explains how it would test the difference in risk.