

Hotter City Blocks

Use credible sources to explain urban heat and ways to reduce it.

7.W.1.B "Write expository texts to examine a topic or concept that develops the focus with relevant facts, definitions, concrete details, or other information from multiple credible sources, using structures and patterns (e.g., description..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Read the three source summaries. Circle each agency name in a source heading. Underline one concrete fact in each summary. In Source A, bracket one cause and its effect; label them C and E in the margin. No outside research is needed.

Urban Heat: A Source Packet

Source A: NASA - What Is an Urban Heat Island?

Summary: An urban heat island occurs when a city is warmer than nearby rural land. Dark paving and roofing absorb sunlight and warm up. NASA uses satellites to observe vegetation and surface temperatures, helping scientists locate hot areas. These are measurements of surfaces, not the air-temperature readings in a weather forecast.

Read more: science.nasa.gov/kids/earth/what-is-an-urban-heat-island/; surface-temperature distinction: science.nasa.gov/earth/earth-observatory/global-maps/land-surface-temperature-vegetation/

Source B: U.S. Environmental Protection Agency (EPA) - Benefits of Trees and Vegetation

Summary: Trees shade the ground by blocking sunlight. Plants and nearby soil also release water as vapor; this process, called evapotranspiration, uses heat and helps cool their surroundings. Trees and other vegetation can therefore reduce both surface and nearby air temperatures.

Read more: epa.gov/heatislands/benefits-trees-and-vegetation

Source C: EPA - Using Cool Roofs to Reduce Heat Islands

Summary: A cool roof reflects more sunlight and transfers less heat into a building than a conventional roof. This can reduce the building's need for air conditioning. Results and costs depend on the roof and local conditions. Some reflective roofs need cleaning to keep working well.

Read more: epa.gov/heatislands/using-cool-roofs-reduce-heat-islands

2 ANSWER WITH EVIDENCE _____ Use the passage

- 1** Use Source A to explain one cause-and-effect relationship. What kind of temperature do the satellites observe?

- 2** How do Sources B and C each address the heating process in Source A? Explain the different mechanisms.

- 3** Why are NASA and EPA relevant sources for this explanation? Use their work described in the packet.

- 4** Evaluate this draft claim: "A cool roof will shade every sidewalk and make every city equally cool." Correct both overstatements using the packet.

3 YOUR TURN

Your own words

Write a two-paragraph explanation for a school newsletter: why can city blocks get hot, and how can communities reduce that heat? Use the supplied summaries. Name NASA and EPA and use accurate details from at least two sources. Develop a clear focus, explain cause and effect, then connect the problem to solutions. Use your own words and avoid promises the sources cannot support.

Plan your explanation

State your focus. Record a useful detail with its source label, then a detail from another source and the relationship you will explain.

Paragraph 1: Explain the problem

Develop the focus with a definition and a cause-and-effect explanation. Name the source of your supporting information.

Paragraph 2: Explain responses

Use a transition to connect solutions to the heating problem. Explain how the solutions work, name your source and include a relevant limitation. Check both paragraphs against your plan.

PART 1 • READ AND MARK

Read the three source summaries. Circle each agency name in a source heading. Underline one concrete fact in each summary. In Source A, bracket one cause and its effect; label them C and E in the margin. No outside research is needed. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Use Source A to explain one cause-and-effect relationship. What kind of temperature do the satellites observe?	Dark paving and roofing absorb sunlight, which warms their surfaces. The satellites observe surface temperature; this is different from air temperature.
2	How do Sources B and C each address the heating process in Source A? Explain the different mechanisms.	Trees block sunlight and evapotranspiration uses heat to cool surroundings. Cool roofs reflect more sunlight so less heat enters the building.
3	Why are NASA and EPA relevant sources for this explanation? Use their work described in the packet.	NASA observes vegetation and surface temperatures to locate hot areas. EPA explains how trees and roof materials reduce heating. These agencies provide relevant scientific observations and explanations.
4	Evaluate this draft claim: "A cool roof will shade every sidewalk and make every city equally cool." Correct both overstatements using the packet.	A cool roof reduces heat entering a building; the packet identifies trees as a source of ground shade. Roof results depend on local conditions, so equal cooling everywhere is not supported.

PART 3 · YOUR TURN (SAMPLE ANSWER)

Possible planning notes

Focus: materials and plants affect heat on city blocks. A: dark paving warms in sunlight. B: shade and evapotranspiration cool surroundings. C: reflective roofing reduces heat entering a building.

Relationship: each response changes how heat builds up.

Model paragraph 1

A city can be warmer than nearby rural land, a difference called an urban heat island. NASA explains that dark paving and roofing warm as they absorb sunlight. The agency observes surface temperatures to help locate hot areas. This means that the materials covering a block help explain its heat; surface readings should not be confused with weather-forecast air temperatures.

Model paragraph 2

To address that heating, communities can change how sunlight reaches surfaces. EPA explains that trees provide shade and that evapotranspiration helps cool their surroundings. The agency also describes reflective roofs, which let less heat enter buildings and can reduce air-conditioning demand. These approaches address different parts of a block. They do not promise identical results everywhere: roof performance depends on local conditions, and some roofs need cleaning.

TEACHER ASSESSMENT NOTES

Annotation examples: circle NASA and EPA in the headings; underline a concrete process or limitation in each summary. In A, C can mark dark materials absorbing sunlight and E can mark warming. Accept equivalent accurate choices. The model develops one focus across two actual paragraphs with cause-effect and problem-solution relationships. Assess accurate paraphrase, named NASA/EPA sources, relevant details and a qualified explanation; no word count is required.