Shade by Satellite

Use geographic data to find patterns and make predictions.

7.C.1.2 "Reinforce geographic skills through the routine practice and use of geographic tools (e.g., thematic maps, graphs, charts, satellite imagery, GIS technologies) in order to draw conclusions and make predictions from geographic data."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the two geographic tools named in the passage, circle the values for the block with the least tree cover, and number the blocks in the table from 1 (coolest) to 4 (warmest) to look for a pattern.

A Hot Afternoon Across Town

1 On a hot, cloudless afternoon, a city team studies four blocks that are close together. A satellite measures each block's *land surface temperature*, the heat of roofs, roads, and ground. A tree-cover map estimates how much land lies beneath tree crowns. These tools let the team compare places without assuming the air feels equally hot everywhere.

2 The table brings together two kinds of geographic data for the same four blocks. Each tree-cover percentage shows the share of land beneath tree crowns. Each temperature is an average for that block at the same time. Since the blocks were checked together, changes in weather during the day are less likely to explain differences between them.

FOUR BLOCKS ON THE SAME AFTERNOON

Block	Tree cover (%)	Average land surface temperature (°C)
A	10	40
B	25	37
C	45	33
D	65	30

3 The city can use the data to decide where to investigate planting trees, but the table cannot prove that trees caused every temperature difference. Roof materials and pavement may matter too. A satellite measures surfaces, not the air people breathe. If crews add shade, they should measure the same blocks again on similar afternoons before judging the result.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which two blocks differ most in tree cover? How do their surface temperatures compare?

2. What pattern connects tree cover and surface temperature across all four blocks?

3. A nearby fifth block has 55% tree cover. Using the table, what surface temperature range would you predict for it on a similar afternoon? Explain your choice.

4. A neighbor says the table proves that planting trees will lower air temperature by 10°C. What are two problems with this claim?

3 YOUR TURN

Your own words

Choose one block for a tree-planting trial. In three sentences, use at least two numbers from the table to defend your choice, predict how its surface temperature might change, and describe how to test your prediction.

ANSWER KEY

Shade by Satellite

GRADE 7 · 7.C.1.2

PART 1 · READ AND MARK

Underline the two geographic tools named in the passage, circle the values for the block with the least tree cover, and number the blocks in the table from 1 (coolest) to 4 (warmest) to look for a pattern. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which two blocks differ most in tree cover? How do their surface temperatures compare?	**Blocks A and D differ most in tree cover, 10% versus 65%. Block A is 40°C, which is 10°C warmer than Block D at 30°C.**
2	What pattern connects tree cover and surface temperature across all four blocks?	**As tree cover increases from block to block, average land surface temperature decreases.**
3	A nearby fifth block has 55% tree cover. Using the table, what surface temperature range would you predict for it on a similar afternoon? Explain your choice.	**About 30°C to 33°C. Its 55% tree cover falls between Block C's 45% and Block D's 65%, whose temperatures are 33°C and 30°C.**
4	A neighbor says the table proves that planting trees will lower air temperature by 10°C. What are two problems with this claim?	**The table measures land surfaces, not air temperature. It compares existing blocks and does not prove that planting trees caused their temperature differences.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would start in Block A, which has 10% tree cover and a surface temperature of 40°C, while Block D has 65% cover and is 30°C. If trees raise Block A's cover, I predict its surface temperature might fall, though the table does not show exactly how much. I would compare satellite measurements from Block A before and after planting on similar clear afternoons.

Accept reasonable predictions supported by nearby values in the table. For the planting trial, accept any block if the student uses at least two correct table values, makes a cautious prediction, and describes a comparable follow-up measurement.