Maps That Explain

Interpret how an informational text builds and qualifies an explanation.

9.P.EICC.2.c "Explain and learn concepts and processes by interpreting and constructing texts. (I/C)"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB As you read, number the steps used to construct the heat map. Circle each detail that tells readers how to interpret the map or limits what the map can show.

How a Heat Map Works

1 On a hot afternoon, two blocks in the same city can feel surprisingly different. Pavement, dark roofs, and limited tree cover absorb sunlight and release heat slowly. To study these differences, city planners create heat maps, visual texts that show temperatures across an area with colors. A map does not simply decorate a report. It helps readers interpret a large set of measurements at once. Areas shown in warmer colors may need shade, cooling centers, or changes to building materials. Before planners act, however, they must understand how the map was constructed and what its colors actually represent.

2 First, technicians place sensors at selected locations, such as schoolyards, parking lots, and parks. They record air temperature at the same time of day so that one location is not compared with another under different conditions. Next, a computer combines the readings with satellite images that show surface temperature and land cover. The program estimates temperatures between sensor sites, then assigns color ranges to the results. A legend explains the ranges, for example, which colors indicate relatively cooler or hotter places. This sequence turns separate observations into a text readers can use to compare patterns across the city.

3 Readers should interpret a heat map carefully. A red area on one map is not automatically hotter than every orange area on every other map. The legend and scale must be checked because different maps may use different temperature ranges. Readers should also notice the date, time, and measurement method. A map made during an afternoon heat wave can explain conditions on that day, but it cannot by itself prove that a neighborhood is always hotter. When planners compare several maps from similar times and seasons, they can identify repeated patterns. Then they can combine the maps with residents' experiences before deciding where to plant trees or add shaded bus stops.

2 ANSWER WITH EVIDENCE

Use the passage

1. What two kinds of information are combined to construct the heat map, and what does each kind show?

2. Why do technicians record air temperature at the same time of day at every location?

3. How does the legend help a reader interpret the heat map?

4. Why can one map made during a heat wave not prove that a neighborhood is always hotter? What evidence would be stronger?

3 YOUR TURN

Your own words

Write a 90-110 word informational paragraph explaining how a school could create and use a lunch-waste chart. Include at least three ordered steps, name the information collected, explain one chart feature, and state one limit on the conclusion readers can make.

ANSWER KEY

Maps That Explain

GRADE 9 · 9.P.EICC.2.c

PART 1 · READ AND MARK

As you read, number the steps used to construct the heat map. Circle each detail that tells readers how to interpret the map or limits what the map can show. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What two kinds of information are combined to construct the heat map, and what does each kind show?	**Sensor readings show air temperature. Satellite images show surface temperature and land cover.**
2	Why do technicians record air temperature at the same time of day at every location?	**They do this so locations are not compared under different conditions.**
3	How does the legend help a reader interpret the heat map?	**The legend explains which color ranges represent relatively cooler or hotter places.**
4	Why can one map made during a heat wave not prove that a neighborhood is always hotter? What evidence would be stronger?	**It explains conditions on one day only. Several maps from similar times and seasons could show repeated patterns.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

First, a student team would weigh unopened food, compostable scraps, and trash from each lunch period for five school days. They would record the totals in a table, using the same scale and categories each day. Next, they would create a bar chart with lunch periods along the bottom and pounds of waste along the side. A key would identify each type of waste. Readers could compare bars to find patterns, such as a lunch period that throws away more unopened food. However, one week of data would not prove a permanent pattern, because menus, attendance, and special events can change waste.

Accept responses that accurately explain how the passage constructs and interprets the heat map, using relevant details. For Part 3, accept a clear process, named data, an explained visual feature, and a reasonable limit stated in 90-110 words.