Soil Data Detectives

Read graph features and analyze scientific measurements.

4.1.c.ii "interpreting, analyzing, and evaluating data interpret and analyze data represented in bar graphs and line graphs"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Circle the graph title and each cover label, then underline the sentences that explain how to compare graph data.

Which Cover Warms Soil?

1 Ms. Ortiz's class investigated how different covers affect soil temperature on a sunny day. They placed identical soil cups outside for 30 minutes. One cup had black paper, one had white paper, and one had foil. Then they measured each cup with the same thermometer. Their bar graph records the results.

2 A bar graph compares separate groups. Its title tells what was measured, and its labels name the groups. The numbers along the side show the scale. To compare two bars, read each height using that scale, then find the difference by subtracting. Scientists also consider whether one result is clearly higher or lower.

3 A line graph is useful when measurements are taken in order, such as every ten minutes. Time usually goes across the bottom, and temperature can go up the side. Connected points show change. A rising line means the measured value increased. A flat line means it stayed the same between two measurements.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which cover had the highest soil temperature? Give the temperature.

2. How many degrees Celsius warmer was the soil under black paper than the soil under white paper?

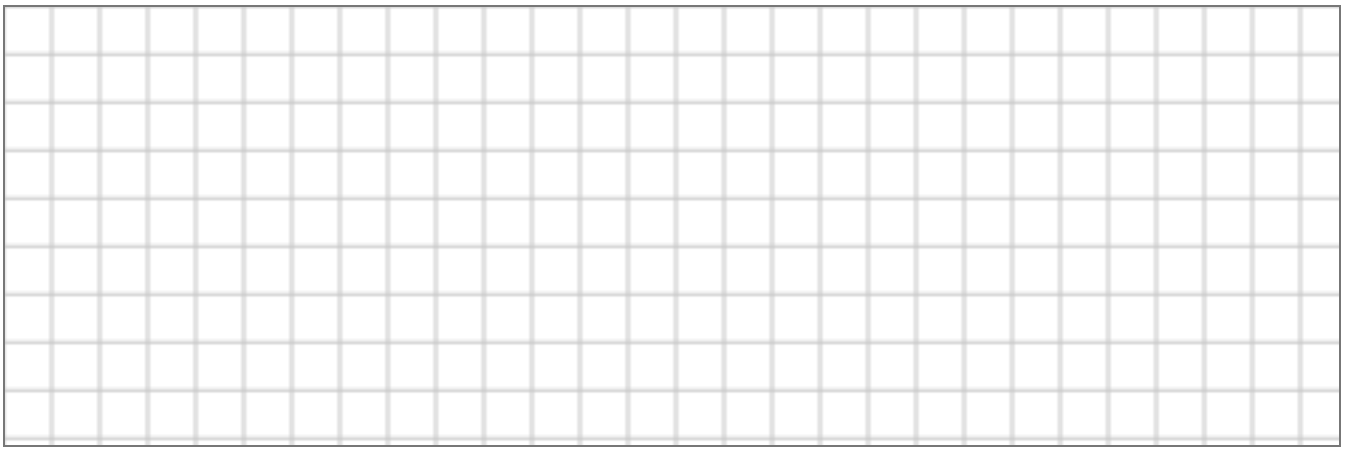
3. Compare the foil and white paper bars. Which cover made the soil warmer, and by how much?

4. If the class measured one soil cup every ten minutes, which type of graph would best show the results? Why?

3 YOUR TURN

Your own words

Make a line graph for a soil cup measured at 0 minutes, 19°C; 10 minutes, 22°C; 20 minutes, 25°C; and 30 minutes, 25°C. Label both axes, connect the points, and write one sentence describing the trend.



ANSWER KEY

Soil Data Detectives

GRADE 4 · 4.1.c.ii

PART 1 · READ AND MARK

Circle the graph title and each cover label, then underline the sentences that explain how to compare graph data. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which cover had the highest soil temperature? Give the temperature.	**Black paper, 31°C.**
2	How many degrees Celsius warmer was the soil under black paper than the soil under white paper?	**6°C warmer.**
3	Compare the foil and white paper bars. Which cover made the soil warmer, and by how much?	**Foil made the soil warmer by 2°C.**
4	If the class measured one soil cup every ten minutes, which type of graph would best show the results? Why?	**A line graph, because it shows how a measurement changes over time.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The x-axis is Time (minutes), the y-axis is Soil temperature (°C), and the plotted points are (0, 19), (10, 22), (20, 25), and (30, 25); the temperature rose for 20 minutes and then stayed the same.

Accept answers that use the graph values and correct subtraction. For the line graph, accept any sensible scale with correctly plotted and connected points, labeled axes, and a sentence stating that the temperature rose and then stayed the same.