Evidence in the Garden

Use data, models, and respectful discussion to support a solution.

8.3 "Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the team's claims and proposed solution, circle the evidence they used, and number each sentence that connects the water-balance model to the conclusion.

Why Did the Beans Wilt?

1. During a hot September, the school garden's bean plants wilted by afternoon. A student team wondered whether dry soil or leaf disease caused the change. They measured soil moisture at noon for six days and counted wilted plants in two raised beds. Bed A received water every morning. Bed B received water only after the soil looked dry. Bed B had lower moisture readings and more wilted plants on five of the six days. The team also inspected leaves for spots and found none.

2. To explain the pattern, the team used a plant water-balance model. Roots absorb water from soil, and leaves lose water through tiny openings during transpiration. When dry soil provides less water than leaves lose, cells lose pressure and leaves droop. The team concluded that low soil moisture was the most likely cause of wilting in Bed B. Their conclusion fit both their measurements and the model. They did not claim that watering was the only possible factor, because temperature and root damage were not tested.

3. At the garden meeting, Jordan proposed watering Bed B each morning for two weeks, then measuring moisture and wilted plants again. Priya disagreed respectfully. She said, "The data support watering, but we should test it fairly. Both beds should have the same kind of bean plants and receive the same amount of sunlight." Jordan revised the plan. The group decided to record water added, soil moisture, wilted plants, and afternoon temperature. They would share a claim, evidence, and reasoning in a short report and listen to questions from classmates.

2 ANSWER WITH EVIDENCE

Use the passage

1. What two observations supported dry soil as a stronger explanation than leaf disease?

2. Use the water-balance model to explain why low soil moisture can make leaves droop.

3. Why did the team avoid claiming that watering was the only possible cause of wilting?

4. How did Priya make the proposed watering test fairer?

3 YOUR TURN

Your own words

Your class tests two windowsill trays of lettuce for 8 days. Tray 1 gets 6 hours of light and has 18 healthy plants. Tray 2 gets 2 hours of light and has 10 healthy plants. Write a 4- to 5-sentence recommendation that states a claim, uses both data points, explains the pattern with a plant-growth idea, proposes a fair next step, and names one factor to keep the same.

ANSWER KEY

Evidence in the Garden

GRADE 8 · TEKS 8.3

PART 1 · READ AND MARK

Underline the team's claims and proposed solution, circle the evidence they used, and number each sentence that connects the water-balance model to the conclusion. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What two observations supported dry soil as a stronger explanation than leaf disease?	**Bed B had lower soil moisture and more wilted plants on five of six days. The leaves had no spots.**
2	Use the water-balance model to explain why low soil moisture can make leaves droop.	**Dry soil provides less water to roots. If leaves lose more water through transpiration than roots absorb, cells lose pressure and leaves droop.**
3	Why did the team avoid claiming that watering was the only possible cause of wilting?	**They did not test temperature or root damage, so those factors could also have affected the plants.**
4	How did Priya make the proposed watering test fairer?	**She said both beds should have the same kind of bean plants and receive the same amount of sunlight.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Tray 2 should receive more light because it had only 10 healthy plants, while Tray 1, which received 6 hours of light, had 18. Light provides energy for photosynthesis, so less light may have limited growth in Tray 2. Next, we should give both trays 6 hours of light for eight days and count healthy plants again. We should keep the same lettuce seeds, soil, water amount, and temperature.

Accept equivalent answers that accurately cite the passage evidence and connect it to the water-balance model. For Part 3, accept a cautious, evidence-based claim, a fair test, and any valid controlled factor.