

Water Wise Plants

Use a model and data to support a solution.

4.3.A “develop explanations and propose solutions supported by data and models;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the proposed solution, circle the table values that support it, and number the two steps in the follow-up test.

A Bean Plant Water Test

- ① Fourth graders noticed that some bean plants in their classroom grew taller than others. They made a simple model: three groups of identical plants received different amounts of water each school day. Each group had four plants. After two weeks, the students measured the average height of each group. Their results appear in the table.

BEAN PLANT INVESTIGATION RESULTS

Water each day (mL)	Average height after 2 weeks (cm)
10	6
20	11
30	12

- ② The data show that plants given more water grew taller in this investigation. Plants given 10 milliliters a day averaged 6 centimeters. Plants given 20 milliliters averaged 11 centimeters, and those given 30 milliliters averaged 12 centimeters. The increase from 20 to 30 milliliters was much smaller than the increase from 10 to 20.
- ③ To use less water, the students proposed giving future bean plants 20 milliliters each day. Their explanation was supported by the model and data: 20 milliliters produced plants almost as tall as the 30-milliliter group, while using 10 fewer milliliters per plant each day. They would test this plan with more plants and measure them for several weeks.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What did the students use as their model, and what did the model compare?

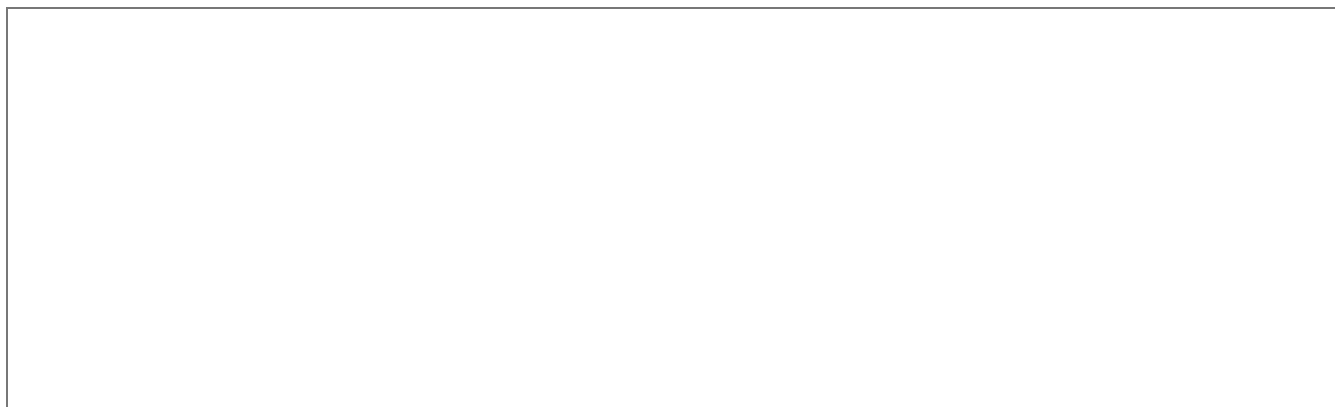
2 What data support the claim that raising the water from 10 to 20 milliliters helped the plants grow taller?

3 Why did the students propose 20 milliliters each day instead of 30 milliliters each day? Use data in your answer.

4 What two changes would the students make in their next test to gather more evidence?

3 YOUR TURN _____ Your own words

A teacher wants the tallest average bean plants and is not worried about water use. In the box, draw a simple model showing the water amount the teacher should use. Then write exactly two sentences that propose a solution and support it with two numbers from the table.



PART 1 • READ AND MARK

Underline the proposed solution, circle the table values that support it, and number the two steps in the follow-up test. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What did the students use as their model, and what did the model compare?	They used three groups of identical bean plants. The model compared different daily amounts of water and the plants' average heights.
2	What data support the claim that raising the water from 10 to 20 milliliters helped the plants grow taller?	Plants given 10 milliliters averaged 6 centimeters, while plants given 20 milliliters averaged 11 centimeters.
3	Why did the students propose 20 milliliters each day instead of 30 milliliters each day? Use data in your answer.	The 20-milliliter group averaged 11 centimeters, only 1 centimeter less than the 30-milliliter group's 12 centimeters. It used 10 fewer milliliters of water per plant each day.
4	What two changes would the students make in their next test to gather more evidence?	They would test more plants and measure the plants for several weeks.

PART 3 • YOUR TURN (SAMPLE ANSWER)

[Drawing: Four bean plants labeled "30 mL each day."] The teacher should give each plant 30 milliliters of water each day. The 30-milliliter group averaged 12 centimeters, compared with 11 centimeters for the 20-milliliter group.

Accept equivalent explanations that correctly use the table values and connect the data to the proposed solution. For the open task, accept a model showing 30 milliliters per day and two sentences that cite 12 centimeters and another correct table value.