

Growing and Graphing: Scientific Method

Background:

Ritchie wanted to know the best amount of water to provide for his tomato plants. He decided to vary the amount of water they received and then measure the height of each plant as a result. He grew Harvest Red Tomatoes outside last year, and gave them 500 mL of water each day. They died, and his neighbor told him they died because they didn't have enough water. Using this as a guide, he made a hypothesis; _____ (you fill in what he would predict)

1. "If I give tomatoes _____ water, then the tomatoes will _____."
- 2a. The independent variable in Ritchie's experiment is the: _____
- 2b. The dependent variable in Ritchie's experiment is the: _____
3. What could Ritchie use as a control group to compare his changes this year to? _____

For his experiment, Ritchie grew some tomatoes indoors and some outdoors, and tried two different types of tomato plants. Each plant was given a different amount of water every day, and he carefully recorded the height of each plant daily in his data table: **Effect of water amount on height of tomato plants**

Plant type /location:	Daily Water Amount	Height (cm) Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Big Boy / Indoors	500 mL	0	1	1	2	3	4
Harvest Red / Outdoor	1000 mL	0	2	4	5	7	9
Harvest Red / Indoor	1500 mL	0	2	5	7	9	11

- 4a. If Ritchie continues his experiment, which plant would be expected to be around 13 cm tall on day 8?

- 4b. Does Ritchie's data support or reject his hypothesis? Can you tell? Explain. _____

5. Ritchie obviously has some problems with his experiment. Explain, using **detailed, complete sentences**, how he could make his experiment more reliable.

6. If Ritchie wanted to graph his data, what type of graph would best represent his data?
a.) multi – line graph b.) bar graph c.) pie graph d.) single line graph
7. Explain your reasoning behind which graph type you chose.

8. Graph Richie's data. Make sure your graph is complete.

: Table 1: **Effect of water amount on height of tomato plants**

Plant label:	Daily Water Amount	Height (cm) Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Big Boy Indoors	500 mL	0	1	1	2	3	4
Harvest Red Outdoor	1000 mL	0	2	4	5	7	9
Harvest Red Indoor	1500 mL	0	2	5	7	9	11

