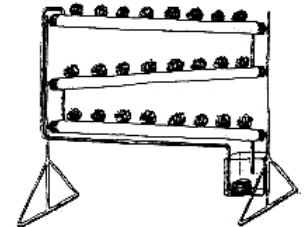


Hydroponics Practice Problem

Name / Period _____

Hydroponics is a method of growing plants in nutrient rich water without the use of soil. It can enable accelerated growth rates, and growth without the use of herbicides and pesticides in a controlled environment. A hydroponics expert is fine tuning her levels of phosphorus with the growth of lettuce and has grown two separate batches. She hopes that the final growth of the lettuce with the new fertilizer levels (batch 1) will be greater than the old level of phosphorus (batch 2).



She measured plant growth in cm with an uncertainty of ± 0.05 cm. The data is:

BATCH 1: 4.5, 5.9, 4.3, 6.6, 6.1, 5.5, 5.8, 5.4, 5.2, 4.9, 5.7, 5.3, 6.0, 4.9, 6.2,

BATCH 2: 6.0, 5.5, 5.2, 5.0, 4.8, 4.6, 4.6, 5.0, 5.3, 4.8, 5.6, 5.8

1. Calculate the mean growth of plants in batch 1 and batch 2. Be sure to show at least one example calculation.
2. Calculate the range of growth in batch 1 and batch 2. Be sure to show at least one example calculation.
3. Calculate the standard deviation of the mean growth of plants in batch 1 and batch 2. Be sure to show at least one example calculation.
4. Create a graph depicting the mean and standard variation for the data provided.
5. Create a final draft quality data table to present the data and calculated results.
6. Complete a t-test for the growth of plants in batch 1 and batch 2.
7. Explain if the growth is significantly different in the two plant batches. How do you know?

1.