

# pH and Plant Germination and Growth Lab

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_

Score \_\_\_\_\_ / 28 = \_\_\_\_\_ ÷ 7 = \_\_\_\_\_ / 4

Category	4	3	2	1
Heading / Title Purpose / Hypothesis ____ / 4	Hypothesis provides a research-based rationale for the prediction. The research source is cited.	Heading Title Purpose Hypothesis clearly predicts germination and growth for all three conditions.	One of the required elements is missing	Two or more of the required elements are missing.
Materials/ Procedure ____ / 4	Exceptional detail – includes drawing of set up with the instruction sheet (this may be included with the results / observations)	All materials are listed and adequately identified (drawing/description) so another person could find all of the supplies All steps are detailed so another person could repeat your technique exactly	Material are partially listed and/or described. Steps are partially described so a reader would be able to repeat most steps accurately	Materials an/or steps are missing and a reader would be misled by reading your lab.
Results ____ / 4	In addition to a high quality data table identifies the pH for each sample, accurate recreation of the growth of the plants through drawing is included.	A data table is included that clearly identifies the data for each pH treatment. Additional comments (i.e., leaf color, leaf number) are included and consistently recorded A ruler is used.	Data is included which identifies the growth for each plant – either no table was used or a ruler was not used.	Data is missing and/or inaccurate. No table was used.
Graph ____ / 4	In addition to an exceptionally constructed graph of the height of the plants in cm (mm), additional annotation is provided to help clarify the overall health of the plants	Title Each axis labeled with units – dates on x-axis and height in mm on the y-axis. Each treatment identified with a unique color. Growth is plotted accurately. A ruler is used	One or more elements for a proficient score are missing. Graph still communicates growth.	Graph looks like it was put together just to get it done with no intent on communicating growth of plants or is missing.
Note New Value	8	6	4	2
Analysis Paragraph ____ / 8	Level 4: in addition to thoroughly completing levels 1-3, the discussion continues to include detailed additional insight on the possible affects of different pH levels on germination and growth. Clear reference to scientific principles and data should be included.	Level 1: Topic sentence which states pH is a measure of acid/base of a chemical. Level 2: Next sentence(s) explain that plants were grown with solutions of acid, neutral, and basic pH levels to determine the affect of pH on germination and growth. Level 3: The following sentences <u>clearly interpret the data from the graph and additional observations to identify and analyze the affect of pH.</u>	One element of 1-3 is missing	Two elements of 1-3 are missing.
Note Value	4	3	2	1
Conclusion ____ / 4	In addition to the proficient requirements, paragraph includes insightful additions to the rationale to the discussion of the hypothesis, what you learned, and the “I wonder”. Clear reference to scientific principles and data should be included.	Topic sentence restates the purpose Acceptance/rejection of the hypothesis is clearly identified. A brief explanation of why the hypothesis was accepted/rejected. A logical “what you learned” statement related to the data/purpose. I wonder comment is a logical next step to further research that is related to the original purpose.	One element of a proficient response is missing.	Two or more elements of a proficient response are missing.