

Post-Lab Analysis and Questions

(Make the graphs and answer the questions on separate sheets of paper.)

1. Use the combined class data to construct two graphs. One graph should compare the rate of photosynthesis of a control variable—temperature, light intensity, or concentration of NaHCO_3 to the corresponding experimental environmental condition that was tested. The other graph should compare the rate of photosynthesis in white light (control) with *all* the other wavelengths (colors) that were tested in the class.
2. Briefly describe the control set of conditions used throughout these experiments.
3. In your group's experimental setup, what was done to change one of the control conditions?
4. Were the individual light wavelengths that were tested equally preferred by the plants for photosynthesis? (Support your answer using the combined class data.)
5. *a.* Was your light wavelengths hypothesis (*Pre-Lab Activity Question #1*) supported? Explain your answer.
b. Was your environmental conditions hypothesis supported? Explain your answer.
6. What was the purpose of the sodium bicarbonate solution in this experiment?
7. Why were you instructed to blow 20 seconds worth of air into the solution?
8. *a.* Since air is really a mixture of many different gases, which kind of "air" (gas) bubbles do you think were being released by the plant?
b. How could the gas released from the plant be identified?
9. *a.* List all the variables that were tested by various groups in the class (including the control variables/conditions).
b. Calculate the effect each variable had on photosynthesis using the formula:

$$\frac{\text{Average rate of photosynthesis from tested variable}}{\text{Average rate of photosynthesis from control}} \times 100 =$$

Write the answer (it will be a percent) next to each listed variable in step 9*a*.

10. Use the calculated percentages from 9*b* to briefly explain the effect each variable had on the rate of photosynthesis.
Hint: The higher the percentage, the greater the effect.
11. *a.* Looking at all the variables tested and the calculated percentages from each test, briefly describe the ideal conditions for Hornwort photosynthesis.
b. Would these conditions be the same for other plants? Why or why not?
12. List at least three possible errors that did or could have occurred during the experiment that may have affected the results.