# Lab 8: Measuring the Effect of Light Manipulation on Photosynthesis Response Form

1. Prediction #1: Light intensity will [INCREASE / DECREASE] the rate of photosynthesis. Explain the rationale for your prediction.
2. Prediction #2: The rate of photosynthesis will be like the control (no light) when exposed to [RED / BLUE / GREEN] light. Explain the rationale for your prediction.
3. Prediction #3: If performing a custom investigation, write your own.
4. Create a graph depicting the number of floating leaf discs over time.


5. Calculate the average of the three ET50 values.

Average ET50 value =

1. Create a bar graph with separate bars that show the photosynthesis rate for each variable tested. Label the independent and dependent variable on your graph.



**Table 8.1. Stepwise instructions for calculating a sign test.**

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| Normal light photosynthetic rate (xi) | Experimental light photosynthetic rate1(ei) | Difference2(ei – xi) | Sign of difference3(+ or -) |
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|  |  |  | # positive \_\_\_# negative \_\_\_ |

1e.g., 50% intensity, blue, green, red, 80% intensity
2experimental photosynthetic rate (ei) – normal photosynthetic rate (xi)
3Write a positive or negative symbol to indicate when the rate of photosynthesis for experimental light conditions is greater or less than normal light conditions.

1. How does light intensity affect photosynthesis?
2. How does light wavelength affect photosynthesis?

## Summary Questions

1. What are some potential sources of error in this procedure? Hint: Do plants respire aerobically?
2. How could this procedure be modified to collect a more accurate representation of photosynthetic rate?
3. What do you conclude from your data about how your manipulated variable impacted the rate of photosynthesis?
4. If you decided to grow spinach in your backyard, what light intensity and/or wavelength of light would produce the highest yield based on class data?
5. Why was soap added to the bicarbonate solution?
6. What are the inputs and outputs of photosynthesis? How do the inputs and outputs of photosynthesis relate to the prefix “photo-” and root word “synthesis”?
7. What role does water play in supporting photosynthesis?
8. What is the purpose of having negative/positive controls?
9. List the independent variable, dependent variable, and controlled variable in the study you performed.
10. Does the data support the predictions you made earlier in the lab?