Photosynthesis Laboratory Exercise:

Name:

Today, you will be examining the processes of respiration and photosynthesis with the aquatic plant, *Elodea*. *Elodea* is commonly found in freshwater lakes and and ponds, where it floats in the water column. Because it does not require a root system to survive, *Elodea* is commonly used in freshwater aquaria and can be purchased at pet stores. When exposed to sunlight, *Elodea* will begin photosynthesizing and will remove carbon dioxide from the solution. **The plant will respire constantly regardless of light conditions, as its cells always need energy**.

Photosynthesis Exercise:	
1.	Place 75 ml of bromothymol blue into an 125 ml Erlenmeyer flask.
2.	Observe the color of the solution. The next step is to introduce carbon dioxide into the solution. There is a ready source of cost-free carbon dioxide within you right now - your lungs. Use a straw from to **slowly** blow carbon dioxide from your lungs into the solution until it **just turns yellow**.
3.	Carry the solution to the front board and compare its color to the printout showing the color of bromothymol blue at various pH's. Find the color on the printout that best matches the color of the solution. If your color is between the colors shown, then use the pH value that is intermediate between them. Record the color of the solution (Initial color) and estimated pH (Initial pH) for each of your three tubes. When comparing or describing colors, be sure to hold the tubes in front of a white background and be as detailed as possible when describing the color (e.g., use terms like "greenish-blue" or "yellow-green").
4.	Pour the solution into three screw cap tubes, dividing it fairly evenly. Obtain one 3-inch piece of *Elodea*, place it in one of the tubes, and cap it. Obtain two 3-inch pieces of *Elodea*, place it in a second tube covered with contact paper (to prevent the entry of light), and cap it. In both of these test tubes, be sure the plant is completely submerged in the solution. Cap the test tube that has no plant in it. Place the test tubes into a test-tube rack and put the rack about 8 to 10 inches from a lamp so that all three tubes are the same distance from the lamp.
5.	Allow the plants to sit undisturbed for 50 minutes, and then compare the colors of the solutions by removing the plants and holding the tubes in front of a white background. Record the Final colors of all three tubes, and estimate the pH for each as described above. After all measurements have been completed, rinse out your glassware.