Name: _____

Waterweed Simulation

Introduction: In this simulation, you will be looking at the production of oxygen as a plant photosynthesizes. This procedure can be accomplished by placing elodea plants in water with baking soda to provide carbon. The plant can then be exposed to varying intensities and colors of light. Oxygen is measured in the number of bubbles produced by the plant. This simulator addresses three factors that influence the rate of photosynthesis. Carbon dioxide availability, light intensity, and light color can all be adjusted in the simulator to determine how each of the factors affects the rate of photosynthesis.

Site: biologycorner.com/flash/waterweed.html

Affect of Light Color on the Rate of Photosynthesis

Set the simulator to 6.0 Light Level, and 6.0 CO2 Level. Adjust the colors to complete the table.

Light Color	Number of Bubbles (Light = 6.0 | CO2 = 6.0)	1. Based on the data, what color of light results in the fastest rate of photosynthesis? Propose an explanation for these results.
Red		
Blue		
Green		
Colorless		

Affect of Light Level on Photosynthesis

Set the simulator to colorless light and CO2 level to 6.0. Make adjustments to the level of light to complete the data table.

Light Level	Number of Bubbles (Light = Colorless | CO2 = 6.0)	2. Based on the data, what light level results in the fastest rate of photosynthesis? Propose an explanation for these results.
1.0		
2.0		
3.0		
4.0		
5.0		
6.0		
7.0		
8.0		
9.0		
10.0		

Affect of CO2 Level on Photosynthesis

Develop an experiment to test how the level of CO2 affects the rate of photosynthesis. Construct a data table in the space below that shows the data you collected. Make sure to include information such as the color of light, light intensity, level of CO2 and the amount of bubbles produced. (Use the previous experiments as a guide)

Data Table

		<-- Don't forget titles/labels
		2. Based on the data, what CO2 level results in the fastest rate of photosynthesis? Propose an explanation for these results.

ANALYSIS

4. Based on the simulation experiments, what factors can affect the rate of photosynthesis in a plant? How do you know?

5. Write the equation for photosynthesis (use your book or online resources if you don't know it).

6. What are the bubbles you are measuring in this lab? Why do the bubbles tell you how fast photosynthesis is occurring?

7. Why is it important that you keep two variables constant (such as light level and color) while you're testing how a third variable (CO2 Level) affects photosynthesis?

8. What settings can you put the simulator on to get the MAXIMUM rate of photosynthesis?