NAME:_____ DATE:_____

MANIPULATING FACTORS AFFECTING PHOTOSYNTHESIS

Go the simulation site below to help complete the worksheet/lab report.

https://leosiiman.neocities.org/lab-rate-of-photosynthesis/photolab-individual.html

This simulation allows you to determine how varying the variables Temperature and light intensity (brightness/strength) affects the process of photosynthesis. Look at the hypotheses below and circle the verb which you think will correctly complete them

a). Increasing the light intensity will [increase / decrease] rate of photosynthesis.

b). Increasing temperature will [increase / decrease] rate of photosynthesis.

Carrying out the experiment to prove your hypotheses.

Method:

1. Compete the table below by manipulating the variables as indicated. For example, the first reading (set of data) will be gained when you keep the Light intensity at 0 and the Temperature at 10˚C.
2. When each pair or variables are chosen, press the green button to start the simulation and run the clock for ONE MINUTE.
3. Then record the number of bubbles.

TABLE SHOWING THE EFFECT OF VARYING TEMPERATURE AND LIGHT INTENSITY ON THE RATE OF PHOTOSYNTHESIS

LIGHT INTENSITY (Lumens)	TEMPERATURE (˚C)		
	10	25	40
0			
1000			
2000			
3000			

Answer the following questions (according to knowledge and the data obtained).

1. What is meant by the rate of photosynthesis? _____
2. How do you know that photosynthesis was occurring in the experiment?

   _____
3. How did you know whenever the rate of photosynthesis increased?

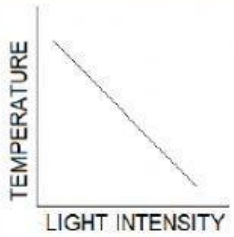
   _____
4. If the bubbles were tested, what gas would be identified? _____
5. Which pair of conditions gave the highest rate of photosynthesis?_____
6. Which pair of conditions gave the lowest rate of photosynthesis?_____
7. Which of the two factors had the greatest effect on the rate of photosynthesis?

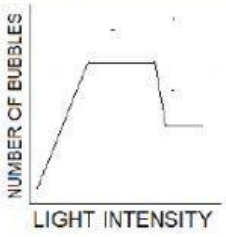
   _____
8. Complete the following conclusion: Increasing the light intensity caused _____ in the rate of photosynthesis which started to _____ gradually after a time.

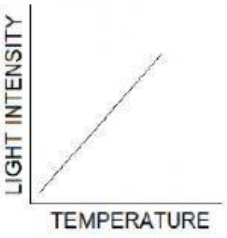
9. Complete the following conclusion: Increasing the temperature caused an initial _____ in the rate of photosynthesis, but when the temperature was further increased to _____°C, the rate of photosynthesis _____ dramatically.

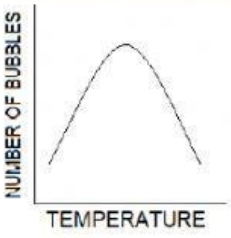
10. Which two temperatures seemed to have similar effects on the rate of photosynthesis? _____

11. Which graph below, shows how the rate of photosynthesis changed at various temperatures if the light intensity was kept constant at 3000 Lumens?

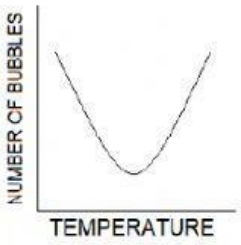


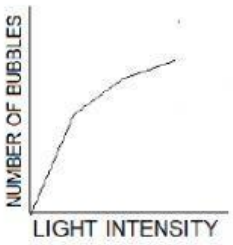


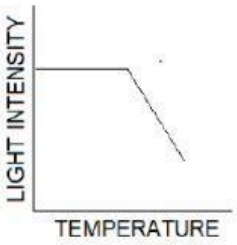


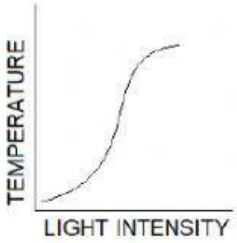


12. Which graph below, shows how the rate of photosynthesis changed at various light intensities if the temperature was kept constant at 25°C?









13. Was your hypothesis a). correct? _____

14. Was your hypothesis b). correct? _____

15. State ONE limitation that may occur if you were to actually carry out this experiment in the lab.

_____

16. State how you would turn the limitation that you mentioned in #15 above into a precaution.

_____