

Name: _____ Hour _____

Unit 2: Graph Activity 2023: Plants and Photosynthesis

Graph Score: ____/10 Total Score: ____/20

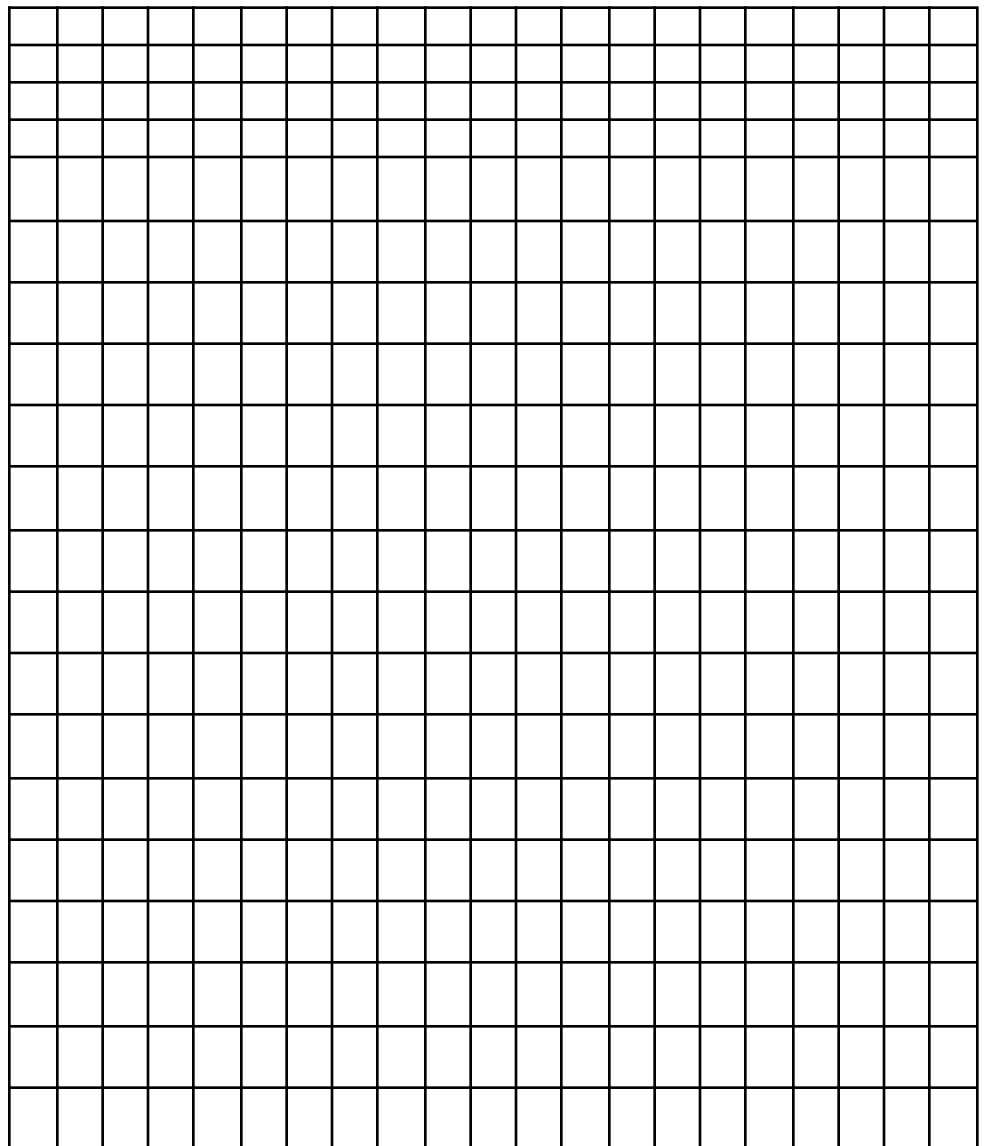
A **LINE** graph is used when you have continuous data (time, temperature, pH, etc).

A **BAR** graph is used when you have count data (numbers for items in certain categories).

A student sets up an experiment to determine how the amount of carbon dioxide (in ppm) impacts the rate of photosynthesis in an Elodea plant submerged under water. The student uses the same plant for the duration of the 30 minutes. She continually adds more and more carbon dioxide to the water in five-minute increments and counts the number of bubbles that form per minute.

The equation for photosynthesis is: *carbon dioxide + water + light* → *sugar + oxygen*

Amount of carbon dioxide added to water (ppm)	Rate of photosynthesis (bubbles per minute)
0	0
200	37
400	46
600	50
800	50
1000	50



Graph the amount of carbon dioxide added (x-axis) vs rate of photosynthesis (y-axis). Be sure to include a title. (10 pts)

1. What is the **independent variable** of the experiment?

(2 pts)

2. Why does counting the number of bubbles allow you to determine how **fast** photosynthesis is happening? (3 pts) _____

3. Describe how the **amount** of carbon dioxide impacts the **rate** of photosynthesis. (3 pts) _____
- _____
- _____
4. How would this graph look different if the student ran this experiment again, but placed two plants in the water instead of just one? Draw a prediction line on your graph, starting at (0,0), using a dotted line to show your prediction. (2 pts)

Graph Rubric (10 pts; each bullet is 1 point)

- Correct graph type is used
- Graph has a title that is DESCRIPTIVE
- Axes are correctly oriented
- Axes have titles
- Axes have units, when appropriate
- Scales on both axes are **consistent** (includes having the “squiggle” when cutting numbers, counts by consistent number of boxes)
- Scales on both axes are appropriate/graph is spread out/uses space
- Key is present (when appropriate); dots connected (when appropriate)
- Data is plotted correctly (includes- does not connect to zero if not given data for zero)
- Other: Point taken off for _____

LATE WORK ADDITION: If this paper is not turned in on time, complete the following questions in addition to the work above. No credit will be given if the answers below are not fully completed.

5. Write out the equation of Photosynthesis and identify each part of the reactants and products (8 pts)
6. Using complete sentences and in your own words, describe what the effect of adding carbon dioxide to the water did to the rate of photosynthesis. (6 pts)
7. Using complete sentences and in your own words, describe why the rate leveled off at 50 bubbles at 600 ppm of carbon dioxide. (4 pts)
8. Using complete sentences and in your own words, explain why carbon dioxide is needed for photosynthesis and in what reaction it is used in the process of photosynthesis. (4 pts).