

Name: _____

Period: _____

Title: Photosynthesis

Standard 8.3.1

Student Friendly Objective: **I can conduct an investigation and provide evidence to explain how photosynthetic organisms use energy to change water and carbon dioxide into sugar and oxygen.**

Task 1

On June 1, a fast growing species of algae is accidentally introduced into a lake in a city park. It starts to grow and cover the surface of the lake in such a way that the area covered by the algae doubles every day. If it continues to grow unchecked, the lake will be totally covered and the fish in the lake will have less oxygen to take in. At the rate it is growing, this will happen on June 30. However, the weatherman is forecasting that the sky will be overcast for the next three weeks.

- a. What resources must be present for the algae to grow? *Include the molecules (matter) that go into photosynthesis and energy source necessary for photosynthesis.*
- b. When the algae is growing and doing photosynthesis what molecules (matter) are being produced?
- c. On June 26, Jane who walks by the lake every day warns her friend Becky that the lake will be completely covered soon. Becky laughs because she doesn't believe Jane. Based on your understanding of photosynthesis, give evidence to support Jane's claim. Based on your understanding of photosynthesis, give evidence to support Becky's disbelief.
- d. On June 29, a cleanup crew arrives at the lake and removes almost all of the algae. When they are done, only 1% of the surface is covered with algae. Explain, using your understanding of photosynthetic organisms, why this may or may not be a reasonable solution.
- e. You are an environmental scientist. Using an algae sample removed from the pond, design an experiment to determine whether the overcast skies are going to affect the growth of the algae.

Research Question	
--------------------------	--

Hypothesis	
Independent Variable	
Dependent Variable	
Identify Control test	
Procedures	

	4-Highly Proficient	3-Proficient	2-Approaching Proficient	1-Below Proficient
Research Question	Question is clearly testable.	Question is testable but may be unclear.	Question may not be testable.	Question is not testable.
Hypothesis	- Hypothesis is <u>clearly</u> stated using "if...then...because." - Hypothesis is testable	- Hypothesis is stated using "if...then...because." - Hypothesis is testable	Hypothesis does not include if, then, or because.	Hypothesis is missing or unrelated.
Variables/ Control Test	- Independent and Dependent variables are correctly identified. - The control test is correctly identified. - At least one constant is correctly identified.	- The independent and dependent variables are correctly identified. - Control test is present. - Correctly identifies a constant.	- Variables are incorrectly stated. - Control test is incorrectly identified - Correctly identifies one constant.	- Variables are incorrectly stated - Cannot tell difference between constants and control test. - Several mistakes with this category.
Procedures	- All steps are numbered and in logical order. - All steps are detailed and explain exactly what to do at each step.	- All steps are in logical order but may not be numbered. - Steps have some details used, but some details may be missing.	- Steps are not numbered and 1-2 are not in order. - Steps only have a few details. They tell what to do but is not specific.	- Steps are not numbered and not in logical order. Procedures cannot be followed. - No detail.