Leaf Disk Assay

N	ame:	

Inquiry into Photosynthesis

Background		
	is the process many organisms use to captu	ıre
energy from the sun and store that energ	rgy in the chemical bonds of the glucose molecu	le.
Energy is used by organisms to do many	ny things like	_,
	, and	
Plants are called,	which means they make their own	food.
Plants do photosynthesis inside cell orga	ganelles called,	
Photosynthesis is a chemical reaction th	hat requires	,
, and	If any of these are removed	,
photosynthesis will not work. Photosynth	hesis makes two molecules;	
, and	You can write the proce	ss of
photosynthesis as an equation:		
+++	+	
Using a Leaf Disk Assay, scientists can	measure the rate of photosynthesis by the build	l-up of
Oxygen, which makes leaf disks float. In	n this experiment, we will adjust the	
oror	in order to see it's effect on photosynthesis	3.
Question: How does	ef	fect
	?	

Hypothesis

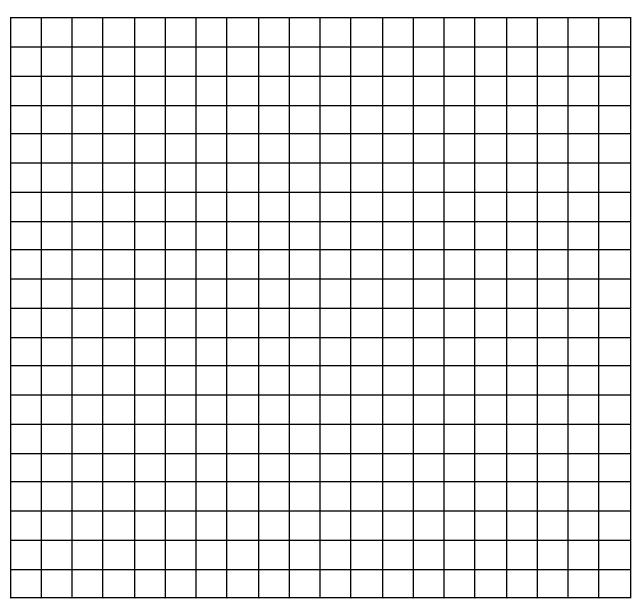
If the _		_, then the rate of photosynthesis will		
Meth	ods and Materials:			
Use th	e hole punch to make 10 leaf disks using the leaf.	Leaf - Hole Punch - Syringe (with cap) - Water		
1. 2.	Place the leaf disks into the syringe without the cap. Insert plunger until almost down.	 Clear cup NaCO₃ (Baking Soda) Sunlight 		
3.	Draw up 5-10ml of water from the cup.			
4.				
5.	Replace cap, and draw down on the plunger in order to reduce the pressure on the water and leaves.			
6.	Hold for 10 second and tap syringe to release	bubbles.		
7.	Let plunger relax. If the leaf disks don't sink, then repeat the last three steps.			
8.	If you are using NaCO ₃ , mix 1 tsp into the cup	of water.		
9.	Open the syringe and place leaf disks into the water. (They should all sink)			
10	. Repeat each of the above steps for each cond	ition you are testing with different cups of		

- 11. Place your cups with the leaf disks into the light that you want to test.
- 12. Start timer and record the number of leaf disks that are floating every 3 minutes for 30 minutes.
- 13. Record in the table below.

water.

Condition	0m	3m	6m	9m	12m	15m	18m	21m	24m	27m

Graph



Resu	lte:
1163U	ııs.

This data shows that	

Conclusion:
1. What does a plant need for photosynthesis?
2. What are the products of photosynthesis? Which one is useful and which one is not?
3. Where does photosynthesis occur in a plant?
4. Write a hypothesis that this experiment is designed to test.
5. Which cup serves as a control?
6. What variables are tested in this experiment?
7. Compare the test groups. Which cup had the most leaf disks floating after 20 minutes?
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8. Were th	ere any cups without floating disks?
9. How do	floating disks correspond to the rate of photosynthesis?
	ling to the data from the whole class, does light intensity affect the rate of nesis? Explain.
11. How d	id the baking soda solution affect photosynthetic rates?
12. Do diff	erent plants do photosynthesis at a different rate?
13. Why is	s photosynthesis a light-dependent reaction?