

**Photosynthesis Leaf Disk Lab (PRE-LAB)**

Question: How do different limiting factors affect the rate of photosynthesis?

*Cross cutting concept: Cause and Effect*

*Science & Engineering Practice: Planning and Carrying out Investigations*

Write out the formula for photosynthesis below. Confirm with your lab partner(s), then your notes.

Fill in your answers to the questions first, then discuss with your lab partner(s) to develop peer-reviewed and revised answers.

Focal Question	I think the answer is....	My group’s answer is....
1. What conditions, structures, and/or raw materials are needed for photosynthesis to occur?		
2. What is produced at the end of photosynthesis?		
3. What factors (materials or environmental conditions) can affect the rate of photosynthesis? <a href="#">(READING1)</a> <a href="#">(READING2)</a>		
4. How can the rate of photosynthesis be measured?		

**Materials:** hole punchers, 60 mL syringe, spinach leaves, 250 mL beaker, clear plastic cups, soapy water solution (7 drops/1000 mL), graduated cylinder, hot water bath, ice water bath, sodium bicarbonate solution (5 g/1000 mL, 100 watt lamp, thermometers, measuring stick.

**Experimental Design:** [Link to reading](#)

Based on the factor assigned (IV), **write a hypothesis** showing how the independent variable affects the rate of leaf disks rising.

---

---

Independent variable (factor that is different in each experimental group)

---

Dependent variable (data that is measured in the experiment)

---

Control group (experimental group run without an independent variable/change)

---

Experimental constants (conditions that are kept the same during the experiment, more = better)

---

---

---

---

### **PRE-LAB MODELING**

As a group, make a model of photosynthesis in a spinach leaf on poster paper including the following:

- a. spinach plant, water, carbon dioxide, stomata, light, glucose, oxygen, and nitrogen
- b. arrows showing the direction the gas or molecule is moving
- c. size/thickness of arrow showing the amount of gas or molecule moving
- d. the independent variable you were assigned

