SOLAR SCIENCE STATION LAB
Middle School Student Page

1. RESEARCH QUESTION.

Which angle will produce the highest voltage during a set time period?

or

What is the ideal combination of angle and time of day for the highest voltage produced by the science station?

or

Which types of light will produce the most electricity with a photovoltaic panel?

2. BACKGROUND KNOWLEDGE.

How does a solar panel work?

Draw a sketch of a solar panel's main parts.

3. HYPOTHESIS.

If (Independent Variable), then (Dependent Variable), because (Rationale).
e.g. If the panel angle changes, then the voltage will stay the same.

4. MATERIALS.

- Science stations
- Sunny location

- A protractor
- pen / pencil
- Timer/Stopwatch
- Some questions may require multiple sections or periods

5. PROCEDURE.
a. **Read** through all of the instructions before you begin.
b. **Gather** all materials.
c. **Assign** the roles of timekeeper, a reader for each station, a writer, and everyone else are recorders.
d. **Set** the angles of the Solar Science Stations to 0°, 22.5°, 45°, 67.5°, and 90°
e. **Find** a sunny place to set up your stations, keeping them covered from sunlight.
f. **Record** the Volts for each angle at 0 minutes.
g. **Uncover** the Science Station and begin timing.
h. **Read** the volt number every two minutes (or any other increment). **Remember** it and then say it out loud so that everyone can hear. Start with the reader for 0°, then 22.5°, and keep going.
i. **Record** the data for each angle. Be sure to get the right data in the right column.
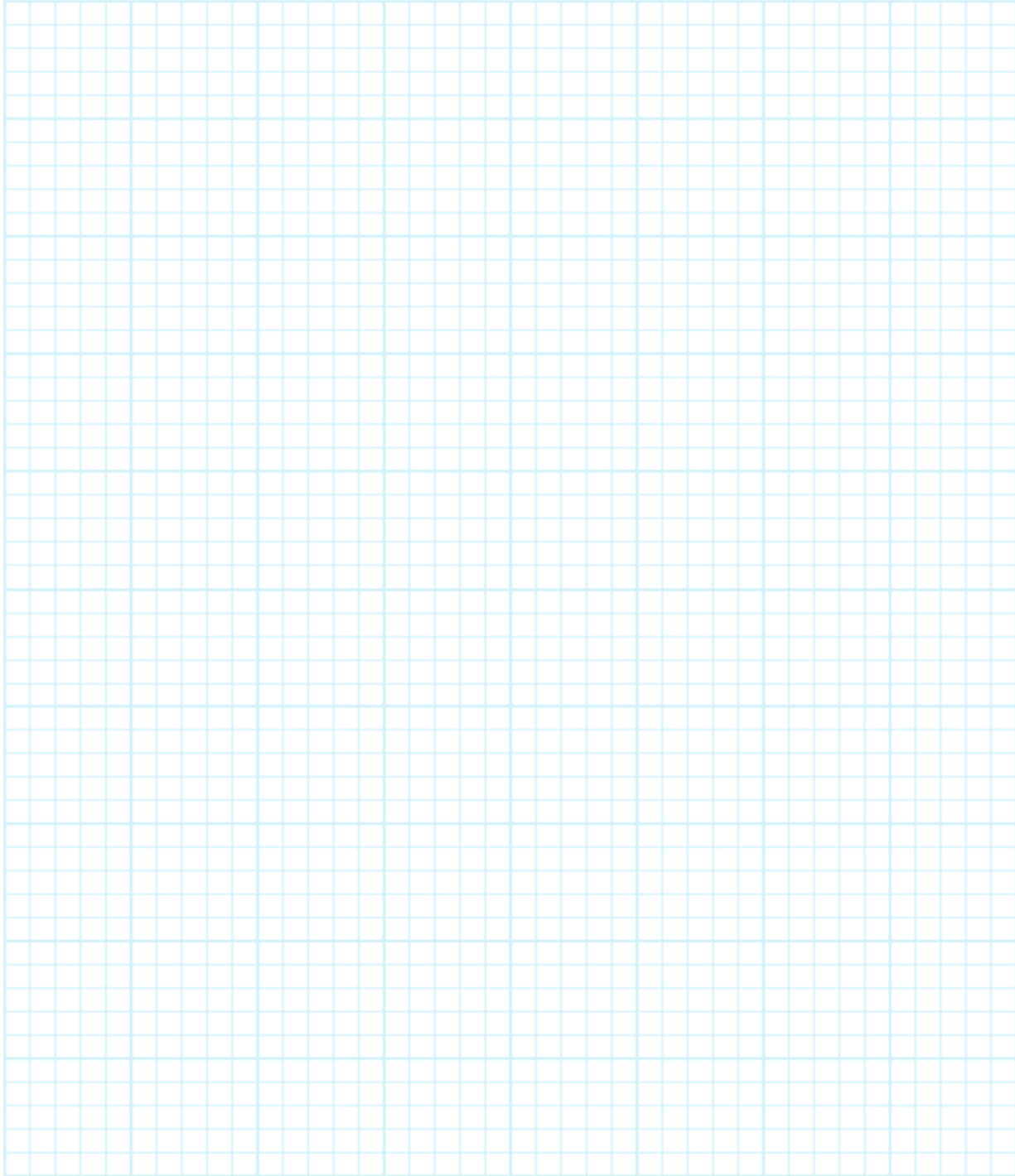j. **Continue** recording data until you have gotten to minute 12.

6. RESULTS.
6a. Data Table

Time (minutes)	Volts produced at various angles				
	0°	22.5°	45°	67.5°	90°
0					
2					
4					
6					
8					
10					
12					

6b. Graph your data below or on a separate piece of graph paper, including:
- Key
- Color
- Label your axes
- Include a title

7. CONCLUSION/DISCUSSION.

Write a paragraph to summarize your results. Include at least a sentence answer for each of the following:

  a. What is the question for this lab?
  b. What was the hypothesis?
  c. Was the hypothesis supported? Why or why not?
  d. What is you interpretation of the data? What did you see happening?
  e. What are some possible errors made and improvements that could be
   made to this   lab?
  f. Further directions: What is something slightly different that could be
   tested next time?