

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

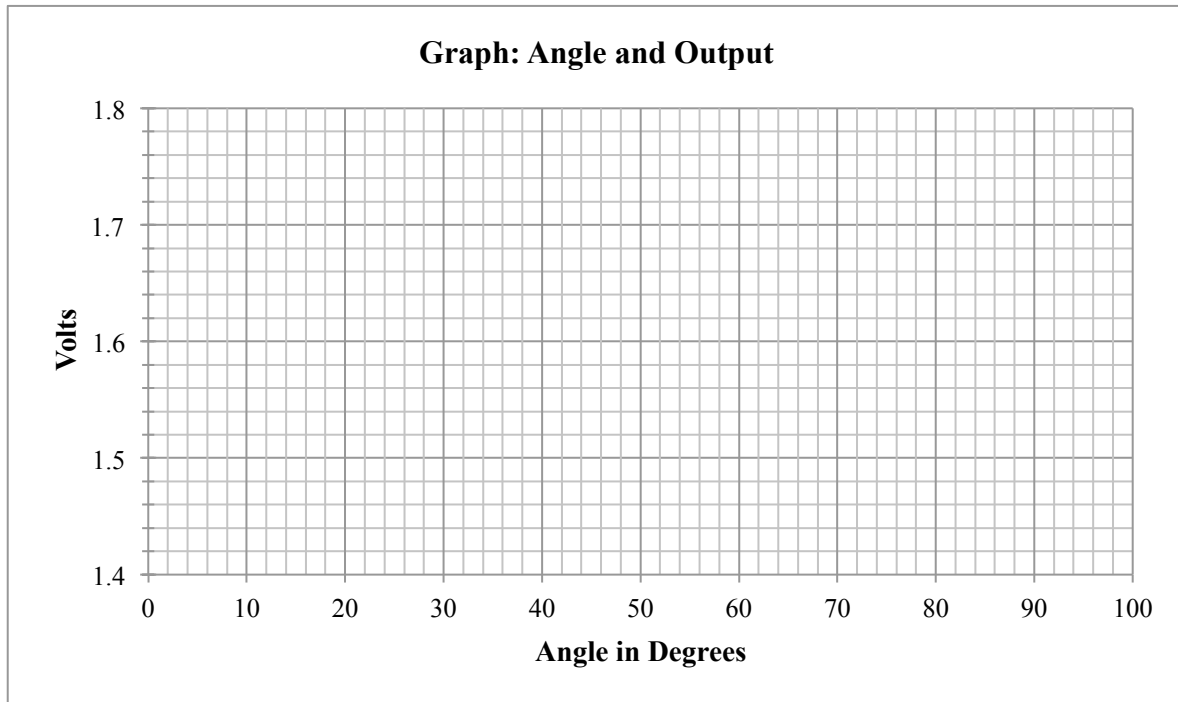
## Solar Energy

*Angle and Output Prediction: How does the angle of illumination affect the solar panel output?*

I think the solar panel output will \_\_\_\_\_ as the angle of illumination decreases.  
(increase / decrease)

*Angle and Output Data*

Angle and Output	
Angle (°)	Voltage (Volts)
90	
60	
40	
20	



*Angle and Output Explanation*

1. Based on what you know about photovoltaic cells, why do you think you got these results?

*Temperature and Output Prediction: How does increasing temperature affect solar panel output?*

I think the output will \_\_\_\_\_ as the temperature increases.  
(increase / decrease)

*Temperature and Output Data*

Temperature and Output		
Time	Temperature (°C)	Voltage (Volts)
	<b>Room Temp.:</b>	
<b>0:30</b>		
<b>1:00</b>		
<b>1:30</b>		
<b>2:00</b>		
<b>2:30</b>		
<b>3:00</b>		
<b>3:30</b>		
<b>4:00</b>		

*Whole Class Data*

Angle and Output: Whole Class	
Group	Angle – Max Voltage (°)
<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>4</b>	
<b>5</b>	
<b>6</b>	

Temperature and Output: Whole Class		
Group	Temp. - Max Voltage (°C)	Temp. - Min Voltage (°C)
<b>1</b>		
<b>2</b>		
<b>3</b>		
<b>4</b>		
<b>5</b>		
<b>6</b>		

### *Results*

1. Based on the class data, what is the ideal angle for sunlight to hit a solar panel and have the maximum output? (circle one)

20 °

40 °

60 °

90 °

2. Based on your graph, at what angle do you begin to see a significant drop in voltage?
3. Based on your data, what is the best temperature (in degrees Celsius) for voltage output?

### *Conclusion*

1. As a solar engineer, your company needs to write a user guide to inform customers about the conditions in which their solar panels will work best. You are responsible for writing the section on solar panel output as it relates to temperature and angle. Use evidence from your experiments to write one to two paragraphs that could be included in the user guide. Include information about what time of day and in which seasons their solar panels will produce the most electricity.