

# Title of Experiment: Investigating a Parameter of Wind Turbine Design

Performed by: [Click Here To Type](#)

**Wild Guess Question:** What is the optimum value of the parameter you are investigating?

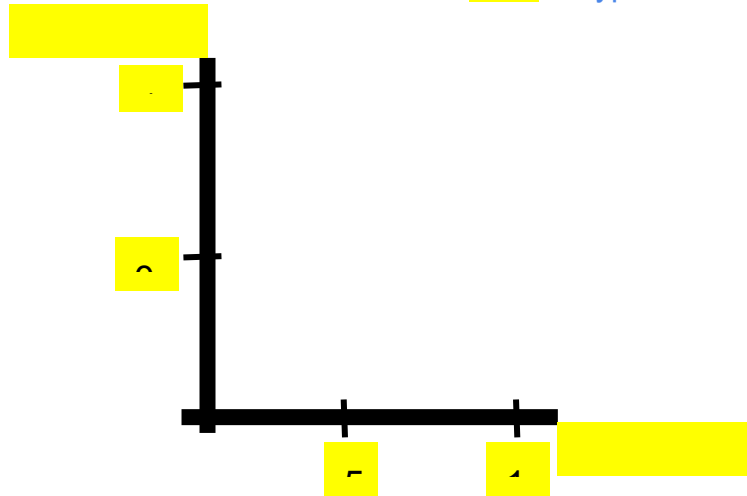
**Wild Guess Answer:** [Click Here To Type](#)

**Research Question:** [Click Here To Type](#)

**Hypothesis:** Graph form:

In

Words: [Click Here To Type](#)



## Data:

Complete this [data table](#) and then copy and paste it below:

**Graph(with Mathematical Model):** [Student Desmos link](#)

## Conclusion:

**Claim**

**Evidence**

Mathematical Models *with Reasoning about the Constants and the Pattern*

(More detail of what is expected here: 1) Communicate the mathematical model that behaves the same as the system you investigated for your Research Question using the **Insert** →  $\pi^2$  Equation... *from the menu above*, 2) if applicable, a description of what the A-value represents in the real world, 3) An explanation of why the pattern is what it is, and finally 4) if applicable, the mathematical model in all words -- that is the general equation.)

**Prediction:**

**Reasoning about Confidence:**

**Limitations**

**Research Extension Question:** [Click Here To Type](#)

**Self or Peer-Evaluation:**

Data Table has controls and any important qualitative data?	Data Table Column Headings have Variable, Units & Uncertainties? Plus, recorded values match the uncertainty?	Your Conclusion explains in the Mathematical Model section why it makes sense that the pattern is cosine?	Conclusion has a data-informed prediction with reasoning about confidence?
<a href="#">Click Here To Type</a>	<a href="#">Click Here To Type</a>	<a href="#">Click Here To Type</a>	<a href="#">Click Here To Type</a>

<b>Determining Confidence in a Prediction</b>			
<b>Considerations</b>	<b>Predicted Value is Within the Data Range</b>	<b>Predicted Value is Near the Data Range</b>	<b>Predicted Value is Far from the Data Range</b>
The best-fit line is near the center of nearly all the data points	<b>High</b>	<b>Medium-high</b>	<b>Medium</b>
The best-fit line is near the edges of many of the data points	<b>Medium-high</b>	<b>Medium</b>	<b>Medium-Low</b>
There may be new physics to consider so the best-fit line may no longer apply	<b>Low</b>	<b>Very Low</b>	<b>Extremely Low</b>

Rubric for Lab Reports					
Aspects/ Levels	I. Research Question	II. Experimental Design	III. Data Tables	IV. Graphs & Patterns	V. Analysis & Conclusion
<p><b>Highly Proficient</b> (all of the statements apply)</p> <p><b>Proficient</b> (only minor omissions)</p> <p><b>Nearly Proficient</b> (1+ major omissions)</p> <p><b>No Evidence</b> (missing)</p>	<p>a. Is a clearly stated question that can be answered with relevant data.</p> <p>b. States the independent, dependent, and controlled variables.</p> <p>c. Includes a hypothesis in both graph and written form.</p>	<p>a. Communicates a method of collecting data that allows for another scientist to recreate the experiment.</p> <p>b. Allows for the collection of high-quality, sufficient data to answer the research question.</p>	<p>a. Headings state measurement, correct units, and appropriate, estimated uncertainties.</p> <p>b. Uncertainties are given to one significant figure and the data is consistent with this uncertainty.</p> <p>c. All calculated data columns display the formula used for calculation.</p>	<p>a. All axes labeled with variable and units.</p> <p>b. Data points are plotted accurately with error bars.</p> <p>c. Reasonable best-fit line is displayed along with the mathematical model.</p>	<p>a. States a claim with supporting evidence.</p> <p>b. Communicates and explains a mathematical model based on the pattern in the data.</p> <p>c. Accurately predicts a data point for the future behavior of the system investigated.</p> <p>d. Justifies an appropriate level of confidence for the prediction.</p>