

Name _____ Date _____ Period _____

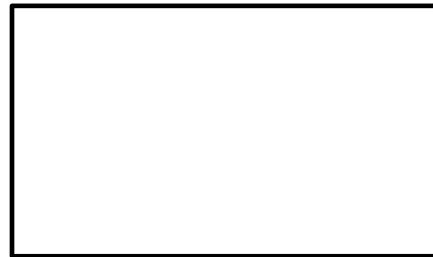
Engineer and Wind Turbine

A new company is looking to invest in natural renewable energy sources. The company has asked that you image, design, build, test, redesign, and retest a wind turbine that will generate 0.1 volts of electricity when there is a breeze outside.

The following regulations below must be followed:

- Blade assembly must be attached to a 12 cm diameter standard CD and not cover the CD mount (opening in the center)
- The total size of the blade assembly may not be more than 40 cm in diameter.
- The blade assembly must not extend more than 2 cm behind the CD.
- The blade assembly must be made of only Nonmetallic substances.
- Neat/clean design
- Only have a \$50 budget to complete the design.

Imagine: Brainstorm several ideas for how to build a wind turbine. Draw pictures of 2 different possible designs.



Budget: Check the price sheet at the table for prices. Keep in mind if the first design does not work, it is better to have a little money left over. The hot glue is free, but if too much is used, it will make the turbine too heavy to generate 0.1 volts of electricity.

Materials	Quantity	Cost	Total
Grand Total			

Design: Draw out your best wind turbine design. Be sure to include **metric measurements** (cm) and **label** what materials you are using to build each part.



Test: When are ready, bring the finished design to the teacher to test the turbine. **Remember, it must generate at least 0.1 volts of electricity when tested.**

Volts generated _____

If the original wind turbine **does not** produce 0.1 volts of electricity, **redesign**, and then come back to test the redesigned wind turbine.

Volts generated (Redesign) _____

Data (Quantitative Observations): This engineering process must include data with numbers. Display this as a graph or chart. Choose one of two different tests:

1. Distance from Fan vs. Voltage **OR**
2. Fan Speed vs. Voltage



Data (Qualitative Observations): What are some things about the successful wind turbine that doesn't involve numbers? (at least 2) This is a description of the wind turbine that created 0.1 volts of electricity.

1.

2.

Improve: What are two ways to change the wind turbine to make it better?

1.

2.

