Name: _____ Per: _____

This is not a “binder” assignment. It will be turned in separately

WIND TURBINE ENGINEERING HONORS PROJECT

Your project for the honors component for Quarter 4 is to design a wind turbine that will generate 0.1 volts of electricity following the engineering design process.

Wind Turbine Test Date: A day-April 19th/B day-April 20th
Written Assessment Due Date: A day-April 25th/B day-April 26th

Assignment Requirements:

Blade Assembly:

a. Blade assembly must be attached to a 12 cm diameter standard CD and not cover the CD mount (opening in the center)
b. The total size of the blade assembly may not be more than 40 cm in diameter.
c. The blade assembly must be made of only Nonmetallic substances.
d. No commercial blade assemblies allowed (you must make your own)
e. Your investigation must be qualitative AND quantitative… it MUST be measurable with numbers.

***If you cannot complete this at home, please arrange a time with your teacher to use the lab after school.

Wind Turbine Test:

- Blade attached to a standard CD/not covering the mount _____/2pts
- Diameter ≤ 40cm _____/2pts
- Nonmetallic _____/1pts
- Blade engineered by student _____/1pts
- Neat/clean design _____/2pts
- Generates ≥ 0.1 volts _____/2pts

You will get an automatic 0 if you do not build your blade yourself. Be ready to answer questions about the design.

Wind Turbine Test Subtotal _____/10pts

ENGINEERING PROCESS WRITTEN ASSESSMENT

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

_____/2pts

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

_____/3pts

STEM
Science • Technology • Engineering • Math

Building materials: List how much of each material you are using to build your wind turbine. Write down specific steps you are taking to build your wind turbine. **Make sure you labeled the materials in your design!**

Building Materials	Procedure (steps)

_____/4pts

Test: You will need to bring your Wind Turbine to school with you on or before the due date and test your wind turbine with your teacher. **You must generate at least 0.1 volts of electricity when tested.**

Volts generated _____	Teacher signature _____

_____/4pts

Improve: What are two ways you can change your Wind Turbine to make it better?

1-

2-

_____/2pts

Data (Quantitative Observations): Your engineering process must include data with numbers. You must display this as a graph or chart. For example: “Distance from Fan vs. Voltage” or “Fan Speed vs. Voltage”.

_____/3pts

Qualitative Observations: What are some things about your design you notice that don’t involve numbers? (at least 2)

_____/2pts

Written Assessment Subtotal _____/20pts
Wind Turbine Test Subtotal _____/10 pts

Total Score_____/30pts

***In order to receive Honors Credit for 8th grade science for Quarter 4, students must achieve “Mastery” on this project of 80%. A mastery score on this project is 24/30 or higher. Students much achieve mastery by turning the project in on or before the due date and achieve the mastery score on the first attempt. The score for this project does not go on the student’s grade. Achieving mastery on this project will give the student “8th Grade Honors Science” credit on their transcript.