**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_ Period \_\_\_\_**

**Designing a Wind Turbine for Maximum Work and Power**

In this investigation you will work with group members to design a wind turbine that can lift a mass by doing work. Data will be collected so that both the work done by the turbine and the power generated by the turbine can be calculated.

Your laboratory report (each student will write an individual report) will include the following:

**Use the EDR to make sure that you are including all required components for each section below.**

1. Problem Statement

* Research wind turbines to determine the independent variable that your group will test

Independent Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dependent Variable: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Hypothesis

* Research how changing the independent variable will affect the work done and the power generated by the wind turbine
* After research, predict how changing your independent variable will affect the work done and power generated by the wind turbine and explain why

1. Labeled Diagrams of each turbine design (you must test at least 2 designs)

Design the turbine so that each of the following variables can be ***measured quantitatively:***

* Change in the independent variable
* Height of washer displacement
* Mass of washer(s) lifted by turbine
* Time required to lift the washer(s)

4. Data Table

* Include all of the measurements above in your data table as well as qualitative observations
* Include at least 3 trials for each design

5. Calculations

* Calculate the work done and the power generated **for each trial and each design** and calculate the average work and the average power for the two designs.

1. Graph

* Your graph should compare the power of the 2 wind turbine designs

1. Conclusion / Evaluation

* When referring to data or results include numbers from data table and calculations.
* When using an outside source to explain the results use parenthetic references AND cite the source in a Works Cited section at the end.

**HONORS:** Background Information and Presentation

* Include a word processed Background Information
* Word Process entire Lab Report