Group Names:_____

# *Wind Turbine Lab*

## Introduction:

To learn how engineers, harness the energy of the wind by following the engineering design process to create and test and then modify a prototype of a wind turbine. You will be required to also record, convert and graph your data.

## Purpose:

To create and then modify an AC voltage producing wind driven device.

## Materials: (Only put the actual materials that you use in this list.)

**Procedure: (**Please write down as you go a numbered list of all the steps you did to both produce, test and modify your turbine.) Also include a labeled diagram.

## Data / Observations:

Feel free to periodically test and check your design with the fan and multi meter at the test station. When complete to your groups satisfaction bring your turbine to the testing station for your first set of trials. The testing station consists of a fan and a multi meter. Record two voltage trials, both are to be done five inches from the fan. Trial one will be at the fans low speed and trial two will be on high. Each trial is to be thirty seconds in length, you will take three readings within this period and then average them to provide your final result. You will then go and make any modifications that you see fit to try and improve on your turbines performance. You will then fill the second chart and see if your modifications were successful. Both data charts are on the next page.

## Data Collection Page:

| Preliminary Set | | Speed 1 (low) | Speed 2 (high) |
|---|---|---|---|
| Voltage produced (millivolts AC) | Reading 1 | | |
| | Reading 2 | | |
| | Reading 3 | | |
| First Set of Trials | Average | | |

| Modified Set | | Speed 1 (low) | Speed 2 (high) |
|---|---|---|---|
| Voltage produced (millivolts AC) | Reading 1 | | |
| | Reading 2 | | |
| | Reading 3 | | |
| Second Set of Trials | Average | | |

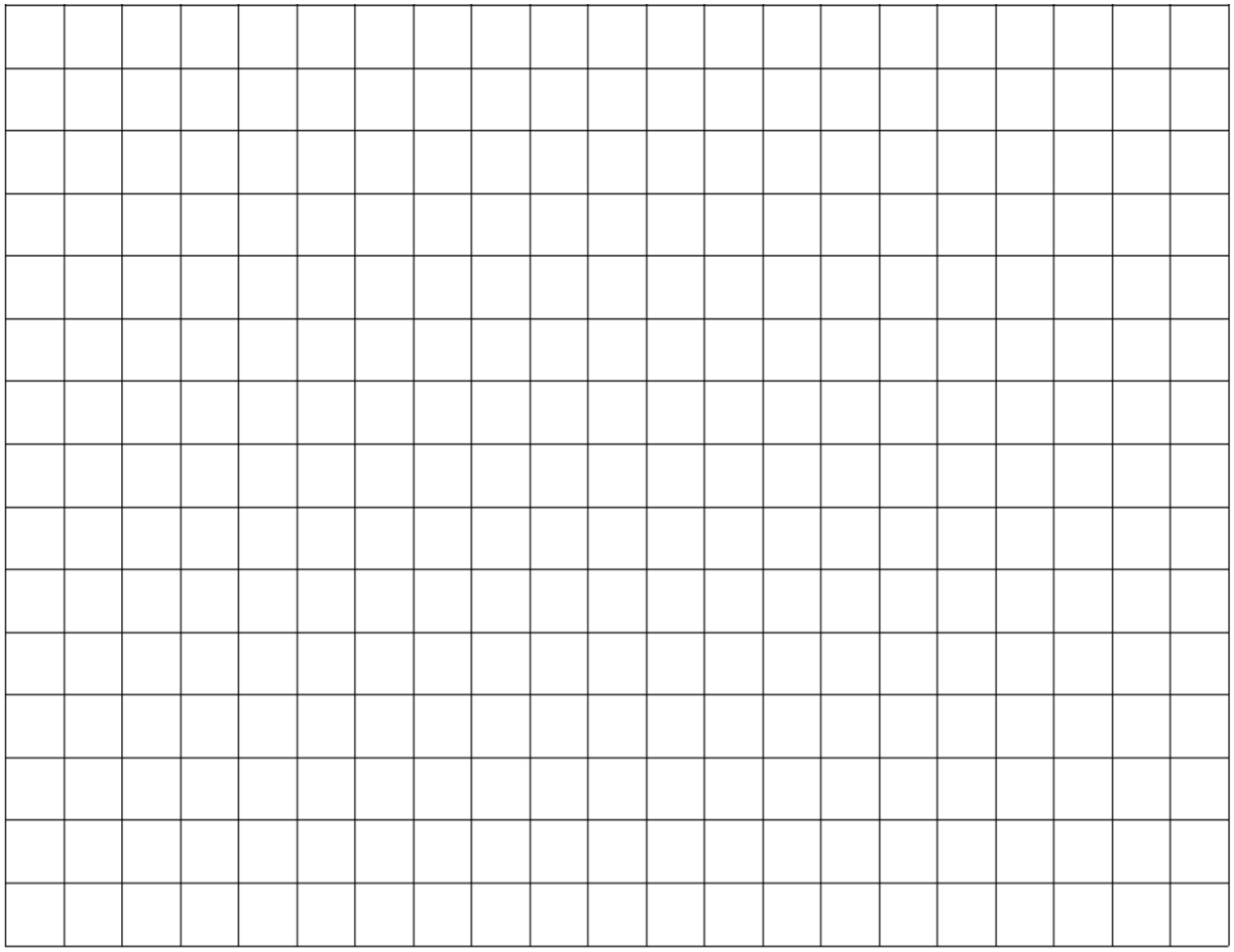
## Analysis / Calculations:

The data is now to be analysed in two ways. The first is to be a graph that will include the average data from the Trial set one and two for both low and high speed (this is to be as a bar graph and four different colours should be used and a legend).

The second is to convert your findings for each trial from millivolts to volts.

**#1**

**Title of Graph: _____**



**#2**

**Average Trial set #1 in Volts=_____**

**Average Trial set #2 in Volts=_____**

**Conclusion:** (In two to three paragraphs state any possible errors in your test trials that could have taken place. Discuss what was modified between trials. Were the modifications to the turbine successful. Make sure to state as a percentage how much your modifications increased or decreased the performance of your turbine.

**Created By Steve Mitson**