

Name _____

Period _____

Wind Turbine Data Analysis

Step 1: Open the file. Take a few moments to look at your Current-Potential data. What do you notice about the data? Describe any obvious relationships you see.

Step 2: In Excel, complete the following tasks:

1. Give Column D the heading "Ratio (V/C)".
2. In cell D2, use a formula to calculate the ratio V/C.
3. Drag the formula down for all data in Column D.
4. Save the file.
5. After creating the "Ratio" column, what can you say about the ratio of Voltage to Current?

Step 3: Move data to Fathom and create scatter plot.

1. Open Fathom.
2. Drag down a new Collection.
 - a. Go back to the Excel file and copy all four columns.
 - b. In Fathom, highlight the collection box.
 - c. Go to Edit-Paste Cases.
3. Drag down a Table.
 - d. Resize so you can see more data.
4. Drag down a Graph.
 - e. Drag Current to x-axis.
 - f. Drag Potential to y-axis.
5. Describe the graph.

6. Since current is on the x-axis and potential is on the y-axis, describe the relationship between current and potential in a sentence.

Step 4: Find a representative ratio and write an equation.

1. Drag down Summary
 - a. Drag Ratio VC to attribute.
 - b. Add Basic Statistics and Five-Number Summary
 - c. Choose a representative ratio from the Summary box. Explain why you chose that number.

2. Using your representative ratio, write an equation that shows how current and voltage are related.

3. To graph your equation:
 - a. Highlight graph
 - b. Go to Graph-plot function
 - c. Enter your equation. (Remember that in Fathom, x and y are “attributes”.)
 - d. After graphing your equation, describe how the equation fits the data.

 - e. Why does your graph go through the origin? What does this say about current and voltage at this point?

 - f. What quantity does the coefficient of x represent?

Step 5: Summarize

1. Write a statement describing the relationship between current, voltage, and resistance.

2. Add Text
 - a. Place a text box at the top of the page for your name and period.

 - b. Place a text box at the bottom of the page with your summary statement describing the relationship between current, voltage and resistance.

3. To print:
 - a. Go to print preview and choose "Fit to One Page"
 - b. Make adjustments if necessary so that all of your work fits on one page.
 - c. Print **TWO copies**. Turn in one copy to Mrs. Beamish and take one to science class tomorrow.

Time	Current A	Potential V
0	0.050487518	0.495300293
0.1	0.027694702	0.28137207
0.2	0.035591125	0.354309082
0.3	0.042572021	0.412597656
0.4	0.048656464	0.476074219
0.5	0.043792725	0.427246094
0.6	0.043487549	0.417480469
0.7	0.042266846	0.412597656
0.8	0.040454865	0.393371582
0.9	0.033149719	0.325317383
1	0.048961639	0.476074219
1.1	0.056858063	0.553894043
1.2	0.053215027	0.50994873
1.3	0.049877167	0.49041748
1.4	0.0440979	0.432128906
1.5	0.040454865	0.393371582
1.6	0.036506653	0.359191895
1.7	0.055961609	0.544128418
1.8	0.037708282	0.36895752
1.9	0.044403076	0.432128906
2	0.033149719	0.330200195
2.1	0.041065216	0.393371582
2.2	0.055961609	0.544128418
2.3	0.049877167	0.485534668
2.4	0.034980774	0.339660645

2.5	0.038318634	0.378723145
2.6	0.039234161	0.378723145
2.7	0.034370422	0.339660645
2.8	0.052604675	0.50994873
2.9	0.049571991	0.480957031
3	0.043487549	0.417480469
3.1	0.043487549	0.422363281
3.2	0.050182343	0.485534668
3.3	0.043487549	0.422363281
3.4	0.044708252	0.432128906
3.5	0.041675568	0.40802002
3.6	0.042572021	0.412597656
3.7	0.044708252	0.432128906
3.8	0.038318634	0.378723145
3.9	0.039234161	0.378723145
4	0.052909851	0.514831543
4.1	0.049266815	0.476074219
4.2	0.042877197	0.417480469
4.3	0.0440979	0.427246094
4.4	0.041370392	0.398254395
4.5	0.032558441	0.315551758
4.6	0.045928955	0.446777344
4.7	0.044708252	0.432128906
4.8	0.037117004	0.364074707
4.9	0.038318634	0.373840332
5	0.032844543	0.32043457
5.1	0.027999878	0.276489258
5.2	0.038318634	0.373840332
5.3	0.048351288	0.476074219
5.4	0.041675568	0.40802002
5.5	0.041065216	0.398254395
5.6	0.041980743	0.412597656
5.7	0.034370422	0.339660645
5.8	0.0440979	0.432128906
5.9	0.055656433	0.539245605
6	0.043792725	0.422363281
6.1	0.042572021	0.412597656
6.2	0.032844543	0.32043457
6.3	0.034065247	0.339660645
6.4	0.030422211	0.296020508
6.5	0.044403076	0.432128906
6.6	0.0440979	0.432128906
6.7	0.043182373	0.417480469
6.8	0.043792725	0.422363281
6.9	0.03194809	0.315551758
7	0.042572021	0.412597656

7.1	0.050792694	0.495300293
7.2	0.034980774	0.344543457
7.3	0.049877167	0.485534668
7.4	0.0440979	0.422363281
7.5	0.04076004	0.398254395
7.6	0.048656464	0.476074219
7.7	0.048961639	0.476074219
7.8	0.046844482	0.456542969
7.9	0.039844513	0.38848877
8	0.039844513	0.38848877
8.1	0.039539337	0.383605957
8.2	0.042572021	0.412597656
8.3	0.054130554	0.52947998
8.4	0.043182373	0.417480469
8.5	0.039234161	0.378723145
8.6	0.030117035	0.296020508
8.7	0.033760071	0.330200195
8.8	0.045318604	0.437011719
8.9	0.051403046	0.500183105
9	0.036811829	0.364074707
9.1	0.034065247	0.334777832
9.2	0.034065247	0.339660645
9.3	0.034675598	0.339660645
9.4	0.042572021	0.412597656
9.5	0.044708252	0.432128906
9.6	0.038013458	0.373840332
9.7	0.036506653	0.359191895
9.8	0.044708252	0.432128906