Derby Racecar Analysis

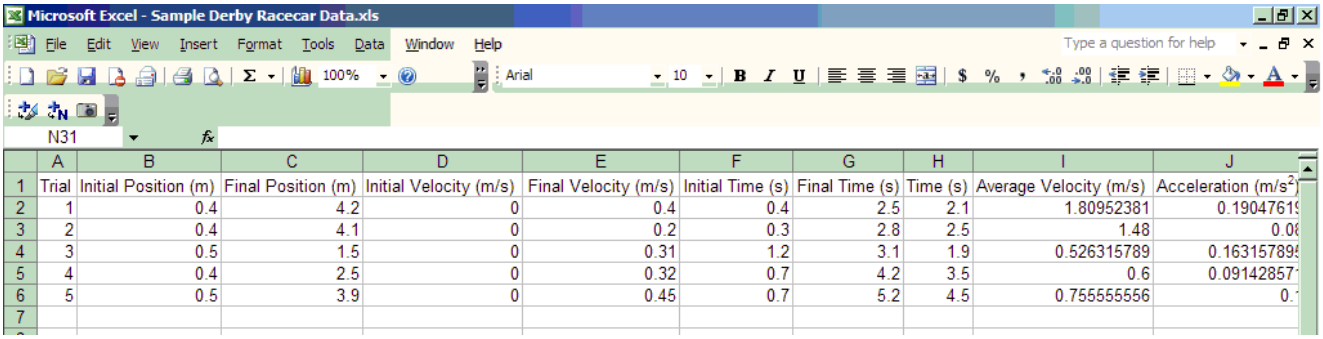
Physical Science and Technology

Using the data sheet you filled out in class the other day, complete the following tasks:

1. Enter the data you collected in class in a Microsoft Excel spreadsheet. To get started, you can use the Derby Racecar Data Template posted on the PST website.

2. Calculate the **time**, **average velocity** and **acceleration** of your derby racecar in the appropriate columns of the data table. To do this, retype the formulas in these columns WITHOUT the single quote mark at the beginning of the formula.

3. Your completed spreadsheet should look something like the image below. Save your Excel spreadsheet to your H: drive. If you are using Excel 2007 on one of the computers with the Vista operating system, make sure to "Save As" an Excel 97-2003 document so you can access your spreadsheet from a different computer.



	A	B	C	D	E	F	G	H	I	J
1	Trial	Initial Position (m)	Final Position (m)	Initial Velocity (m/s)	Final Velocity (m/s)	Initial Time (s)	Final Time (s)	Time (s)	Average Velocity (m/s)	Acceleration (m/s^2)
2	1	0.4	4.2	0	0.4	0.4	2.5	2.1	1.80952381	0.19047619
3	2	0.4	4.1	0	0.2	0.3	2.8	2.5	1.48	0.08
4	3	0.5	1.5	0	0.31	1.2	3.1	1.9	0.526315789	0.163157895
5	4	0.4	2.5	0	0.32	0.7	4.2	3.5	0.6	0.091428571
6	5	0.5	3.9	0	0.45	0.7	5.2	4.5	0.755555556	0.1
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4. In Microsoft Word, answer the following questions:
   a. In general, which was larger: the average velocity or the acceleration?
   b. In some trials we conducted, your acceleration may have been higher than the velocity. Explain how this makes sense (from a scientific point of view): how can something accelerate at a very high rate but still have a relatively low velocity?
   c. What kinds of changes do you think could be made to a derby racecar to increase its acceleration or velocity?
   d. In your own words, explain the difference between *displacement*, *velocity*, and *acceleration*.
   e. If you were to redo this project, what would you change about the way you built your derby racecar? Why?

5. Copy and paste your data table into your Word document so we can see your original data. Use the "Paste as Image" option so the data table fits onto the page.

6. Save this Word file to your H: drive. If you are using Word 2007 on one of the computers with the Vista operating system, make sure to "Save As" a Word 97-2003 document so you can access the file from a different computer.

7. **After having a teacher review your document**, print it and turn it in. Make sure your name is on your report!