**Aca. Physics Graphing**

Here are some tips for drawing a good graph:

1. Always use graph paper and a ruler.

2. Draw the axes close to the bottom and left margin of the paper but leave room for

numbers and labels. It doesn’t matter which way you hold the paper but sometimes

one way works better than the other.

3. Decide which variable goes on which axis. The dependent variable (the measurement a.k.a mass, distance, etc.) goes on the y-axis and the independent variable (time, volume, etc.) goes on the x-axis.

4. Space the values on your axes so that your data covers as much of the paper as

possible. Don’t crowd all of your data in one little corner of the graph.

5. Make sure that the distance between each division on a particular axis represents the

same value. The scales on the two axes, however, may be different. It is not always

necessary to begin counting from zero.

6. Label the axes with numbers and the name of the variable and its unit.

7. Plot the points carefully. Make a dot large enough that the reader knows that it

is a data point and not just a stray mark.

8. Decide whether your points represent a straight line or a curve. Draw the best straight

line or smooth curve through the points. (DO NOT CONNECT THE DOTS)

9. Always remember that the whole point of drawing a graph is to be able to estimate

between the data points. When you make these estimates be sure to draw lines on the

graph to justify your answer

Now complete the following assignment. It involves creating two graphs (by hand on graph paper) and answering questions (in sentences on loose-leaf paper). Staple all papers together as the assignment will be collected.

Data Sample 1

A student measured out various amounts of alcohol with a graduated cylinder. The student then weighed each sample in order to determine the relationship between the volume of alcohol weighed and its mass. Graph the following data, determine the relationship, and answer the questions.

Volume of alcohol, in mL mass, in grams

2.0 1.58

4.2 3.60

6.0 4.70

8.4 6.20

10.2 8.40

12.0 9.45

14.4 11.36

16.2 12.00

18.0 14.50

20.0 15.78

Questions for Data Sample 1:

1. Is the trend line straight or curved ? Why ?

2. What volume of alcohol would have a mass of 11.7 grams?

3. What would be the mass of 8.5 mL of alcohol ?

4. What is the density of alcohol in g/mL ?

Data Sample 2

A student on a bicycle trip left at 8 am and kept a log of the time and his distance traveled. Graph the data, determine the relationship, and answer the questions.

Time (hours) total distance covered, in km

Start 0 0

1 12

2 23

3 33

4 42

5 50

6 57

7 63

8 68

9 70

Questions for Data Sample 2.

1. Is your trend line straight or curved ? Why ?

2. Approximately how far had the student traveled 3 hours 40 minutes into the trip? Can you be absolutely certain, why/why not ?

3. How long had the student been riding when they had traveled 35 km ?

4. Compare the distance traveled during the first hour with the distance traveled

during the last hour. Suggest a possible explanation for the difference.