Physics 1 Lab Questions for the Cycloidal Trough Lab

1. If an object's velocity cannot be measured directly, what two other quantities may be measured and combined to calculate velocity?

2. Which of the two quantities in number 1 is most difficult to measure? Give two reasons why this is so.

3. What is the purpose of the cycloidal trough in the lab?

4. When you calibrated (timed) your trough, did you have it flat or on an incline? Why?

5. How many blocks did you use to support the upper end of your trough? In general, why did you not use many more blocks, or many less (in other words, why would a very flat incline or a very steep incline make this lab difficult?

6. What's the difference between average speed and instantaneous speed? Explain how one takes the "slope" of a curved graph at a particular point on the graph.

7. In general, should one draw a long tangent line or a short tangent line to reduce the error due to calculating slope?

8. One of the largest errors in this lab comes from trying to find exactly where the "peaks" of the ball's motion occur. Why is it important to find the exact "peaks"?

9. Why is it important that a graph be scaled to take up the majority of the graph paper?

10. What do you notice about the general shape of the plotted position vs. time data? What does the shape of the plot reveal about the motion of the ball? Explain your answer. Sketch the general shape of your graph and explain clearly (referring explicitly to features of your graph) whether Galileo or Aristotle was right.