PSSC Physics

Timer lab 2:

Analysis of an object in free fall

Name_____Period_____

Introduction: Objects falling near the surface of the earth and for short distances accelerate at a nearly constant rate downward. You can analyze this motion by taping a 1/2 Kg mass to a piece of paper tape and letting the timer make marks on it as it falls.

What you need to do:

1. Let the 1/2 Kg mass fall, dragging the tape through the running timer. (Be sure to let the timer get up to speed before releasing the object)

2. Measure distance v. time data from the tape. (For each tock, measure the distance from it to the first tock at t = 0)

3. Find the slope of this line for each set of points. This is your **Velocity v. time data**.

4. Find the slope of the velocity v. time data. This is your **Acceleration v. time data.**

5. Make three graphs. **Position v. time, Velocity v. time, and Acceleration v. time.**

6. Answer the following question for the conclusion part of the lab:

Question: How does your data show (or not show) that the acceleration of the mass was uniform for the interval you observed?