

Name: \_\_\_\_\_

## Pre-lab 7: Oscillations

1. Look at the first equation in the lab instructions which gives the period of a pendulum. Make a sketch of the plot  $T^2$  vs  $L$ , and explain how you can use the slope of this plot to determine  $g$ . (Recall that the equation of a line is  $y = mx + b$ , where  $m$  is the slope and  $b$  is the  $y$ -intercept).

2. The equation we use for the pendulum period is based on the assumption that  $\sin \theta = \theta$ . Making sure that your calculator is in radians, determine the angle at which this assumption causes an error of about 5%. That is, for what angle is  $(\sin \theta)/\theta = 0.95$ ? Determine also the angle for a 1% error. After you have determined the angle in radians for each of these errors, convert each angle to degrees.

3. Step 5 in the procedure cautions you to pull the pendulum only about 2 cm to one side. Does this matter? Why or why not?