

Name: _____ Lab Section: _____ Date: _____

PreLab: Standing Waves in a Vibrating Wire

Instructions: Prepare for this lab activity by answering the questions below. Note that this is a **PreLab**. It must be turned in at the start of the lab period. Time cannot be given in lab to perform PreLab activities. After the start of lab activities, PreLabs cannot be accepted. Explain your answers. Points will be taken off if your work is not neat and well organized.

1. (5 points) A string is under a tension of 500.0 N. A 1.23 m length of the string has a mass of 4.5 grams. What is the speed of a transverse wave of wavelength 0.50 m in this string?
What is the frequency of the wave?

2. (4 points) From Eq. (7) on page 72 derive the equation: $\ln v = \frac{1}{2} \ln T - \frac{1}{2} \ln m_0$

3. (6 points) A plot of $\ln v$ vs. $\ln T$ should be a straight line. Why?

What is the slope of the straight line?

What is the intercept of the straight line?