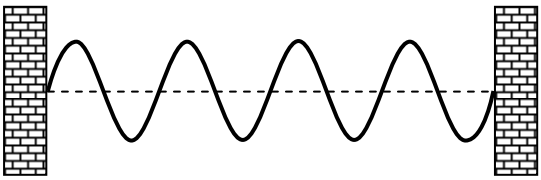
Analytical Physics II Laboratory Due January 26, 2026
Dr. Pogo

Quiz #1

Name:_____



The figure shows a string at one instant in time. The ends of a piece of string are glued to two facing walls. The tension in the string is known to be 10 N. The distance between the two walls is 0.4 m.

1. How many total nodes are present at this time? # = _____

2. How many anti-nodes are shown? n = _____

3. What is the wavelength at the time shown? λ = _____ m

4. How are wave velocity v, frequency f, and wavelength λ **symbolically** related?

   v = _____

5. The mass of the string per unit length (μ) can be found from the tension and the velocity. Write this **symbolic** equation for μ:

   μ = _____

6. The frequency of this wave is f = 160 Hz. What is the wave speed?

   v = _____ m/s

7. What is the mass of the string per unit length? μ = _____ kg/m

8. Using your value of μ, and assuming that the length of the string is the same as the distance between the two walls, find the mass of the string:

   m = _____ kg

9. If μ and λ are known constants, and you plot tension vs. f^2, what is the **symbolic** slope of the resulting line?

   slope = _____

10. Since you actually have numbers for μ and λ above, use them to determine the numeric slope corresponding to question 9.

    slope = _____ kg·m