

Resonance in Open and Closed Air Columns and Standing Waves – Examples

Name: _____ Date: _____

1. The third resonance length in an open-air column (open at both ends) is found to be 60 cm. A tuning fork of frequency 900 Hz was used to do the experiment. Calculate the air temperature? [Include a diagram]

2. A tuning fork was sounded over an adjustable air column closed at one end. It was found that the difference between the *second* and *fifth* resonant length was 60 cm. The experiment was done in a lab with an air temperature of 25°C. [Include a diagram]

a) Calculate the wavelength of the sound wave?

b) Calculate the frequency of the tuning fork used?

3. An 80 cm guitar string (fixed at both ends) is sounded with a pick. The string vibrates at the 5th harmonic with a frequency of 512 Hz. Calculate the speed of the wave in the string?
[Include a diagram]