

Javier Duarte, Department of Physics
University of California San Diego
Physics 2C, Winter 2020

Reading Assignment due Friday 1/17: Submit via Gradescope by 8:00am

1. Suppose you have a pipe producing standing sound waves. Two adjacent harmonics of standing waves (i.e., no standing waves in between these) have wavelengths 2.000 meters and 1.500 meters.
 - (a) Which wavelength corresponds to a higher mode?
 - (b) Is this pipe open-open or open-closed? Explain. Either Eq. (17.17) or (17.18) is useful — figure out which one applies to the data.
 - (c) What is the fundamental wavelength? What is the length of the pipe?
2. Watch this video from our best friends over at UCLA:

<https://www.youtube.com/watch?v=IQ1q8XvOW6g>

Note the two tuning forks playing from 0:39–0:42 in the video. Assuming one of the tuning forks is 288 Hz, what is the frequency of the other one?

Hint: slow down the playback with the settings button (bottom right corner) to $0.25\times$ the normal speed and count the how many beats you hear during, say, 0:40-0:42.

For extra practice (not due): From Chapter 17 of Knight, 4th edition: Conceptual Questions: 4-5, 7, 10. Exercises: 14, 15, 17, 20, 33, 35.