# Speed of Sound Demo

When a tuning fork is struck, it vibrates and sound waves are generated. When held above the resonance tube, these sound waves will travel down the tube and reflect upon reaching the surface of the water. If a resonance condition is met, the result is a standing wave.

1. Suppose the first harmonic results in the diagram to the right. Sketch the first harmonic on the diagram.
2. What quantities should be measured in order to calculate the speed of sound in air?
3. Describe a procedure which can be used to measure these quantities.
4. Make the necessary measurements.
5. Calculate the speed of sound.
6. Look up the speed of sound in air at room temperature.
7. Determine the percent error.
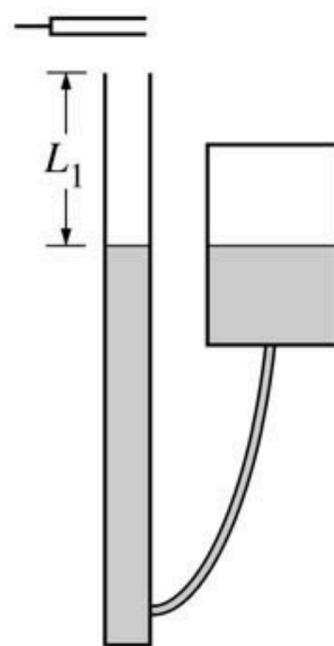
In the ideal case, a displacement antinode occurs exactly at the open end of the tube. There is a chance, however, that the formation of the wave does not actually start at the opening but instead a little before (above) the opening.

8. What change could be made to the original method to take this error into account?