Speed of Sound and Standing Waves (resonance)

1. Obtain a tuning fork. Using the frequency stamped on the fork, and 330 m/s as an approximation for the speed of sound, determine the wavelength of a sound wave made by the fork you have.

2. The fundamental frequency to resonate in a pipe closed at one end has a length equal to one fourth the wavelength of the sound wave that will cause resonation. Divide your answer in #1 by four.

3. Pick a tube about 0.05 m longer than your answer in #2.

4. Using the tube, a container of water, and the tuning fork, generate a resonating wave in the tube. Adjust the length of the tube until maximum resonation occurs.

5. Measure the length of the tube OUT of the water. Multiply this by four. That is the actual wavelength of the sound wave. Now calculate the speed of sound in the classroom.

6. Repeat with other tuning forks. Do as many trials as people in your group +1. (A group of four does 5 trials.)

7. Put all of your results in a table with headings and units.

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