Sound in a Test Tube   Name:_____ Pre._____

Materials

- Small test tube

Procedure

1. Read over the entire procedure and then fill in the Predicted Pitch portion of the data table.

2. Fill a small test tube ¼ of the way with water.

3. Blow across the top of the test tube. Listen for the pitch.

4. Repeat steps 3 and 4 using a test tube that is ½ full and a test tube that is ¾ full of water.

5. Fill in the Actual Pitch portion of the data table.

Data and Observations

Water Level	Predicted Pitch (which do you think will produce the highest, medium and lowest pitch)	Actual Pitch (Which actually produced the highest, medium and lowest pitch)
¼ full		
½ full		
¾ full		

Analysis

1. Describe how the pitch changed depending on the amount of water in the test tube.

2. Which test tube produced a sound wave with the **longest wavelength**?
   a. The test tube that was ¼ full of water
   b. The test tube that was ½ full of water
   c. The test tube that was ¾ full of water

3. How did you know the correct answer to #2? (Be sure and mention wavelength and pitch in your answer.)

4. Which test tube produced a sound wave with the **highest frequency**?
   a. The test tube that was ¼ full of water
   b. The test tube that was ½ full of water
   c. The test tube that was ¾ full of water

5. How did you know the correct answer to #4? (Be sure and mention frequency in your answer.)

6. The frequency of a high C on a piano is 1046.502 Hz. Assume the speed of sound is 340 m/s.

   a. If you are listening to a high C, how many sound waves are hitting your ear drum each second?

   b. What is the period of the wave? (Use the correct unit.)

   c. What is the wavelength of the wave? Show your work and use the correct unit.

   d. How long would it take the sound to reach somebody standing 200 m away from the piano? Show your work and use the correct unit.

   e. If somebody reported hearing the sound 3 seconds after it was made, how far away must they have been? Show your work and use the correct unit.