Echo Lab

**Purpose:** Today you will be finding the speed of sound in the air in this room. You will be doing this by sending sound waves down pipes and measuring the time it takes for the echo to return. You will also be testing the validity of the temperature/speed of sound equation.

**Data:**

|  |  |
| --- | --- |
| Trial | Time of echo (ms) |
| 1 |  |
| 2 |  |
| 3 |  |

Tube 1: Length: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Trial | Time of echo (ms) |
| 1 |  |
| 2 |  |
| 3 |  |

Tube 2: Length: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Trial | Time of echo (ms) |
| 1 |  |
| 2 |  |
| 3 |  |

Tube 3: Length: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Temperature probe reading: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

For your lab report, I want you to find the speed of sound in this room graphically. DO NOT AVERAGE ANY NUMBERS!!!!! Think about what has to be on your x and y axis if you want to find the speed of sound. Once you get an answer, compare that to the predicted speed of sound from using the temperature probe. The Lab report is due on **Thursday/Friday Feb 22nd/23rd**

Extra Credit Opportunity:

Once you have your data, calculate out the speed of sound in this classroom. When ready, create an echo in the long tube by the outside door. The tube is not hollow all the way down but stops at some unknown point. You can take 3 time measurements and then calculate how far down the tube is hollow. When you have your prediction, come to me and if you are within 5% of the actual length, you will receive some extra credit on the lab report. Show work below: