FLINN SCIENTIFIC

Name____

Discovering the Speed of Sound in Air Worksheet

Data Table

Frequency (Hz)	Tube Length (cm)	Tube Length "L" (m)	Wavelength (m)	Speed of Sound (m/s)	Average Speed of Sound (m/s)
256					
288					
320					
341					
384					
428					
480					
512					

Post-Lab Questions *(Answer all non-mathematical questions using complete sentences.)*

1. Calculate the wavelength for the 512 Hz tuning fork. Show the formula used, substitution with units, and label the answer with the correct units.

2. Calculate the speed of sound for the 512 Hz tuning fork. Show the formula used, substitution with units, and label the answer with the correct units.

3. Observe the length and frequency of each tuning fork. What is the relationship between the length of a tuning fork and its frequency?

4. Look at the data in the frequency and wavelength columns of the data table. As the frequency increases, what happens to the wavelength?

5. Notice the similarity between the speeds of sound calculated for each tuning fork. Using the formula $v = f\lambda$, and your answer from question #2 above, explain how sounds of different frequencies can have similar speeds.

6. The actual speed of sound in air at STP is 331 m/s. How does the average speed of sound in air compare to the actual accepted value? Calculate the percent error between the measured and accepted speed of sound.

7. In general, do you think the speed of sound would increase or decrease if it travels through a liquid or solid? Explain the reasoning for your answer.