

Name: \_\_\_\_\_

## Lab Quiz: Speed of Sound in Air

Answer each of the following questions using the information you collected during the lab. Please submit your completed quiz before you leave the lab. No papers will be accepted after the end of the lab period.

1. (20 points) Complete the tables below using the measurements you recorded and the calculations you performed.

FREQUENCY = 384 Hz						$\lambda_{av}$ (m)	$v = \lambda_{av}f$ (m/s)
$y_1$ (m)		$y_2$ (m)		$y_3$ (m)			
$\lambda_1 = 4y_1$ (m)		$\lambda_2 = 2y_2$ (m)		$\lambda_3 = 2y_3$ (m)			

FREQUENCY = 512 Hz						$\lambda_{av}$ (m)	$v = \lambda_{av}f$ (m/s)
$y_1$ (m)		$y_2$ (m)		$y_3$ (m)			
$\lambda_1 = 4y_1$ (m)		$\lambda_2 = 2y_2$ (m)		$\lambda_3 = 2y_3$ (m)			

2. (3 points) Predict the **actual value** of the speed of sound based on the **temperature** in the room. Please show your work.

3. (3 points) What is the **percent error** in your result for the **384 Hz** fork? Please show your work.

4. (3 points) What is the **percent error** in your result for the **512 Hz** fork? Please show your work.

5. (1 point) **True or false:** The higher the frequency, the faster the speed of the sound wave. Doubling the frequency doubles the speed.
6. (1 point) **True or false:** Your results could be improved by isolating the tubes from each other, making the individual resonances easier to hear.
7. (1 point) **True or false:** If the experiment was performed in a substantially colder room, the measured speed of sound would be slower.
8. (1 point) **True or false:** If the experiment was performed in a substantially colder room, the frequencies of the tuning forks would be lower.