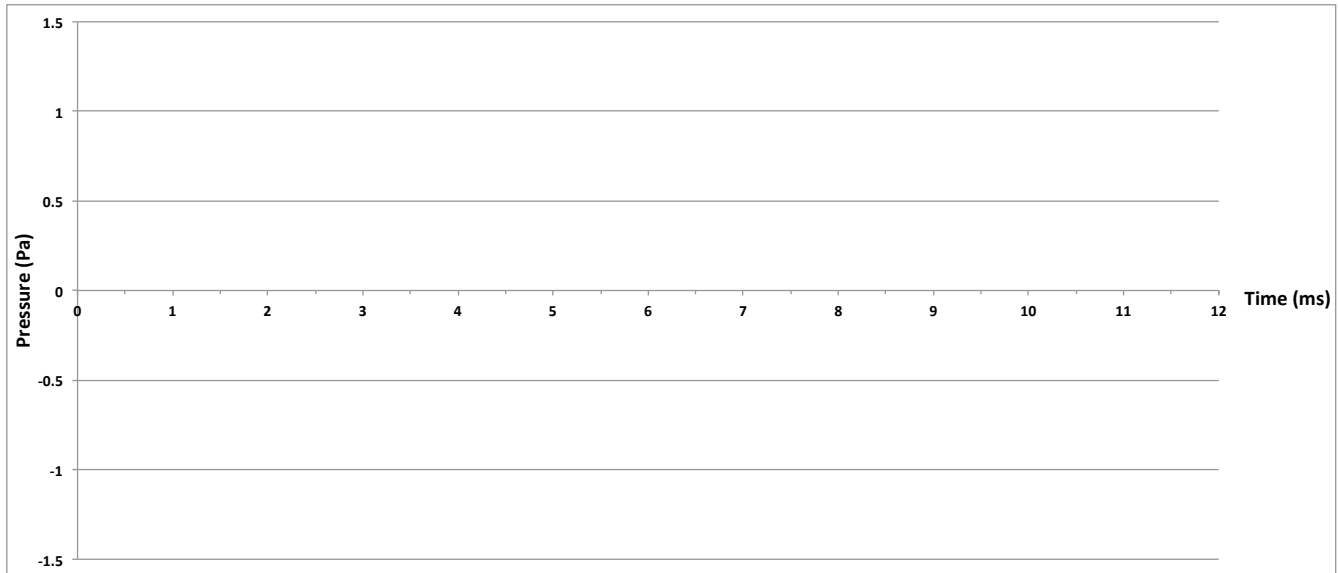


Name \_\_\_\_\_

Section \_\_\_\_\_

*Please show all of your work!*

1. On the axes provided below, graph the following:
  - a. 100-Hz sine wave with a peak amplitude of 1.0 Pa
  - b. 200-Hz sine wave with a peak amplitude of 0.5 Pa
  - c. Sum of the previous two waves



2. Find the equation that describes the waveform that you graphed for part 1c.

3. Calculate the sound pressure level that corresponds to a sound pressure of  $5 \times 10^{-3}$  Pa.

4. Calculate the overall A-weighted level of the spectrum below.

Band	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
L <sub>p</sub>	82 dB	77 dB	72 dB	60 dB	64 dB	57 dB	50 dB	40 dB

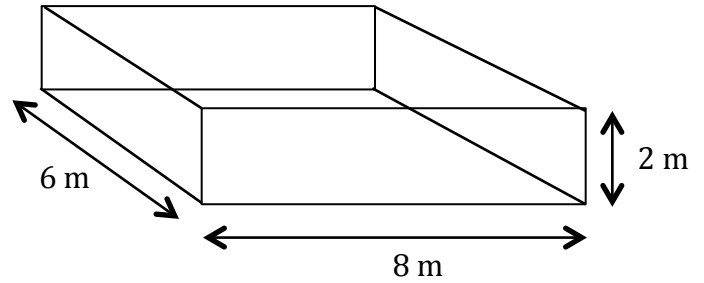


6. The room pictured has the following absorption coefficients at 500 Hz:

Floor: Carpet,  $\alpha = 0.14$

Ceiling: Acoustic Ceiling Tile,  $\alpha = 0.70$

Walls: Gypsum Wallboard,  $\alpha = 0.10$



- a. Calculate the total absorption in this room.

- b. Calculate the reverberation time.

- c. Calculate the mean free path.

### Sound Barrier Calculation

