

Name: _____ Seat: _____

Calculating Axial Room Modes to Modify an Acoustic Environment

Music & Math: An Arts-Integrated Model, December 4, 2014

Objective: I will be able to determine the axial modes of a given room by calculating standing wave frequencies and confirming them aurally or with mobile devices in order to support recommendations with data for improving the given room’s acoustics.

1. Measure the given room’s dimensions in feet (use decimals to indicate lengths smaller than 1 foot).
 - A. L=
 - B. W=
 - C. H=
2. Predict standing wave frequencies (nodes and antinodes) using the given equation:

$$f = n(c/2D)$$

	L	W	H
<i>n</i> = 1			
<i>n</i> = 2			
<i>n</i> = 3			
<i>n</i> = 4			
<i>n</i> = 5			
<i>n</i> = 6			
<i>n</i> = 7			
<i>n</i> = 8			
<i>n</i> = 9			
<i>n</i> = 10			

3. Plot the potential standing wave frequencies on the line plot.



4. Confirm the above plotted frequencies either aurally or with a spectrograph. Circle or highlight confirmed frequencies and note “node” or “antinode.”.