Sound and Music Notebook - Scoring Rubric

Your notebook will be collected at the end of class on _____, _____ _____.
The following items should be in your notebook. They should be clearly organized and easy to find. *Auxilliary items* should be taped, glued or stapled into the notebook in the appropriate location; they should not be *hanging loose*. Use an organizational system and label all work. Each lab will be graded separately. Eleven Sound and Music lab grades will be entered into the gradebook. An overall notebook grade will be determined based on your use of the notebook as an organized and effective record-keeping tool which documents your engagement in the learning cycle during classtime and labtime.

Name: _____ Period: _____

Item		Score
S1.	**Listen Up Lab** ____ Included, labeled and organized all parts of the lab report. ____ Data section includes well-organized and labeled observations regarding the pitch and intensity of the sound as the train (or the car) was approaching compared to how it sounded when receding. Observations are accurate. ____ Conclusion/Discussion correctly describes the pitch and the intensity for an approaching source and a receding source.	_____/2 (Lab score)
S2.	**Mach 1 Lab** ____ Included, labeled and organized all parts of the lab report. ____ Data section includes a table of data with several trials; column headings are labeled; units are shown. Speed values are accurately calculated; work is shown in organized fashion with a labeled unit. Results are reasonably accurate. An average speed value is calculated; outlying data is clearly omitted from the averaging process. Class data is shown. ____ Conclusion states the experimentally-determined speed of sound in air. ____ Discussion of Results includes an accurate and thorough error analysis. Analysis discusses both the accuracy and the precision of the results; outlying data trials are identified. A percent error calculation is performed; work is clearly shown.	_____/5 (Lab score)
S3.	**Natural Frequency and Standing Waves Lab** ____ Included, labeled and organized all parts of the lab report. ____ Data section includes the provided diagram – completed and taped in. The diagrams are consistent with the holding position. Some form of a data analysis is document; analysis reveals suitable effort and good reasoning ability. While the analysis does not need to be *squeaky clean*, it should clearly document the efforts to relate the resonant frequencies to the standing wave patterns. ____ Conclusion/Discussion explains how the resonant frequencies are related to the standing wave patterns. The discussion is consistent with the data analysis (in Data section); supporting evidence is explicitly referenced. The discussion is complete, thorough, and reveals both effort and understanding.	_____/6 (Lab score)
S4.	**Closed End Air Column Lab** ____ Included, labeled and organized all parts of the lab report. ____ Data section includes a diagram with organized and labeled data; units are shown. Work for speed calculation is shown and labeled; adjustments for end effect is shown and labeled. Class data is organized in a table. Individual results are reasonably accurate (after correcting for end effect). ____ Conclusion states the experimentally-determined speed of sound in air. ____ Discussion of Results includes a well-written error analysis; experimental value for sound speed is compared to the theoretical value. A percent error calculation is performed; work is clearly shown and labeled.	_____/5 (Lab score)
S5.	**Open End Air Column Lab** ____ Included, labeled and organized all parts of the lab report. ____ Data section includes a diagram with organized and labeled data; units are	_____/5

shown. Work for speed calculation is shown and labeled; adjustments for end effects (both ends) is shown and labeled. Class data is organized in a table. Individual results are reasonably accurate (after correcting for end effects). ____ Conclusion states the experimentally-determined speed of sound in air. ____ Discussion of Results includes a well-written error analysis; experimental value for sound speed is compared to the theoretical value. A percent error calculation is performed; work is clearly shown and labeled.	(Lab score)
S6. Guitar String Lab ____ Included, labeled and organized all parts of the lab report. ____ Data section includes provided table; table is complete. Work for calculations are clearly shown and labeled. Data is reasonably accurate. ____ Conclusion clearly and thoroughly describes the effect (or non-effect) that doubling, tripling and quadrupling the string length has upon the frequency and the speed. Writing is organized, clear and responds to *the question*. The conclusions are accurate and consistent with the data. ____ Discussion of Results provides the logical support for the Conclusion; specific trials of data are cited as evidence in support of each statement made in the Conclusion section.	_____/8 (Lab score)
S7. Music in a Bottle Lab ____ Included, labeled and organized all parts of the lab report. ____ Data section includes a diagram of the set-up; length of air column is accurately indicated on the diagram. Frequency-length data is organized in a table with labeled column headings and units. A plot of the frequency-length plot is provided; the results of the linear regression analysis (slope, y-intercept and regression constant) are reported. Results are reasonable accurate. ____ Conclusion reports the equation relating frequency to the length; variables in the equation are defined; did not use y and x in place of f and L. ____ Discussion of Results discusses the meaning of the slope (or constant of proportionality in the equation). Relevant information from class discussions and textbook readings are used in the discussion; Logic and reasoning is evident as an effort is made to relate this constant to other physical quantities. Discussion reveals understanding of closed-end air columns.	_____/6 (Lab score)
S8. Musical Intervals Lab ____ Included, labeled and organized all parts of the lab report. ____ Data section includes the completed table with some note pairs which sound good and some which sound bad. May include class data; class data is labeled as such and organized. Results are reasonably accurate. ____ Conclusion/Discussion identifies the frequency ratios which are associated with consonant and dissonant sounds; specific examples and reasoning is provided to support the conclusion. Conclusions are consistent with either individual data or class data reported in the Data section.	_____/3 (Lab score)
S9. Musical Scales Analysis ____ Included, labeled and organized all parts of the lab report. ____ Data section includes the provided table (taped in) and some form of numerical analysis in an effort to determine the mathematical equation. The numerical analysis is thoroughly and clearly documented.m Is accurate and reveals good problem-solving ability. ____ Conclusion/Discussion reports the mathematical equation; equation is accurate and clear. Thoroughly and accurately explained how the equation can be used to determine the frequency of the n^{th} key relative to the frequency of a given key.	_____/4 (Lab score)
S10. Timbre Lab ____ Included, labeled and organized all parts of the lab report. ____ Data section includes the completed table; the results of the frequency analysis (FFT graph) are reported; the variety of significant frequencies produced by an instrument are displayed on the spectrum chart. Results are reasonably accurate. ____ Conclusion/Discussion groups several instruments into two categories -	_____/5 (Lab score)

	relatively rich sounding and relatively pure sounding. The relationship between the quantity of overtones and the subjective sense of the sound is discussed; made reference to specific data as evidence to support this relationship; discussed how the referenced data supports the conclusion.	
S11.	**Who Can Hear Monte Tone? Lab** ____ Included, labeled and organized all parts of the lab report. ____ Data section includes the provided diagram (completed and taped in); the vehicle number and wave letter is indicated. A table of data summarizing the results is provided; indicated the seat location, the part of each wave which interfered at the seat location and the type of interference which results. ____ Conclusion/Discussion described the relative loudness of sound heard for each seat location. A short explanation is given for why the sound is heard as soft (minimum) or loud (maximum); discussion revelas understanding.	_____/3 (Lab score)
S12.	**Use of Notebook as a Record-Keeping Tool** Ideally, a student would use the notebook to record notes from class lectures, post-lab sections, textbook readings, etc. Answers and discussions of opening questions are provided. The notebook is a record of the involvement of a scientist/student in both class and lab. A blank or even sparsely-used notebook with little evidence of involvement in class is not a sign of a student who has used the notebook to document and record their involvement in class. A diligent student keeps careful records which subsequently become an effective and useful learning tool.	_____/8 (HW score)