



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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Project Title Music in Motion	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My goal of this experiment was to test the frequency, amplitude, and magnitude of nine different clarinet notes as they pass through different mediums. These mediums consisted of air, glass, and velvet.</p> <p>Methods/Materials The experiment was conducted using a personal computer. Nine clarinet notes (found online), were played through air, velvet, and glass into a personal computer recording microphone. The frequency, amplitude, and magnitude of the notes were processed using MATLAB software.</p> <p>Results The amplitudes of all the notes decreased after traveling through any of the three mediums. The amplitude of the sound wave decreased the most when going through the velvet, and the least when going through the air. The glass medium's amplitude was slightly higher than velvet. Most notes had about four main frequency points. Almost all of the trials performed produced consistent data, with little change. Most notes consistently showed that the medium did not affect the notes' frequency.</p> <p>Conclusions/Discussion All of the tested notes produced different frequencies, the highest notes and octaves of notes showing higher frequencies. Almost every notes' frequency did not change, even after traveling through different mediums. This may have been due to the mediums I tested. If mediums such as water or lead were tested, differences in frequencies may have been observed. The notes that did change were probably outliers and did not show logical patterns, and were most likely due to measurement or calculation errors. The amplitudes decreased the most when going through the velvet medium, followed by glass, and then air.</p>	
Summary Statement The frequency, amplitude, and magnitude of nine different clarinet notes after traveling through three different mediums were tested.	
Help Received My father programmed MATLAB software in order for me to produce readable graphs showing the frequency, amplitude, and magnitude of the notes. My mother assisted in organizing the science fair board. My teachers gave advice and guidance concerning my experiment.	