



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

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| Name(s) Effie A. Striem | Project Number J1916 |
| Project Title Classic Music | |
| Objectives/Goals The question: How much water is needed to put into a glass container to create the right frequencies to play a one octave scale? The hypothesis: The more water added to the glass the higher the pitch would get. The vibrations caused by rubbing a wet finger on the rim create sound-waves in the glass. Not all glasses are exactly the same. In order to change the pitch, different amounts of water are needed or different glasses have to be used. | |
| Abstract Results Preliminary trials have tested the capability of individual glasses. Filling the selected uniform glasses with different amounts of water created a scale to play a note on each glass to complete an octave for the 1st time. Five crystal red-wine glasses and three champagne glasses were needed. Tracing a line on the glasses at the water level allowed refilling the glasses to approximate water volume. Repeated trials to fine tune the exact notes were made using measuring utensils to measure the exact amount of water in every glass separately. | |
| Conclusions/Discussion Conclusion: The initial hypothesis was incorrect. The more water that was added, the lower the pitch became. This happened because the friction energy from the rubbing was absorbed and reduced much more with more water, making the notes go lower. The empty glasses had the highest pitch. | |
| Summary Statement How to play an 8 note octave on a set of wine glasses | |
| Help Received Dad helped record measurements | |