



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Thomas W. Witkowski	Project Number J1632
Project Title The Effect of Temperature on the Tuning of a Guitar	
Abstract Objectives/Goals Exposure to temperature change is known to affect the size of many materials, this test studied whether temperature change had an affect on the tuning of a guitar. The experiment tested if a change in size of the guitar elements would effect the tension on the guitar strings. Therefore if the tension on the strings changed so would the tuning. Methods/Materials To accomplish this a guitar was placed in a controlled environment for a designated amount of time and exposed to various temperature changes to see what effect on the tuning could be measured. The guitar had to be given sufficient time in the controlled environment in order for it to have time to react to the temperature change. Therefore it was necessary to allow the guitar to be in the controlled environment for half an hour before testing the tuning. Results Temperature increases from 70 degrees to 75 and 80 degrees yielded the most change in tuning. Temperature decreases yielded no conclusive results or no results at all. The strings with the least thickness were affected the greatest and became several cents flat. Cents is a term used in tuning meaning one fiftieth of a full note. Conclusions/Discussion These results are important because they demonstrate that temperature increase has a great enough affect on the wood and metal strings of a guitar to change the amount of tension put on the strings. The results show that the metal strings can be altered in temperature changes and are important knowledge to those trying to maintain an in-tune guitar.	
Summary Statement The effect of temperature on the tuning and tension of a guitar and it's strings.	
Help Received Father helped with gathering materials; Plex Products Unlimited helped make test box.	