



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

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Project Title Piano of Blues	
Abstract Objectives/Goals In this experiment, a piano of blues is made to find how changing the concentration of copper sulfate in a solution affects the sound frequency produced from an electrical circuit. Since higher concentrations of ionic compounds in a solution will result in higher conductivity and a more powerful current, it is expected that a higher concentration would result in a higher frequency. Methods/Materials Solutions with various concentrations of copper sulfate in distilled water were used, with a modified 555 timer circuit. Attached to it was a speaker and two wires, which would be dipped into the solutions to form a resistor and produce sound. The frequency was measured with the #Spectrum# audio analyzer app. Results The frequency increased with the concentration, however the growth was logarithmic, rather than linear. Concentrations of 0.08, 0.1, 0.15, 0.18, 0.2, and 1 grams of copper sulfate in 100 milliliters of distilled water produced frequencies ranging from approximately 427 to 709 hertz, representing the concert notes G#, A#, C, D, D#, and F. Conclusions/Discussion As expected, higher concentrations of ionic compounds in a solution will result in higher frequencies. With the correct concentrations, one can create a piano of blues!	
Summary Statement A piano of blues, made with copper sulphate solutions and a circuit, showed that the sound frequency produced increased as the concentration of copper sulphate increased; with the right concentrations, music notes can be created.	
Help Received My father taught me how to build the modified 555 timer circuit, and how it worked.	