



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Ryan D. Sloane	Project Number J1821
Project Title Up, Up, and Away	
Abstract Objectives/Goals To predict gross lift for a hot air balloon before flight testing. Methods/Materials Measure the volume of the balloon. Test for temperature inside the balloon. Weigh the balloon. Calculate lift using a lift table and rule of thumb. Predict how much weight the balloon can lift. Perform flight test to test hypothesis. Hot air balloon is a dry cleaning bag. Air is heated with a propane torch and metal pipe stand. Temperatures are measured with a instant read thermometer. Balance scale used for measuring balloon and lift weights. Lead weights and paperclips for flight test. Packing peanuts for measuring volume. Results I predicted a gross lift of 22.35 grams. My flight test successfully lifted 35 grams. I exceeded my prediction by 12.65 grams. Conclusions/Discussion The balloon was able to lift more weight that I predicted. The part of my project I probably needed to control better was the temperature inside the balloon. I tried to keep the inside temperature the same during the flight test, but I must have been heating the inside to a higher temperature than my thermometer was reading. A higher inside temperature would explain the extra lift.	
Summary Statement It is possible to calculate the lift for a hot air balloon using volume and air temperatures.	
Help Received My Dad helped with the design of the heating stand and operating the propane torch during testing.	