



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) Jacob J. Pace	Project Number 35414
Project Title Up, Up, and Away?	
Objectives/Goals The objective of my project is to explore how temperature affects the lifting ability of a helium balloon. My hypothesis is that when the helium inside the balloon is warmer relative to the surrounding air it will lift more. Abstract Methods/Materials Materials used: Three inflated Mylar helium balloons of the same shape and size, a #payload# of paperclips attached to each balloon with 24# of curling ribbon, thermometers, a stopwatch, and 5 different temperature environments. The number of paperclips each balloon could lift was recorded after 5 minutes at #room temperature,# as each balloon was taken into environments of 114F, 156F, 54F, 36F, and 6F, and again after 5 minutes in the new environment. Data was also collected as each balloon was taken back into #room temperature# and again after 5 minutes at room temperature. Results When a helium balloon is taken from a cooler temperature to a warmer temperature, it immediately lowers its payload to the ground. When a helium balloon is taken from a warmer temperature to a cooler environment, it is able to lift an increased payload of 1-2 paperclips. Conclusions/Discussion I was #buoyed# up after seeing that my data supported my hypothesis. The ability of a helium balloon to lift its payload increased when the helium temperature was warmer relative to the ambient air.	
Summary Statement The goal of this project is to discover the effects of temperature on the ability of a helium balloon to lift a #payload.#	
Help Received My father and mother helped type the project and transport materials to experimentation sites. Access to school kitchen#s walk-in refrigerator and freezer was granted by Carolina Amiott and her supervisor. George Brown permitted use of the sauna and steam rooms at the local GB3 Gym.	