



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Noah Girdler	Project Number J1710
Project Title What Is the Buoyant Force of Helium?	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective of this study is to establish if the relationship between helium and mass increases in a linear way.</p> <p>Methods Same size balloons, same lengths of string, various weights of similar size with lead weights, helium. Measure the volume of a 9" balloon using water, measure that water in a flask in order to calculate the mass. Fill ballon with helium until 9" in diameter, find resting point of balloon using different weights. Convert mass of helium to cubic feet.</p> <p>Results The experiments I conducted yielded a result that 1 cubic foot of helium weighs 1.43 ounces. I discovered that the relationship between helium and its buoyant force is linear.</p> <p>Conclusions Ten 9" balloons (2.3 cubic feet) have a buoyant force of 3.4 ounces. In other words, it took 3.3 ounces to equalize the lifting power of 2.3 cubic feet of helium. This equates to the lifting power of 1 cubic foot of helium to have a buoyant force (i.e. it weighs) of 1.43 ounces (weight divided by volume). That is how much lighter helium is to the air around us.</p>	
Summary Statement I established the buoyant force of helium is 1.43 ounces per cubic foot and that the relationship between helium and mass increases in a linear way.	
Help Received I designed the concept for the project and executed all aspects of it, with the support of my dad, and my science teacher's review and input.	