



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> Christopher T. Dahlgren	<b>Project Number</b>  36726
<b>Project Title</b> Bottle Rocketry	
<b>Abstract</b> <b>Objectives/Goals</b> Objective: The objective is to determine what amount of water between one and seven cups will allow a bottle rocket to reach its maximum height if all other conditions remain the same. <b>Methods/Materials</b> Methods and Materials: Two 2L bottles, Water, Air pressure, Estes altitude finder. The bottle rockets are constructed out of identical two liter bottles. They are made using four lower fins and four upper fins. A nose cone was attached for aerodynamics. Clay ballast was added under each nose to bring the weight of each rocket. to 150 grams. Each rocket was launched using a non-launch tube system and pressurized to a consistent 50 psi using a bicycle pump. Each launch has pre-measured amount of water ranging from one to seven cups. The height of each rocket will be measured by the Estes altitude finder. The entire process will be repeated twice to verify results and average altitude findings. <b>Results</b> Results: I found out that four cups of water produced the highest launch. Any amount below four cups of water did not give the rocket enough propellant to reach its maximum height. Any amount above four cups of water proved to be too much propellant and did not allow enough air to be pumped into the rocket. This was seen on the last launch where the rocket landed still having water in it. <b>Conclusions/Discussion</b> Conclusion: Four cups of water produced the highest launch. Therefore, my hypothesis was correct. I thought that filling the bottle halfway would produce the highest launch. If I were to do the experiment again, I would increase the air pressure to 100 psi.	
<b>Summary Statement</b> The project was to determine the optimum amount of water that would propel a bottle rocket to its maximum altitude.	
<b>Help Received</b> Due to the distance between the launch site and the data recording position and basic safety, I required help from my family with launching the rocket. Otherwise I was able to do the project myself.	