



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Zachary S. Barnes	Project Number J0103
Project Title A Hole in One for Aviation	
Abstract Objectives/Goals The objective was to find if dimples on the top of an airfoil would allow it to generate more lift and less drag than a conventional airplane wing. Methods/Materials 9-inch long airfoil, wind tunnel, computer with LoggerLite Pro. Tested 6 times, 3 for lift and 3 for drag, then added 10 dimples evenly spread across top, until reached 50 dimples. Results I found that dimples on an airfoil do decrease drag and increase lift, but they create extra turbulence, which makes for a bouncier wing. Conclusions/Discussion I tested to see if dimples could be something that would improve efficiency on an airplane wing and found that they do help decrease drag and increase lift, but they create extra turbulence.	
Summary Statement I tested to see if dimples could be something that would improve efficiency on an airplane wing and found that they do help decrease drag and increase lift, but they create extra turbulence.	
Help Received Scott Barnes (Dad) helped me construct my airfoil and test it in the wind tunnel. Jennifer Barnes (Mom) helped me layout my board, and Elizabeth Conrad (Science Teacher) allowed me to borrow her wind tunnel and helped me through the registration process for the Orange County Science Fair.	