CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
S0111

Project Title
At What Angle Is the Lift of a Wing Maximized?

Abstract

Objectives/Goals
In order for the pilot of an airplane to be able to gain altitude, they must know at which angle of inclination to put the plane. the purpose is to discoverthe angle that gives the plane the most lift. If the angle of the airfoil is increased, then the amout of lift generated will also increase untill it reaches the stall point.

Methods/Materials
This project requires research and development. To start the project, one needs to have an understanding of how an airplane is lifted off the ground, which is called lift. The project required extensive planning. A wind tunnel was built in order to test the angel of attack of the airfoil. Before using the wind tunnel, the angel of attack was tested outside of the wind tunnel. Then, it was tested inside of the tunnel to determine if the generated lift would increase. The angel was tested and recorded in five degree in crements.

Results
The results show that as the angel of attack was increased five degrees the lift increased about .2 ounces outside of the wind tunnel. As the angel of attack was decreasedfive degrees, there was a negative liftof about .2 ounces. The results of the tests in the wind tunnel were similar. As the angel was increased by five degrees, the lift increased by .3-.4 ounces. The stall point for each test was approximately 30 degrees.

Conclusions/Discussion
Overall, the hypothesis is supported. As the angel of attack was increased the amount of lift generated increased untill it reached an exceeded the stall point.

Summary Statement
The objective was to discover the angel that would maximize the lift generated.

Help Received
My mother proof read my research paper. My father helped assemble the Testing apporatus.