CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
Clayton C. Davis

Project Number
J0104

Project Title
Up, Up, and Away

Abstract

Objectives/Goals
The goal of my project was to test what pitch of a helicopter's blade will provide the most lift.

Methods/Materials
I made four helicopter blades with identical shape and size, but different pitches (5, 20, 35, and 50). All blades are to be mounted on a motor. The motor and blades were placed on an envelope scale and weighed. I then turned on the motor and observed the new weight. The difference between the two numbers is how many ounces the particular unit can lift. I tested each pitch three times.

Results
My results from greatest to least lift were as follows: 20 degrees lifted 9.1 ounces, 35 degrees lifted 7.2 ounces, 5 degrees lifted 6.7 ounces, and 50 degrees lifted 5 ounces.

Conclusions/Discussion
My hypothesis was proven correct by my results. After testing, I communicated with some helicopter manufacturers and they confirmed my results by stating that my findings were just as they would have expected. Experiments such as mine have helped helicopter aviation reach goals of lifting astonishing weights. Helicopters that can lift great weights are used in forest fire fighting, army transportation, and many other ways.

Summary Statement
My project was to determine what pitch of a helicopter's blade will provide the most lift.

Help Received
My father helped me brainstorm the development of my project and assisted me in the use of power tools for building the testing unit. My teacher edited papers and assisted me in putting my board together.