CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J0107

Project Title
Sail and Speed

Abstract

Objectives/Goals
To determine what sail trim 0, 15, 30, 45, 60, 75, and 90 degrees would make the boat sail fastest. We believe that the sail trim of 90 degrees would make the boat sail the fastest.

Methods/Materials
The sail was made out of mylar. Carbon fiber spars ad heat shrink tubing were used for the mast and boom. The hull was made out of plywood, as was the track. Six fans were used to simulate wind.

Results
The boat failed to complete the track with the sail trim, of 0, 75, and 90 degrees. The sail trim of 15 degrees was the slowest, while 30 and 60 were about the same speed. The boat completed the track at the fastest speed with the sail trim of 45 degrees.

Conclusions/Discussion
The boat sailed the fastest when the sail was trimmed at 45 degrees. We proved our hypothesis incorrect. We learned how air particles collide over an airfoil creating high and low pressure areas, and how this combines to create lift. The lift generates movement which can be measured as speed.

Summary Statement
This project determines how sail trim effects the speed of a sailboat.

Help Received
Jess Atkinson provided materials and guided the making of the sail. Brittany's dad used power tools to help build the hull and track.