



## Colorado Science and Engineering Fair

## 2025 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: Can I Get A Lift?

Finalist's Name: Lane Mattive

School and City: Sargent Middle School, Monte Vista

Sponsor's Name: Terri Paulson

Category: Physics & Astronomy

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

Fast airplanes, slow airplanes, heavy airplanes, light airplanes, it's all about the wing...or Airfoil! Have you ever wondered why wings are shaped like they are? Me too. This is what led me to my project. This project looks at how much weight different wings can lift based on their shape and the way air flows around them. In my experiment, we will be looking at three different Airfoils, all different shapes, they will consist of a Boeing 747, Cessna Skyhawk, and a Piper Cherokee. I hypothesize that the Boeing 747 airfoil will withstand and pull up the most weight because it is a newer design of airfoil so it could be more advanced. I will start by setting up my wind tunnel and preparing my fan, metal rods, wings, string, and weights to determine how much weight a certain shape of wing can lift. I will then do two tests with each wing so I will be able to get consistent results. I started with an exhaust fan but felt that I needed higher velocity air to better emulate real airflow over a wing. I ended up using an electric leaf blower that blows around 140 MPH, and liked the performance it gave me. In conclusion, my hypothesis was false, the Cessna Skyhawk ended up lifting the most weight, although at high speeds, the Cessna did something called an aerodynamic flutter. This means this airfoil is not ideal for lifting heavy loads at fast speeds. The Piper Cherokee lifted the second most amount of weight, leaving the Boeing 747 last.

*I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.*

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**