



## Colorado Science and Engineering Fair

## 2024 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: Just Wingin It

Finalist's Name: Lane Mattive

School and City: Sargent, Monte Vista

Sponsor's Name: Terri Paulson

Category: Physics & Astronomy (PHYS)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

The question is....what is a winglet? I asked 25 people if they knew what winglets are, only 5 people did. Have you ever looked out the window of an airplane and seen a fin on the end of the wing? This leads me to my project's concept of winglets. There are many types of winglets, which one is the most aerodynamic and creates the least amount of drag? I chose to test two different winglets, the blended winglet and the wing fence winglet. I also wanted to test a wing with no winglet. My hypothesis is that the blended winglet will give off the least amount of drag, with the wing fence winglet coming in second. I will start by making a wind tunnel using acrylic sheets and create a pulley system to simulate drag. I will then put each wing combination in the wind tunnel and observe the airflow of each one. I also added a fog machine that will help me see the air flow at the end of the wing. I will test the drag on each one by adding weights to my pulley system until the test sled remains stationary under the thrust force from the wind tunnel fan. I will weigh each set of weights from each wing combination and document it to form a graph. Through experimentation the wing with no winglet resulted in the least amount of drag and in this situation would be the most efficient wing.

*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.