

# ROCKET AERODYNAMICS

**The way rockets move through air**

# LAST YEAR'S MAIN GOAL

Build a **stable** (but not too stable) rocket with minimal **drag** for our rocket's speed range and payload

# OUR RESEARCH

- Read about the basics: lift, drag, and stability
- Found literature on airfoils and nosecone shapes
- Used programs like OpenRocket and Rocksim to experiment with designs

# DESIGN

- Chose a design that had good aerodynamic characteristics
- Gave input to structures team on body length and diameter
- Created models of fins and nosecone in OpenRocket, RASaero, and SolidWorks

# BUILD PHASE

- Figured out our original fin design was hard to make
  - Changed our design to make manufacturing easier
- Tried a few different methods of making our nose cone
  - Found one that worked and went with it!

# IDEAS FOR IMPROVEMENT

- **Make design changes early and often:** We made too many design changes late in the build process and it cost us time
- **Simulate:** Have numbers like  $C_l$  and  $C_d$  during the design phase to back ourselves up
- **Test:** Build prototypes and test them before main build phase
- **Communication:** Have a plan from the start to communicate effectively with each other
- **Understand the competition rules:** Pay attention to wording!

QUESTIONS?

Thank you!