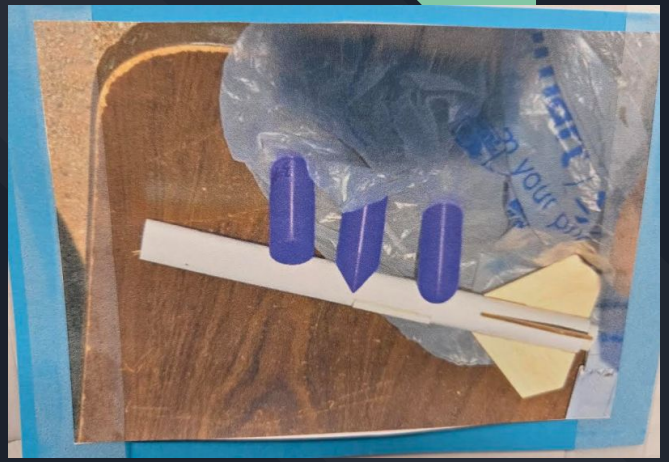
Ready Rockets



5A17

Purpose

My purpose to do this is to identify the best nose cone for a rocket so that someday we might be able to go Mars.

Question

How do different shaped nosecones affect the drag and aerodynamics in rocketry? Between nosecones that are pointy, round and flat, which one will do the best?

Hypothesis

I predict that the rocket with the round nose cone will do the best and that the rocket with the flat nose cone will do the worst, because the round one has better aerodynamics and less drag, and the flat one will reduce aerodynamics and increase drag.

Background Research

The article is about how rockets work and what adjustments would make the rocket better and higher flying

The article is about how rockets why they work and what to do to improve them.

The URL is http://www.grc.nasa.gov/www/k-12/rocket/TRCRocket/rocket_principles.html

Last Date of Access: **12/10/25**

Title of Article: Rocket Principle
Author's Name: Tom Benson

Date of Article: May 13 2021

Materials

1. Moder (C6-5)
2. Pre Built rocket
3. 3D Printer
4. Filament (plastic that makes objects in 3D printer)
5. Igniter
6. Altimeter (Records the height/altitude)
7. Launch pad
8. Alligator Clip
9. String
10. Wadding (paper like material)
11. Glue
12. Sandpaper

Procedures

1. Build rocket from pre packaged rocket kit
2. 3D print 3 Nosecones
3. Put wadding into rocket
4. Use long object to push down wadding
5. Put in parachute
6. Put in altimeter
7. Put in the moder in the bottom
8. Put in igniter into moder
9. Put in something so the igniter won't fall out
10. Put the rocket on the metal stick
11. Test if the ignitor is working
12. Wait for announcer to launch your rocket
13. Record data
14. Repeat

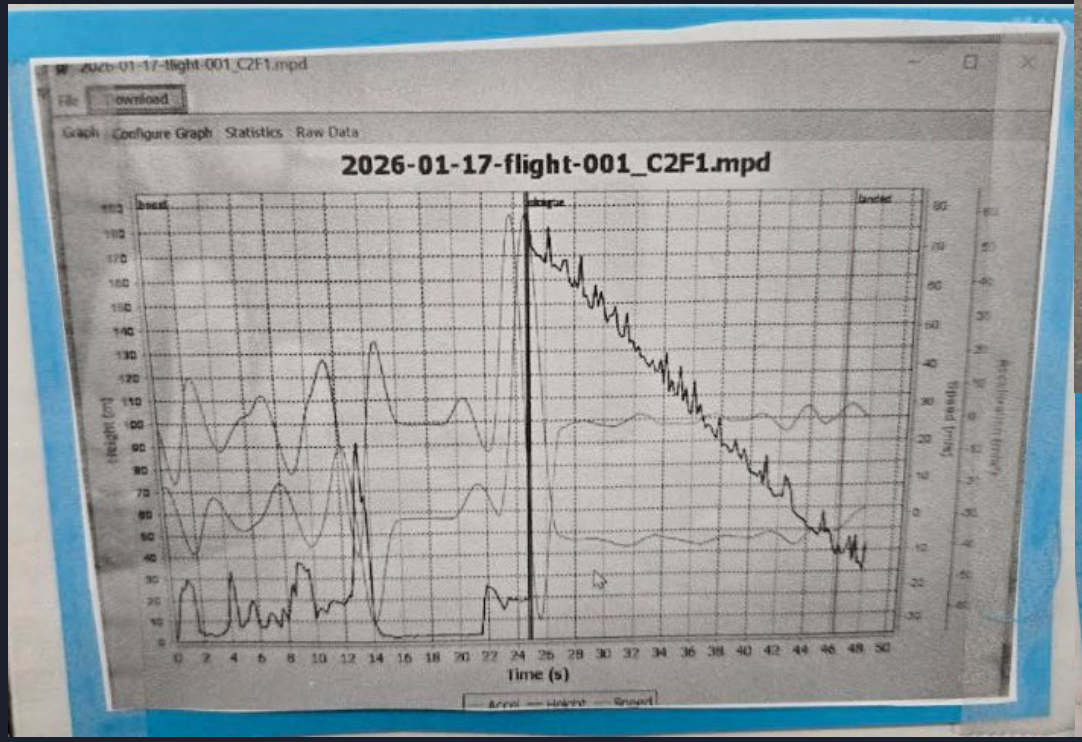
Variables

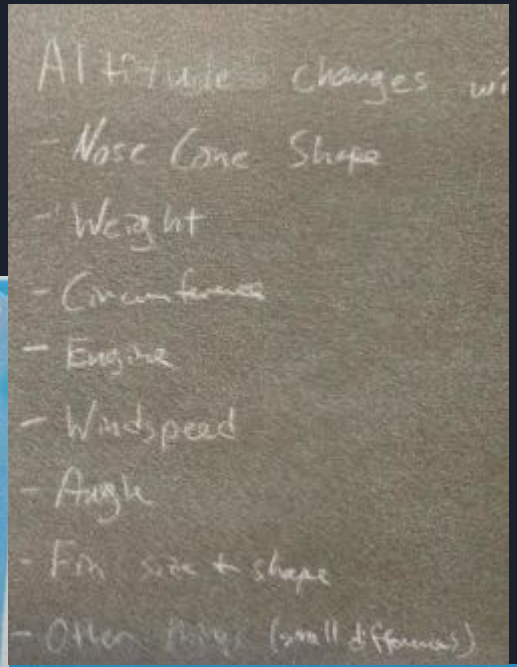
Independent Variable: (What are you changing?)
The Nose cones

Dependent Variable: (What are you measuring?)
How high does the rocket launch

Control: (What has to be the same)
The model of the rocket and the motor the parachute and the weight.

Data and Observations





Flight	Nosecone *1 Sharp	Noscone *2 Round	Nosecone *3 Flat
1	861ft	910ft	681ft
2	872ft	879ft	747ft

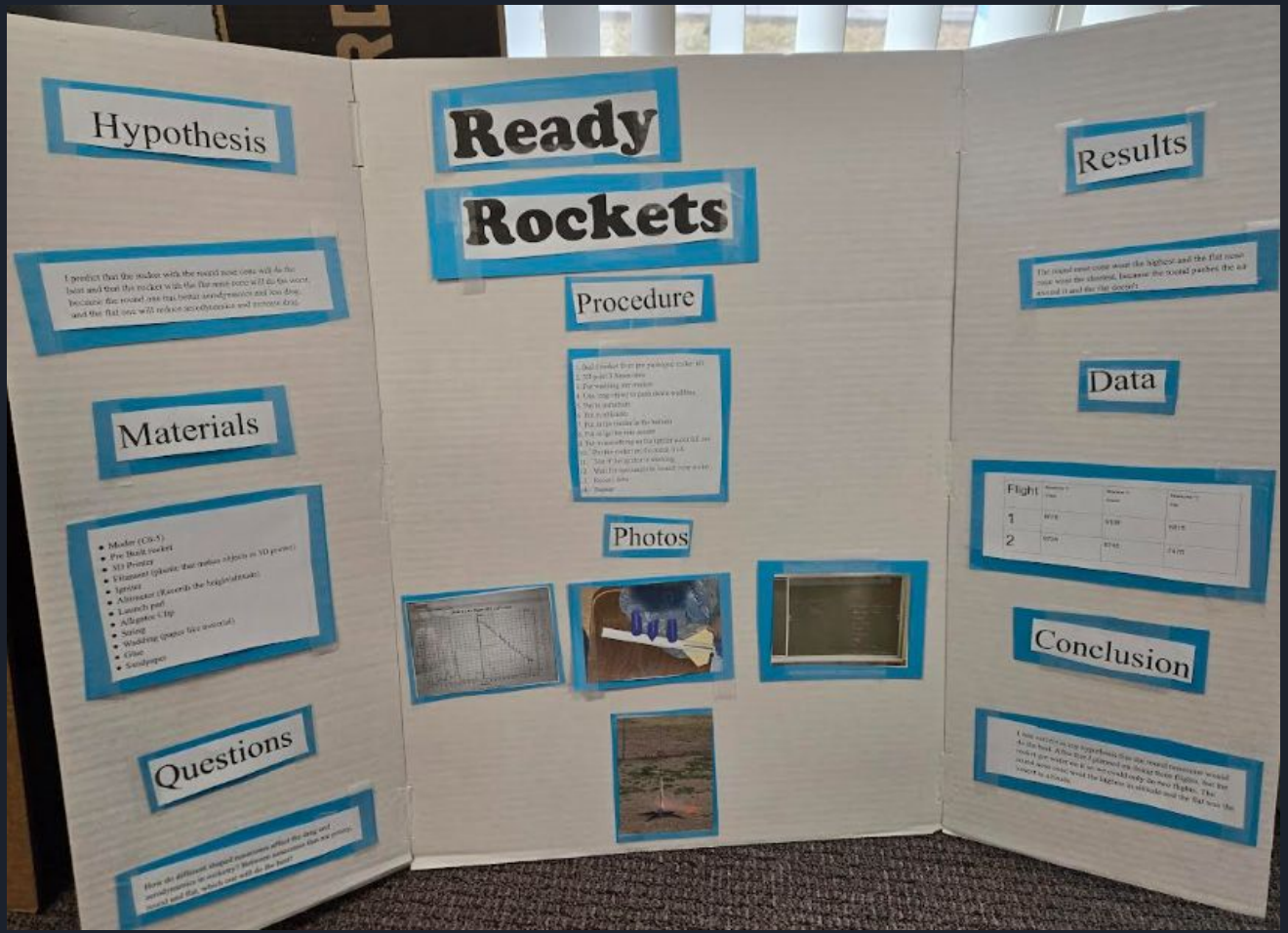
Results

The round nose cone went the highest and the flat nose cone went the shortest. Because the aerodynamics in the round nose cone was much better than the flat nose cone.

Conclusion

I was correct in my hypothesis that the round nose cone would do the best. After that I planned on doing three flights, but the rocket got water on it so we could only do two flights. The round nose cone went the highest in altitude and the flat was the lowest in altitude.

Real World Application

This experiment is important for real-world rocket and spacecraft design. Engineers use aerodynamic shapes to help rockets travel higher, faster, and more efficiently. Space agencies, like NASA, carefully design rocket nose cones to reduce drag when launching rockets into space. Understanding aerodynamics can help scientists build better rockets for missions to places like Mars and beyond. These same ideas are also used to design airplanes, cars, and even sports helmets to improve speed and safety.

Final Project