



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

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Project Title Rocket Science: What Fin and Fin Placement Is Optimal for a Rocket's Altitude?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this experiment is to determine which fin and fin placement combination is most optimal for a rocket's altitude.</p> <p>Methods/Materials Inclinometers, air pressure launcher, two rocket body tubes and cones, various fin shapes, varying placements were used. Rockets were launched with different fins and fin placements and the altitude was measured with the use of inclinometers.</p> <p>Results The average altitudes were compared with each varying fins and placements. The rectangular four-finned, parallelogram four-finned, and elliptical three-finned appeared to be the most optimal for altitude.</p> <p>Conclusions/Discussion Most of the four-finned rockets performed more superior compared to the three-finned rockets. With the swept shape of the parallelogram, this fin type executed a higher altitude when collated with the outcomes. Combined together, the parallelogram four-finned rocket's stability with greater amount of fins and its lower drag with the shape appear to be the most aerodynamic fin and placement for altitude.</p>	
Summary Statement After launching I found that the rectangular three-finned, parallelogram four-finned, and elliptical three-finned appear to be the most optimal for a rocket's altitude.	
Help Received I was assisted with the creation of the launcher with the help of a mechanical engineer associated with GE Healthcare. I performed the experiments and the making of rockets myself.	