



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

<b>Name(s)</b> <b>Lalitha S. Dhyaram</b>	<b>Project Number</b>  38538
<b>Project Title</b> <b>Which Is the Optimum Model Rocket Fin Shape to Reach the Highest Altitude?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this project is to determine which fin shape will allow a model rocket to reach the highest altitude. <b>Methods/Materials</b> Estes Alpha III model rockets, poster board and balsa wood sheet. Make new fin mounts by cutting different fin shapes out of balsa wood and making new fin mount tubes with poster board; replace Estes plastic fin mounts. Rockets are assembled with new and varying fin mounts. Launch each model rocket 3 times, recording both the inclinometer and altimeter results for each flight. <b>Results</b> Assembled rockets had the following fin shapes; (trapezoid, rectangle, square, triangle, clipped delta, asymmetrical parallelogram, elliptical, pointed ark, & original Estes model). Averages by test number to the nearest centimeter bring these overall results - 40.29 m, 36.08 m, 41.26 m, 45.28 m, 45.02 m, 54.61 m, 40.82 m, 40.66 m, and 39.43 m respectively to the fin shape order given. These results suggest that the asymmetrical parallelogram fin shape on a model rocket is the best in reaching the highest altitude. <b>Conclusions/Discussion</b> Repeated launch trials of 9 model rockets with different fin shapes showed that the asymmetrical parallelogram fin shape performed better than the other fin shapes. This means that having a fin mount with asymmetrical parallelogram shaped fins made from balsa wood on a model rocket provides a significant increase to the altitude reached by the model rocket.	
<b>Summary Statement</b> I measured the altitude that each model rocket reached and found that the asymmetrical parallelogram fin shape is the best fin shape on a model rocket to reach the highest altitude.	
<b>Help Received</b> I designed the fin shapes and assembled the rockets myself. I got help from my Science teacher in reviewing my project reports. I got help from my mom in cutting out the fin shapes from the balsa wood. I got assistance from my parents for transportation to the launch site.	