



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Denise A. Navarro	Project Number J0222
Project Title How Does a Trebuchet Work?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of the project was to build one trebuchet made of wood with supplies in my school's woodshop class. I changed each feature in order to see at which settings it will perform its best. I also tested to see which feature to change in order to accurately hit a target on the floor at 6.25 and 10 m. I had to document my test well by creating a daily log, research paper, and visual display board. My hypothesis was that in order for the projectile to go a greater distance, I believe the length of the sling string should be longer, the hook should be curved more, the lever arm should be longer, and the fulcrum should be higher. In order to hit the target, the lever arm should be adjusted.</p> <p>Methods/Materials I used a trebuchet made of wood, a hackie sack, string, a meter stick, and safety goggles. When I changed the features of the trebuchet, I kept all the other things constant just to be as accurate as possible. I changed the length of the sling string from 35-54 cm. I changed the curvature of the hook from a flat semi-circle to a fully curved semi-circle. I varied the length of the lever arm from 70-100 cm. I also changed the height of the fulcrum from 54-60 cm. In order to hit the target, i changed the curve of the hook, the length of the lever arm, and the height of the fulcrum.</p> <p>Results The projectile went farther when the sling of the sling string was longer, the curve of the hook was greater, the lever arm was longer, and the height of the fulcrum was higher. The best feature to change in order to hit the target was the length of the lever arm beacuse it allowed me to aim better.</p> <p>Conclusions/Discussion In conclusion, my hypothesis was correct. When the lengths of the sling string and the lever arm was longer, the projectil went farther. When the hook was curved more and the hieght of the fulcrum was higher, the projectile went farther. The best feature to change to hit the target was the lever arm.</p>	
Summary Statement I built one trebuchet made of wood and test each of its different variables to see at which settings it will perform the best and hit two targets on the floor.	
Help Received Mr. Wade helped me build the trebuchet in his woodshop class; Mrs. Genota helped me with the research paper and display borad; my parents helped me with my purchases.	