



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) David A. Whiteside	Project Number J0236
Project Title Projectile Efficiencies for a Kinetic Energy Weapon of Medieval Warfare	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project is to find the optimum ratio of counter weight to projectile weight. Another goal is to find if the optimum ratio, if there is one, will hold strong between three different projectile weights.</p> <p>Methods/Materials One will need power tools, saws, a nail gun, wood and a set of instructions to guide you as you build the trebuchet. One will also need a projectile or tennis ball, weights for the counter weight, and a measuring tape to measure the distance of each launch.</p> <p>Results The data shows that for projectile group #one# the optimum ratio is 92:1. The optimum ratio for projectile group #two# is 59:1. The optimum ratio for projectile group #three# is 34:1.</p> <p>Conclusions/Discussion When the data is studied, it is shown that there is no over all optimum ratio that is listed throughout all the projectile weights. There is a pattern that is shown, but not with enough sample size to be statistically significant. This is a pattern that shows when the projectile weight is increased; the ratio between counter weight and projectile becomes smaller.</p>	
Summary Statement This project was trying to find if there was an optimum ratio between counter wheight and projectile wheight and what was the ratio if there was one.	
Help Received Mother helped type the report; Friend helped retrieve ball after launches; Dad supervised the building of the trebuchet.	