



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Amal I. Duriseti	Project Number J0205
Project Title Beware Ye Minifigures	
Abstract Objectives/Goals I wanted to find out how changes in projectile mass, counterweight mass, and throwing arm length affect the range and trajectory of a projectile launched by a trebuchet. Methods/Materials I built a trebuchet using Legos and launched projectiles weighing 3/8 oz, 1/2 oz, 3/4 oz, and 1 oz for each of 6 possible combinations of two arm lengths (21 inches and 23 inches) and three counterweight masses (500, 1000, and 1500 grams). I observed the shape of the trajectory and recorded the range for three trials of each case. I graphed the average of the three trials for each case. Results My results show that the range of a trebuchet increases as projectile mass decreases, counterweight mass increases, or the throwing arm length decreases, and that the trajectory of the projectile becomes flatter as the projectile mass decreases, the counterweight mass increases, or the throwing arm length increases. The converses of all the findings are true. Conclusions/Discussion My results confirm the hypotheses about projectile and counterweight mass, but disconfirm the hypotheses about throwing arm length. The evidence indicates that a longer throwing arm decreases the range of a projectile and makes the trajectory more curved.	
Summary Statement I tested how changes in projectile mass, counterweight mass, and throwing arm length affect the range and trajectory of a projectile launched by a trebuchet.	
Help Received Mom helped sew sling and spot landings; Dad helped with sling design modifications	