CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
Albert Tseng

Project Number
J0325

Project Title
The Effect of Weight on an Arrow's Stability and Damage

Abstract

Objectives/Goals
The purpose of this project is to see the effects off weight on a projectile, in this case, the arrow. It determines how random archery really is, and the effect of weight on distribution

Methods/Materials
The equipment I used was PSE Razorback Jr. Bow and 6 Gold Tip Lightning arrows. The increased weights were achieved by adding rice to the hollow shaft. The procedures were to shoot the 19.4 gram arrow first for ten times, recording after each shot was accomplished. This was repeated for all other weights. The same position was acquired for each shot by using a tripod with PVC pipes attached to mark the exact position of the bow

Results
The results were that in the #Distance from the Origin# field, the more accurate the arrow was, the more random it would be (deviation of the distance). Also, the heaviest arrow mirrored the lightest arrow (farthest from origin) and the mid-weight ones were the closest to the origin. In the #Puncture Depth# field, again the heaviest mirrored the lightest and the mid-weight ones penetrated the deepest and were the most random.

Conclusions/Discussion
My conclusions are that high and low arrow weights have the same effect, which is a less accurate or less damaging but less random result. The average of the two weights produces the most accurate result or most damaging but has more randomness.

Summary Statement
It determines how weight affects an arrows stability and damage created

Help Received
Mother helped with designing the board layout. Father took photo of arrow being shot.