



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Kirsten M.A. Cassidy	Project Number J0103
Project Title How Does Fletching Affect the Velocity of Arrows?	
Abstract Objectives/Goals The goal of this project is to find the fastest arrow out of the four different arrows being tested. The fastest arrow will be the most accurate. Anyone who is involved in the sport of archery can benefit from the results of the experiment by having the fastest and most accurate arrows. Methods/Materials Some materials being used are a recurve bow, four differently fletched arrows, a computer with Coach Studio and Quick Time software, a high speed camera, and an archery range. First record with the high speed camera all the arrows that were shot. Then download them onto the computer and cut them down so they are not as lengthy. Transfer into Coach Studio and track the arrow. Export the data and record in a data table. Results The arrow that was predicted to fly the fastest did in fact fly faster than all the rest after analyzing the data from the videos. The only difference to the hypothesis was that the fastest arrow flew 1.247624 m/s faster than the next fastest arrow. The researcher found that there were some definite differences in the speed of the arrow shot. Conclusions/Discussion The hypothesis was very close to the actual arrow. The feather straight fletched arrow did indeed fly the fastest but it was faster than predicted. It flew 1.2476154 meters per second faster than the next fastest arrow which was the plastic helically fletched arrow. The fastest arrow flew 1.6400702 meters per second faster than the third fastest arrow which was the feather helically fletched arrow. What was even more amazing is that it flew 3.9663006 meters per second faster than the slowest arrow. This is almost four whole meters per second faster than the plastic straight fletched arrow. The part of the hypothesis that was correct was which arrow would fly the fastest. This was the feather straight fletched arrow.	
Summary Statement The fastest and most accurate arrow is the straight feather fletched arrow. Now that this information has been found all archers can have the fastest arrow.	
Help Received Help was received from Sabrina Cassidy (mom), Christopher Cassidy (dad), and Gayla Robinson (archery Instructor).	