



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Jordan R. Young	Project Number S0229
Project Title Stay Fly: A Study of the Effects of Both Aspect Ratio and Weight on the Flight of a Glider	
Abstract Objectives/Goals Throughout the history of aircrafts, there has existed a struggle to provide maximum efficiency while still having the ability to carry heavy loads. It is the goal of this project to determine which combination of Aspect ratio (AR) and weight will provide the most efficiency. Methods/Materials This project requires minimal supplies which are not hard to find. The fuselage of a toy glider was used as a constant body for the test glider. Balsa wood was used to construct the wings of the glider. A piece of Rubber Thread was used to launch the glider from a table top. A spring scale was used to insure that there was a consistent force of 10 Newtons of force when it was launched. Results The data shows that there is a steady increase in distance traveled as the aspect ratio is increased. The results for Wings 1-5 are as follows (wing #1- 2.751 m, wing #2- 2.908 m, wing #3- 4.747 m, wing #4- 5.165, wing #5- 5.472). There was an average Standard Deviation of .355 m. After a weight of 4.25 grams was added there was a decrease in distance traveled throughout all three of the weighted wings. Wing #1 had an average decrease of .393 m. Wing #3 had an average decrease of 1.327 m. Wing #5 had an average decrease of 1.072 m. Throughout all three of the test sets there was an average decrease of .964 m. There was also an average Standard Deviation of .108 m. Conclusions/Discussion In conclusion, the objective of this project was achieved. There results acquired were not the ones expected. It was expected that as the aspect ratio increased that the distance would increase up to a certain point when it was then begin to decrease gradually. However, this did not happen. The distance traveled continued to increase as the aspect ratio was increased. It is possible that this is due to the fact that a longer piece of balsa wood could not be found resulting in material limitations. When the weigh was added to the wings there was an obvious decrease in distance. It is not clear why this occurred. In theory the weight should not have affected the distance traveled by the glider.	
Summary Statement This project#s purpose is to determine the correlation between the effects of Aspect Ratios on distance traveled and weight and distance traveled.	
Help Received The only help received was that of my father. He assisted me in the measuring of the distance traveled.	