



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Luca V. Mendoza	Project Number 31895
Project Title Which Wing Will Create the Most Lift?	
Objectives/Goals The purpose of my experiment was to demonstrate the effects of wing shape on lift. Abstract Methods/Materials To do so, I designed three different wing shapes with the same area and a wind tunnel. Wing A, when viewed from above, was a triangle, with a height and base of 50cm. Wing B was a rectangle, with a 50cm span and a 25cm chord. Wing C had a 1m span and a 12.50cm chord. The wings were constructed with K#nex frames, crucial in getting the common airfoil shape, and plastic-wrapped. The amount of lift generated was measured by timing how long it took for each wing to travel six inches up the diagonal rods of the wind tunnel. Results In the end, Wing A lifted the fastest. It not only lifted six inches in 2 seconds, it immediately traveled all the way to the top which was another 25 inches. Wing B lifted six inches in 3.33 seconds, and Wing C took 7.5 seconds. Although Wing B flew up the rod more quickly than Wing C, Wing C went up farther and steadier. Conclusions/Discussion The results did not match my hypothesis, which predicted Wing C would generate the most lift because it created the least induced drag. Perhaps the reason Wing C was slow was the fan only blew at its center and didn#t utilize the full area. However, Wings A and B had more area in the center, Wing A more so than B, providing more lift. In the future, I would be interested in making the wings of balsa because it would render similar weights, and eventually make all the wings lighter so I could measure the amount of lift by adding weights to the wings to see how much they could hold and still fly. Moreover, I would try to find rods that don't bend. Lastly, I would like to have more fans so the wind would be evenly distributed.	
Summary Statement To demonstrate the effects of wing shape on lift, three wings of the same area but different design were tested in a wind tunnel.	
Help Received My mother drilled holes in the wind tunnel frame.	