



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Luca V. Mendoza	Project Number J0116
Project Title Which Wing Will Create the Most Lift?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my experiment was to demonstrate the effects of wing shape on lift.</p> <p>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.</p> <p>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.</p> <p>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.</p>	
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.	