



# CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

<b>Name(s)</b> <b>Bobby M. Jones</b>	<b>Project Number</b>  31901
<b>Project Title</b> <b>Airplane Wings and the Amount of Lift They Produce</b>	
<b>Objectives/Goals</b> I set out to find the wing shape that will provide the most lift that will provide the most lift. My main goal was to find one specific design that outperformed the others when it came to producing lift. <b>Abstract</b> <b>Methods/Materials</b> First, I need to build a wind tunnel that I will be able to put my wing designs into and test the amount of lift they produce. I need a few pieces of wood, a leaf blower for a wind source, spray paint, and wood screws. Although I have one particular design in mind, I will be able to use different designs for the wind tunnel as I continue with research. I also need to make at least three different wing designs to test. I will make these wings from balsa wood. Last, I will need pennies so I can add weight to the wings. Next, I have to build the wind tunnel. I will gather the materials and then assemble them according to the directions I have found that help you build the wind tunnel. Then, I will build all three of the wing designs that I have chosen to make from balsa wood. Last, I will put each of the designs into the tunnel. Next, I will add a specific weight: both one and three pennies. Then, I will turn the fan on and increasingly turn up the speed at set intervals. When the wing lifts, I will record #takeoff speed.# I will then bring the speed down until the wing drops back down, and then I will record #cruise speed.# <b>Results</b> Even without any amount of weight there was a difference between the control wing and the other shaped wings. The shaped wings lifted at lower speeds and cruised at the lowest or second lowest setting. It became obvious that lift was being shown by the tests. However, it was only slightly harder to measure the difference between the shaped experimental wings. For some of them, the difference came down to just a few notches of speed. In the end, my hypothesis was proven to be true and the wing with a slightly curved upper camber and flat lower camber presented the most lift out of any of the wing designs. <b>Conclusions/Discussion</b> The best wing shape i created was my second experimental one. This wing would be the most effective wing to use if one is building a cargo plane. It will allow the plane to carry weight without having to use as much fuel. Other planes that are looking to save fuel might also use this wing.	
<b>Summary Statement</b> My project is about finding the wing design that will provide the greatest amount of lift.	
<b>Help Received</b> My dad helped build the wind tunnel because I had a broken arm.	