



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Daniel R. Brownlee	Project Number J0103
Project Title Dihedral Angles and Their Effect on Flight	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This experiment was designed to determine if the dihedral angle of a plane's wing affects a plane's length of flight. The dihedral angle is the angle of a plane's wing to a horizontal plane.</p> <p>Methods/Materials The test plane was created from a balsa wood kit, an arrow shaft and threaded rods. A hinge fitting was constructed by having a one inch dowel rod with a hole in it slid over a threaded rod on the fuselage. The hinge fitting was used to shift the dihedral angle of the wings. A launch system was created to insure each test was launched consistently. Fifty tests were completed for the following dihedral angles: 0o, 15o, 30o, -15o, and -30o. The data was recorded from where the nose hit each time. The tests were completed in an inside facility that was not affected by the outside elements.</p> <p>Results The -30o anhedral flew the farthest on average. The -15o flew the shortest on average. However, this angle flew with the most stability.</p> <p>Conclusions/Discussion The experimenter believes the -30o anhedral flew the furthest because a cushion of air formed under the plane which did not allow the normal vortexes to form and kept the plane aloft longer.</p>	
Summary Statement This experiment was designed to determine if the dihedral angle of a plane's wing affects a plane's length of flight.	
Help Received Father helped launch and build airplane. Mother helped to type report. Used Gym at Mission Valley Church of the Nazerene.	