California Science Center

CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.)
Jymette M Meyer

Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9)
Lift? The Effect of Wing Shape and Angle of Attack on Lift

Science Fair Use Only

J0925

Division
X **Junior (6-8)** _ **Senior (9-12)**

Preferred Category (See page 5 for descriptions.)
9 - Fluid Mechanics/ Aerodynamics/ Thermophysics

Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.)
Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.

The lifting ability of an airfoil is a function of its shape and its angle of attack. The shape affects the lifting ability because the longer distance that the air must travel over the top of the wing means that the air must move faster relative to the air flowing under the shorter distance under the wing. Because the velocity is higher over the wing the relative pressure below the wing is higher and the pressure difference creates the lift.

Even flat thin airfols can create lift if they are angled relative to the direction of the air flow. This is because a portion of the airflow is directed upward against the wing.

In this experiment the effect of both the angle of attack and airfoli shape on lift are evaluated. A wind tunnel was built, several wing shapes designed and built, and a scale was used to measure quantitatively the effect of both wing shape and angle of attack on the amount of lift generated.

Summary Statement (In one sentence, state what your project is about.)
The effect of wing shape and angle of attack on lifting capability

Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4.
Father helped in designing testing equipment and setting up system for data collection; mother helped in obtaining resources and in board design.