# CALIFORNIA STATE SCIENCE FAIR
## 2007 PROJECT SUMMARY

**Name(s)**
Robert T. Tifft

**Project Number**
**J0125**

**Project Title**
## Aerodynamics' Effect on the Downforce of a Race Car

**Abstract**

**Objectives/Goals**
My objective is to show how the aerodynamics of a racecar and an airfoil mounted upside down affects the down-force of the car.

**Methods/Materials**
The materials that were used are, a plexi glass box for test area ,a ten inch diameter aluminum tube for plenum, about fifteen hundred straws for plenum, three scale size cars for test subjects, brass tubing for mounts, glue to bond straws, duct tape to seal leaks, spring scale to measure down force, vinyl skirt to connect fan to plenum, carpet blower to produce wind, brass plate for a platform for the cars, silver solder for soldering brass piping to plate and to scale, balsa wood for the airfoil.An airfoil was sanded from balsa wood, and mounted with brass tubing on the front, middle (roof), and rear of each of the three cars. I tested the amount of down force that is produced from each car with the airfoil on each position.

**Results**
My results were that the rear of the car produced the most down force. The middle of the car produced the least amount of down force. The Chevy NASCAR produced the most down force and Saleen S7 produced the least amount of down force. And the Ford GT was the most balanced since it had the least amount of curves.

**Conclusions/Discussion**
Aerodynamics affect the air flow over a car thus interfering with down force. This was tested this by putting three differently shaped cars in a homemade wind tunnel. An airfoil was attached to three positions of each car, front, middle, and rear. The rear produced the most down force because the rear window declined from the roof leaving little air under the airfoil and most of the air on top thus pushing it down. The middle (roof) produced the least amount of down force because the front window inclined from the hood leaving most of the air under the airfoil thus slightly lifting the car.

**Summary Statement**
My prodject is about how aerodynamics affect the downforce of cars.

**Help Received**
My dad helped pick out materials