



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title Need For Speed? It Will Cost You!	
Abstract Objectives/Goals The objective of this project was to determine what speed a car gets the best gas mileage. The second objective was to determine if a cargo rack on top of the car as well as the type of fuel made any difference to the fuel economy. Methods/Materials I tested this experiment on Canada Road which is a lightly traveled road and highway 280. I recorded the mpg from the multi-function indicator which shows the average fuel consumption. I traveled at 40, 55, and 65 mph. I repeated the tests multiple times with each variable to check for consistency. I also tested with a cargo rack on the car as well as with premium fuel vs. regular fuel. Materials: Odometer Speedometer Tachometer Cruise Control Outdoor thermometer Multi-function Indicator Test Vehicle: 2000 VW Passat 1.8 Liter Turbo Results The data showed that you get worse mileage when traveling at higher speeds. The faster you go, the more it costs, because you use up more fuel. You also get worse mileage while driving with a cargo rack on the top of the car. The cargo rack produces more drag which makes the engine work harder and this makes the engine use up more fuel. When you drive up steep hills your gas mileage decreases dramatically. On the test going south, there were more uphill than going north. Premium fuel improved the mpg by 15% at 65 mph, but was only 9% more expensive. Conclusions/Discussion At 40 mph the car obtained the best mpg, and at 65 mph obtained the worst. Premium fuel increased the mpg but only at 65 mph. When traveling with a cargo rack on the top of the car, the mpg were about 10 mpg worse than without the rack. The cargo rack increased the aerodynamic drag which played a big role in fuel economy.	
Summary Statement This project is about testing to see what speed a car gets the best gas mileage, and to see if a cargo rack as well as premium fuel affects fuel economy.	
Help Received Father for helping with the experiments; Mother for helping make the board.	