



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Joseph D. Papador	Project Number S0218
Project Title Fun Factors	
Objectives/Goals My objective was to find the factor that most greatly decreases miles per gallon of the four I tested.	
Abstract	
Methods/Materials Method 1. Drive one car, with no applied factors, from Ventura Avenue to Bates Beach and back going sixty-five miles an hour using cruise control. Record results at both the halfway point and at the end. 2. Apply one factor and repeat test and note any changes. 3. Repeat with each factor. 4. Change cars and repeat test. Materials: Two different cars, gasoline, digital tire gage, racks, and car instrumentation.	
Results I drove a Volvo five times with different factors applied for each test. For my control I received 30.8 MPG. With the windows down I received 28.7 MPG. With the AC and radio on I got 27.3 MPG. with a reduction of 5 PSI of tire pressure I received 30.1 MPG. And with the addition of racks i got 25.5 MPG. I also drove a Honda Hybrid five times with the same factors. I received 50.7 MPG on my control, 48.8 MPG with the windows down, 48.0 MPG with the AC and radio on, 49.5 with a decrease of 5 PSI in the tire pressure, and 40.2 MPG with the addition of racks.	
Conclusions/Discussion The factor that most greatly reduced MPG was the addition of racks to the car. This was caused by the reduction of aerodynamics on both the cars. My hypothesis was incorrect however the electrical devices caused the second highest decrease in MPG next to the addition of racks. I believe that I tested the air pressure incorrectly and didn't change it enough to make a significant decrease. The factors that I tested had a significant change in MPG that I didn't expect to happen. Knowing these factors and what they do to your MPG and avoiding them can save you both money and gas. I would like to test other factors in the future and see if any others create a significant difference in MPG and also find some that will increase MPG instead of decreasing.	
Summary Statement I have tested different factors that affect miles per gallon and looked to see which factor would decrease the MPG the most.	
Help Received My father drove the cars	