



# CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

<b>Name(s)</b> Jared A. Nolen	<b>Project Number</b> 34315
<b>Project Title</b> Does Dimpling a Car Affect Its Acceleration?	
<b>Objectives/Goals</b> The objective was to find evidence that proved that a car that was dimpled like a golf ball would accelerate faster than a car that is smooth. The acceleration of the car was measured between two photogates that were placed one meter apart on an angled track. <b>Abstract</b> <b>Methods/Materials</b> A track was set up with two photogates placed one meter apart on an angled track. A cover for a toy car was constructed with floral foam and cut with fishing line to a preferred shape and was smoothed so there would be no sharp edges. Next the car was run down the track 150 times and all the times were recorded onto a spreadsheet. The same car was then dimpled all across its surface (the same car was used so that the mass would stay the same). That car was then run 150 times and the data was recorded onto a spreadsheet. The data was then averaged and compared. <b>Results</b> My results showed that the dimpled car accelerated faster than the non dimpled car. The average time for the non dimpled car was 0.6374 seconds and the dimpled car's averaged time was 0.6371 seconds. I then proceeded to remove the top and bottom 10% of the data in order to remove the outliers. The average for the non dimpled car was 0.6513 seconds and the dimpled car's averaged time was 0.6511 seconds. The times over 1 meter were small so if I would have increased its length to one kilometer The average time for the non dimpled car would be 637.42 seconds and the dimpled car's averaged time would be 637.17 seconds. <b>Conclusions/Discussion</b> My hypothesis was proved correct, the dimpled car accelerated faster than the non dimpled car. An improvement for further study might have been to increase the distance of the track in order to get more dramatic results. This could apply to the real world because it could be used on cars or other vehicles like planes, boats, etc. It could be used on drag racing cars to increase acceleration over time. It could also be used on planes to lower how much jet engine fuel is used. It could be used on everyday cars to get where you're going faster or to get higher miles to the gallon.	
<b>Summary Statement</b> I tested to see if a car that was dimpled like a golf ball would accelerate faster than a smooth car over a distance of one meter.	
<b>Help Received</b> I borrowed equipment from my science teacher, Mr. Trone.	