



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Kaycee J. King	Project Number J0221
Project Title Inertia and Momentum: How Does Weight Distribution Affect Momentum?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I determined the most effective placement of weight on a 1.2 ounce car to cause the farthest distance of travel on two tracks.</p> <p>Methods/Materials Two tracks were built, one with a 30 degree and one with a 25 degree incline at the beginning of the track. The car, exactly 5 ounces with the weight, had five positions along the body of the car to hold the weight. Twenty runs for each of the 5 positions were performed. The distance traveled with each run was recorded, the average calculated, and results determined. A comparison of the weight placement, the slope of the track, and the distance traveled was made.</p> <p>Results On the 30 degree track, the fifth position (farthest back) had the longest average run at 177.45 inches but position four (on top of the axle) averaged 176.3 inches. On the 25 degree track, the farthest distance run, on the average, was also in the fifth position at 164.8 inches but the fourth position was significantly less. Analyzing the results of both runs indicate that the farthest position in the 25 degree track (fifth position) was significantly more effective than other back positions on distance traveled, than for the back positions of the car in the 30 degree track.</p> <p>Conclusions/Discussion My hypothesis, that weight placement should be in the back of the car for the longest distance traveled, was correct for both conditions. The experiment also found, however, that it is most critical with a flatter incline (25 degrees) to place the weight in the very back. With a steep incline (30 degrees), weight placed either on top of the axle or behind it were both effective for distance traveled. These results could be quite helpful in car design to create the most fuel efficient car possible.</p>	
Summary Statement My project sought to determine the most effective placement of weight on a small car for the farthest distance traveled.	
Help Received My dad built the track to use for my experimental runs. My teacher showed me how to make graphs and identify specific details.	