



CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY

<b>Name(s)</b> Isaac V. Cohen	<b>Project Number</b> <b>J0208</b>
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<b>Project Title</b> <b>The Effects of Gyroscopic Force on a Stationary Body</b>
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<b>Objectives/Goals</b> To demonstrate gyroscopic force	<b>Abstract</b>
<b>Methods/Materials</b> To begin my experiment I needed the following materials: ;# Bigger bike wheel (68.58 cm diameter) ;# Smaller bike wheel (50.8 cm diameter) ;# Two handles per wheel ;# A stool that can freely rotate over 360° ;# Person to spin the wheel ;# A scale to weigh the wheels Once all the materials were bought and collected I was able to begin my experiment. These are the steps needed to conduct the experiment: ;# 1st: Sit on the stool on your knees. (See photo below). Align the mark on the stool with the 0° graduation. ;# 2nd: While sitting on the stool, hold the smaller wheel in front of you and keep it horizontal. ;# 3rd: Have a friend spin the wheel. ;# 4th: Rotate the axis of the spinning wheel 180° and notice the torque it exerts on your wrists. Also notice the rotation of the stool as the wheel is tilted. ;# 5th: Repeat Steps 1-4 five times and record. ;# 6th: Repeat from Step #1 with the bigger wheel	
<b>Results</b> Spinning the larger wheel resulted in a larger stool rotation. More force can be felt at the handles when moving the larger wheel through different angles.	
<b>Conclusions/Discussion</b> Conclusion: The formulas that describe the energy developed from a spinning gyro involve how the mass is distributed. Two wheels of the same mass but one with its mass further from the center of rotation will generate more force. Further Research: I would like to learn more kinematics and how the laws of motion describe complex mechanisms. Also maybe I would like do this experiment on a bigger scale	

<b>Summary Statement</b> Demonstrating gyroscopic force
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<b>Help Received</b> Mr. Nelson (Mrs. Nelson's dad) and My dad, Mr. Cohen helped with equations.
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