



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Eric S. Luxenberg	Project Number 31317
Project Title Three Player Prisoner's Dilemma	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My purpose was to discover how classic Prisoner's Dilemma changes or stays the same when expanded to three players, in terms of winning strategy and defection versus cooperation.</p> <p>Methods/Materials I programmed a tournament which allowed the strategies I created to compete against each other. My experiment variables were the individual strategies, and they were tested to determine which one would win the tournament.</p> <p>Results A modified version of the classic strategy #Tit For Tat#, with a tendency towards cooperation, was the most successful when competing against thirteen other strategies in a tournament. Tit For Tat type strategies did the best overall.</p> <p>Conclusions/Discussion The principles behind Prisoner's Dilemma remain valid when expanded for multiplayer scenarios, and the most effective strategy in classic PD, Tit for Tat, remains the best in the three player version. Also, the results showed that a tendency towards cooperation is the better than aggression.</p>	
Summary Statement My purpose was to discover how classic Prisoner's Dilemma changes or stays the same when expanded to three players.	
Help Received Math teacher oversaw the programming portion	