



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Thomas T. Wooding	Project Number J1216
Project Title Let's Make a Deal	
Abstract Objectives/Goals The objective of this project is to determine if the probability of picking the right object is better by switching your initial choice with a variant of the shell game, where one choice that is for sure wrong is removed by the person in charge and shown to you after you make your first guess. My hypothesis is that there is will be no advantage to switching. Methods/Materials I built a game based upon the game show "Let's Make a Deal". I knew what was behind all three doors. I then let the subject pick a door, without letting them see what was behind it. Then, I showed them a door that for sure offered a bad prize. They were allowed to stay with their initial choice or switch. This was repeated with more doors, eliminating two of four doors and three of five doors to see if more choices changes the odds. 100 trials each of three, four, and five door variants were conducted by subjects and the results recorded. I also conducted 100 trials with a computer simulation of the three door variant. Results Subjects who switched on the three door variant got the right door 68% of the time, while those staying with the initial choice got the right door 31% of the time. With four doors the advantage to switching increases to 73% vs 22%. With five doors, the advantage to switching increased to 79% vs 20%. The computer simulation showed that switching got the right door 65% of the time, while staying got it right 35% of the time. Conclusions/Discussion My hypothesis was wrong. The probability of getting the right door with the first pick is one in how many choices you have. When picks that are wrong for sure are removed down to the point that there are only two doors left, the probability of getting the right door by switching is much better, and increases with more doors being added. The trick is that the guy in charge knows for sure which doors to eliminate.	
Summary Statement This project investigates weither there is an advantage to switching your initial choice in variants of the shell game.	
Help Received My mother took pictures & helped test subjects.	