

The Monty Hall Three-Door Puzzle Suppose you are a game show contestant. You have a chance to win a large prize. You are asked to select one of three doors to open; the large prize is behind one of the three doors and the other two doors are losers. Once you select a door, the game show host, who knows what is behind each door, does the following. First, whether or not you selected the winning door, he opens one of the other two doors that he knows is a losing door (selecting at random if both are losing doors). Then he asks you whether you would like to switch doors. Which strategy should you use? Should you change doors or keep your original selection, or does it not matter?

Write a program to run this problem at least a few hundred, or a few thousand, times while keeping track of which is the winning strategy for that occurrence. Print out the frequency for switch and stay. For even more credit, allow the user to input the number of door (3 or more) to try this when the game has 4, 5, or more doors. Submit all your code to run the program. You may use JAVA, JavaScript, Python, C++, or C# as your programming language. If you want to use something else, get my permission first. This is due by the final.

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If you do not know how to program, you can simulate this with cards and a partner. Choose the ace of diamonds and two other cards. Your partner mixes the cards and lays them out face down so that they *know* which is the ace of diamonds. This is the winning door. You choose a “door” and the other person “opens” (turns face up) a losing door. You then get to choose whether to change your pick. Keep a tally of whether changing is the winning choice. Do about 100 trials and report on your results. Try again with four cards for extra credit. If you have questions, see me with your partner.

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