

Monty Hall Problem

Question: Suppose you're on a game show, and you're given the choice of three doors: Behind one door is a car; behind the others, goats. You pick a door, say No. 1, and the host, who knows what's behind the doors, opens another door, say No. 3, which has a goat. He then says to you, "Do you want to pick door No. 2?". What is the probability to win car if you switch?

Solution: Note that switch and win car if and only if picked goat which happens with probability $2/3$.