

Recitation 2
February 14, 2006

1. A coin is tossed twice. Alice claims that the event of two heads is at least as likely if we know that the first toss is a head than if we know that at least one of the tosses is a head. Is she right? Does it make a difference if the coin is fair or unfair? How can we generalize Alice's reasoning?
2. We are given three coins: one has head on both faces, the second has tails on both faces, and the third has a head on one face and a tail on the other. We choose a coin at random, toss it, and it comes up heads. What is the probability that the opposite face is tails?
3. Fischer and Spassky play a sudden death chess match. Each game ends up with either a win by Fischer, this happens with probability p , a win for Spassky, this happens with probability q , or a draw, this happens with probability $1 - p - q$. The match continues until one of the players wins a game (and the match).
 - (a) What is the probability that Fischer will win the last game of the match?
 - (b) Given that the match lasted no more than 5 games, what is the probability that Fischer won in the first game?
 - (c) Given that the match lasted no more than 5 games, what is the probability that Fischer won the match?
 - (d) Given that Fischer won the match, what is the probability that he won at or before the 5th game?