UC Berkeley
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EE126: Probability and Random Processes

Discussion 1

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Problem 1. A twelve-sided die A has 9 green faces and 3 white faces, whereas another twelve-sided die B has 3 green faces and 9 white faces. A fair coin is tossed once. If it falls heads, a series of throws is made with die A alone; otherwise the series of tosses is made with only die B.

(a.) Find the probability that green shows up on the first throw.

(b.) If green shows up on the first throw, what is the probability that die A is being used?

(c.) Given that green shows up on the first two throws, what is the probability that green shows up on the third throw?

Problem 2. Suppose that there are n attendees of a party, each of whom throws their hats in the middle of the room. Each attendee then randomly selects a hat. What is the probability that none of the attendees select his or her own hat?

Problem 3. Alice and Bob have $2n + 1$ coins, each coin with probability of heads equal to $\frac{1}{2}$. Bob tosses $n+1$ coins, while Alice tosses the remaining n coins. Assuming independent coin tosses, what is the probability that Bob will have gotten more heads than Alice?