

CSE 312: Foundations of Computing II

Instructor: Alex Tsun

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Lecture Topics: Markov Chain Monte Carlo, 5.8 The Multinomial Distribution

[**Tags:** Multinomial, Multivariate Hypergeometric]

1. You work at a carnival and offer a simple game for children to play. The children get to choose a ticket from a bucket and based on the color of the ticket they will get different prizes. There are five colors of tickets: red, blue, green, and yellow which there are 24 of each, and gold which there are 4 of for a total of 100 tickets. Every day, 40 kids come to play the game. What is the probability that 9 of each of the red, blue, green, and yellow tickets and all 4 gold tickets are chosen on a given day if:
 - a. Your boss is present, so you have to make the game fair and replace each ticket after it is chosen?
 - b. Your boss isn't around, so you are lazy don't replace the tickets after each draw?