CS 13: Mathematical Foundations of Computing

Lecture 14 Exercises

Name:

E-mail:

Balls!

Calculate the expected total number of red balls drawn when 5 balls are drawn from an urn which has 6 red balls and 10 green balls **without replacement**.

Coupon Collector's Problem

Suppose a cereal box company has a promotion where each of their cereal boxes has one of n equally likely coupons. What is the average number of cereal boxes you would need to buy to get *all the things*, er the coupons?

More Probability, Probably

What is the probability that the sum of k randomly chosen integers (not necessarily distinct) between 1 and 100 (inclusive) will be divisible by 100?

High Five!

To raise the morale of the n students worried about 38, the 8 38 TAs, $T_1, T_2, \ldots, T_8$ decide to give students high fives. For each student, the TAs roll two 8 sided dice and the numbers that show up will be the TAs to give the student a high five. If the numbers are the same, then that TA will give the student two high fives. What is the expected number of students that will get two high fives from the same TA?