

Dr. Z.'s Intro to Probability Homework assignment 3

1. What is the probability that if you toss a fair coin n times, you would get exactly k Tails?
2. What is the probability that if you roll a fair die 4 times, you will not get any ones.
3. What is the probability that if you roll a fair die n times, you will not get any even numbers?
4. There are 10 math majors and 10 CS majors, and they have to form teams of two for a competition. If each arrangement is equally likely, what is the probability that no team is mixed, i.e. each of the 10 teams-of-two either consists of both CS majors or both math majors.
5. What is the probability that among 30 people, at least two of them have the same birthday?

(Assuming that all 365 days are equally likely, and no one is born on Feb. 29)

6. What is the probability that among 6 people, at least two of them have the same birth-month? (Assuming (a little stupidly, since Aug. is more likely than Feb.) that all 12 months are equally likely).
7. If you have a box (where you can't see the inside) consisting of 20 red balls, 30 green balls, and 40 yellow balls, and you draw 12 balls (without replacing them). What is the probability that you would pick 3 red balls, 4 green balls, and 5 yellow balls?