

Probability Homework Problems

1. Suppose you are selecting a lunch at a restaurant. You may select either a soup and salad combination or a sandwich. If there are 3 soups, 4 salads, and 8 sandwiches available, how many different lunch combinations are possible?
2. What is the probability of flipping a coin 4 times and getting 3 or more heads?
3. (a) A basketball coach has 12 players on his team. How many ways can the coach choose 5 starters for the next game?
(b) A baseball coach has to choose the batting order for the 9 players on his team. How many ways can he do this?
4. A box contains a red ball, a blue ball, and a green ball. A ball is drawn at random and then replaced. A second ball is then drawn at random.
 - (a) Show all the possible outcomes using a tree diagram.
 - (b) What is the probability that you draw a red ball both times?
 - (c) Calculate the probability of getting one blue and one red ball.
5. Suppose that you flip an unfair coin that lands on heads 90% of the time. Make a tree diagram for the possible outcomes of flipping the coin twice, and find the probability of each outcome.
6. If I flip a fair coin four times in a row, and then write down the total number of times it landed heads, what is the sample space? Is this an equiprobable space?
7. Find the following without a calculator.
 - (a) ${}_5C_4$
 - (b) ${}_5P_4$
 - (c) ${}_{50}C_{48}$
8. A die is rolled and a coin is tossed. Find each probability.
 - (a) The die shows a 2 and the coin shows a tail.
 - (b) The die shows a 4 or 5 and the coin shows heads.
9. There is a 71% chance that it will rain tomorrow. Describe the complimentary event in words, and find its probability.
10. There are seven students in a club, four girls and three boys. If we randomly select three of the students by drawing names out of a hat, what is the probability that all three would be girls?