

STAT/MA 41600  
In-Class Problem Set #4: August 31, 2016

1. Roll two 6-sided dice. Suppose that the values that appear on the two dice are different, i.e., the values do not match.
  - 1a. What is the probability that the sum of the two values is 5?
  - 1b. What is the probability that one or the other of the two dice is a 6?
  - 1c. What is the probability that the sum of the two dice is an even number?
2. Consecutively deal 5 cards without replacement from a standard deck of 52 cards.
  - 2a. What is the probability that the 5th card is a heart, given that the 1st, 2nd, and 3rd cards are hearts?
  - 2b. What is the probability that the 1st card was a heart, given that the 3rd, 4th, and 5th cards are hearts?
  - 2c. If at least 2 of the 5 cards are hearts, what is the probability that all 5 cards are hearts?
3. Consider two 6-sided dice. One of them is painted black on all 6 sides. The other is painted black on 2 sides and white on the other 4 sides. If one of these two dice is chosen at random and rolled, and resulting side (that faces up) is black, then what is the probability that the rest of the sides on the chosen die are all black too?
4. Consider a collection of 9 bears. There is a family of red bears consisting of one father bear, one mother bear, and one baby bear. There is a similar green bear family, and a similar blue bear family. These 9 bears are all placed around a circular table with 9 chairs, and all arrangements are equally likely. What is the probability that all of the red bears are sitting together, and all of the green bears are sitting together, and all of the blue bears are sitting together?