1. 5-card Poker questions: What are the probabilities of?

   (a) A hand with at least one ace

   (b) A straight (e.g \{4, 5, 6, 7, 8\}, mixed suits)

   (c) One pair

   (d) Full house

   (e) Royal flush

2. Suppose you pick two cards, one at a time, at random from a deck of 52 cards. Find

   (a) \(p(\text{both cards are diamonds})\)

   (b) \(p(\text{the cards form a pair})\)
3. An integer is chosen from the interval \([1, \ldots, 100]\). Find the probability it is divisible by either 6 or 15.

4. An base-10 numeral is chosen from the interval \([000, \ldots, 999]\).
   
   (a) What is the probability that the numeral contains no 3s or 5s?

   (b) What is the probability that the numeral contains one 3 and no 5s?

5. In keno, you choose a set of six numbers out of 54 numbers. Find the probability that none of your numbers match the six winning numbers and you get the booby prize.

6. A group of ten women and ten men are in the room. A committee of four is chosen at random. Find the probability that the committee consists of only women.