1. You need to arrange six of your favorite books along a small shelf. How many different ways can you arrange the books, assuming that the order of the books makes a difference to you?

2. A club with eight members is to choose three officers: president, vice-president, and secretary-treasurer. If each office is to be held by one person and no person can hold more than one office, in how many ways can those offices be filled?

3. At a benefit concert, fourteen bands have volunteered to perform but there is only enough time for six if the bands to play. How many lineups are possible?

4. To win at LOTTO in one state, one must correctly select 5 numbers from a collection of 57 numbers (1 through 57). The order in which the selection is made does not matter. How many different selections are possible? Probability of winning the prize?

5. An ice cream store sells 3 drinks, in 4 sizes, and 7 flavors. In how many ways can a customer order a drink?

6. You are dealt one card from a standard 52-card deck. Find the probability of being dealt the queen of hearts.

7. Larry, Tom, Katty, Sergio and Tyrone have all been invited to a dinner party. They arrive randomly and each person arrives at a different time.
   a. In how many ways can they arrive?
   b. In how many ways can Larry arrive first and Tyrone last?
   c. Find the probability that Larry will arrive first and Tyrone last.

8. A group consists of seven men and five women. Three people are selected to attend a conference.
   a. In how many ways can three people be selected from this group of twelve?
   b. In how many ways can three women be selected from the five women?
   c. Find the probability that the selected group will consist of all women.

9. A hand consists of 5 cards from a well-shuffled deck of 52 cards.
   a. Find the total number of possible 5-card poker hands.
   b. A club flush is a 5-card hand consisting of all club cards. Find the number of possible club flushes.
   c. Find the probability of being dealt a club flush.
   Ans: 4.951980792 x 10^{-4} or 4. 951980792 E-4 means: 0.000495 to six decimal places.

10. If you are dealt 4 cards from a shuffled deck of 52 cards, find the probability that all 4 cards are queens.
    Ans: 3.693785×10^{-6} = The probability is 0.000004 (Rounded to six decimal places as needed.)

11. Determine whether the following statement makes sense or does not make sense, and explain your reasoning. I would never choose the lottery numbers 1, 2, 3, 4, 5, 6 because the probability of winning with six numbers in a row is less than winning with six random numbers.
    Ans: The statement does not make sense because every combination of six numbers is equally likely to be drawn.

12. The mathematics department of a college has 14 male professors, 11 female professors, 10 male teaching assistants, and 10 female teaching assistants. If a person is selected at random from the group, find the probability that the selected person is a professor or a male. Ans 7/9

13. A single die is rolled twice. Find the probability of rolling a 2 the first time and a 1 the second time.

14. You draw one card from a 52-card deck. Then the card is replaced in the deck and the deck is shuffled, and you draw again. Find the probability of drawing a queen the first time and a heart the second time.

15. A coin is tossed and a die is rolled. Find the probability of getting a head and a number greater than 3.

16. Elizabeth brought a box of donuts to share. There are two-dozen (24) donuts in the box, all identical in size, shape, and color. Three are jelly-filled, 6 are lemon-filled, and 15 are custard-filled. You randomly select one donut, eat it, and select another donut. Find the probability of selecting two jelly-filled donuts in a row.

17. The table shows the outcome of car accidents in a certain state for a recent year by whether or not the driver wore a seat belt.

	Wore Seat Belt	No Seat Belt	Total
Driver Survived	418,210	161,967	580,177
Driver Died	490	1952	2442
Total	418,700	163,919	582,619

   1) Find the probability of not surviving a car accident, given that the driver did not wear a seat belt.
   2) Find the probability of wearing a seat belt, given that the driver survived a car accident.