1. Basic Probability
   a. Dice: Two dice are rolled. Find the probability that the sum is less than 7
   b. Cards: A card is pulled at random from a standard deck of 52 cards. Find the probability that the card is a 4.
   c. Coins: Three coins are flipped. Find the probability that exactly one of them shows tails.
   d. Marbles: A bag has three red marbles, four green marbles, and two blue marbles. What is the probability of randomly selecting a red or green marble from the bag?

2. Probability with Permutations
   Seven horses (A, B, C, D, E, F, and G) are in a race. There are no ties, and it is assumed that all the horses have an equal chance of winning.
   a. You bet that horse A will finish 1st, horse B will finish 2nd, and horse C will finish 3rd. What is the probability that you win the bet?
   b. Your friend Jane bets that horses A, B, and C will be the top 3 finishers. What is the probability that Jane wins her bet?
   c. Your other friend Jeff bets that horses D, E, and F will be in the top three, AND horses A, B, and C will be in the bottom three. What is the probability that Jeff wins his bet?

3. Probability with Combinations
   a. Defective Objects: A box of 100 fuses contains 3 defective fuses. You randomly select a handful of 5 fuses. What is the probability that in your handful, you have exactly one defective fuse?
   b. Committees: There are 10 girls and 12 boys in a class. 5 of them are selected to be on a special committee. What is the probability that the committee consists of 4 girls and 1 boy?
   c. Lottery: A certain lottery is played by selecting five numbers, from 1 to 56, and one number from 1 to 46. Then, five white balls, numbered from 1 to 56, and one gold ball, numbered from 1 to 46, are randomly selected.
      (i) You win the grand prize if all your numbers match all of the numbers on the selected balls (both white and gold). Order does not matter in this lottery. What is the probability of winning the grand prize?
      (ii) You win a consolation prize if four of your five numbers match the numbers on the white balls, and your single number matches the number on the gold ball. Again, order does not matter. What is the probability of winning the consolation prize?
   d. Cards: A poker hand consists of five cards from a standard 52 card deck. Find the probabilities of the following hands.
      (i) Two aces and three of any other card (not aces).
      (ii) Three aces and two of any other card (not aces).
      (iii) Four aces and one of any other card.
      (iv) A four of a kind (four of any single kind of card and one other card).