CSE230 Spring '22 Assignment 02

1. Three cards are chosen at random from a shuffled deck of cards. Determine the probability of each card belonging to a different suit.

2. A bag contains 4 red balls, 3 orange balls, and 2 green balls. If three balls are chosen at random without replacement, what is the probability that all three balls are orange?

3. What is the probability that the product of two integers (not necessarily different integers) randomly selected from the numbers 1 through 20, inclusive, is odd?

4. When Alexa takes her 1st free throw in a game, she has a 40 percent chance to score. She has a 70 percent chance of scoring on her next throw if she scored on the earlier one, but only a 20 percent chance if she didn't score on the previous one. Assume she needs to make 3 free throws in a row, the first of which she misses. What is the probability that she will score at least once on one of the following two throws?

5. Two dice are thrown simultaneously. Find the probability of :

    a. getting a multiple of 6 as the sum
    b. getting six as a product

6. A jar contains five balls: three red and two white. Two balls are randomly selected without replacement from the jar, and the number x of red balls is recorded. Explain why x is or is not a binomial random variable. If the experiment is binomial, give the values of n and p.

7. Three reviewers who were assigned to review a submitted paper have the individual probability to review the papers with probabilities 0.7, 0.5, and 0.8. Let N be the number of reviewers who submit their reviews. Calculate the probability P (N) with N = 3, 2, 1, 0

8. Analyzing the data of GOT viewers showed that about 40% of viewers were 14 or older. If 15 GOT viewers are surveyed, find the following probabilities.
    a. At least 4 of them are 14 or older.

b. Exactly 10 of them are 14 or older.
c. Less than 5 of them are 14 or older.

9. Estimate the expected number of integers with 1000 digits that need to be selected at random to find a prime, if the probability a number with 1000 digits is prime is approximately 1/2302

10. Harry has a toy company and he notices that 10 out of every 45 toy cars are defective. What is the probability that Harry will find the first defective car on the last one if he checks 6 cars one by one?