**Hypergeometric Problems**

1. A deck of cards contains 20 cards: 6 red cards and 14 black cards. 5 cards are drawn randomly without replacement. What is the probability that exactly 4 red cards are drawn?
2. A small voting district has 101 female voters and 95 male voters. A [random sample](https://www.statisticshowto.datasciencecentral.com/simple-random-sample/) of 10 voters is drawn. What is the probability exactly 7 of the voters will be female?
3. There are 10 black marbles and 10 white marbles out of which 5 marbles are being chosen. Find the probability that there are 2 white marbles in them.
4. Out of 100 students qualifying an exam, 10 were drawn randomly. If 35 out of 100 qualified students are female, then find the probability that 66 out of 1010 chosen are females.
5. There are 6 bulbs in a house out which 3 are defective. If 2 bulbs are picked randomly, find the probability that at least one is defective.
6. If 6 cards are drawn from a deck of 52 cards, find the probability of getting all kings in the draw.

**Geometric Distribution**

1. Products produced by a machine has a 3% defective rate. What is the probability that the first defective occurs in the fifth item inspected?
2. Using the geometric distribution with a success probability of 0.4, calculate the probability of getting your first success on the third tria*l.*
3. Matthew is a high school basketball player and a 75% free throw shooter. What is the probability that Matthew makes his first free throw on his fifth shot?
4. Let us consider the problem with the value of Total Number of Occurrence as 7 and the value of Probability of Success as 0.5.
5. Let us consider the problem with the value of Total Number of Occurrence as 6 and the value of Probability of Success as 0.9 What is the value of geometric distribution?

**Discrete Uniform Distribution**

1. Roll a six faced fair die. Suppose X denote the number appear on the top of a die.

a. Find the probability that an even number appear on the top,

b. Find the probability that the number appear on the top is less than 3.

c. Compute mean and variance of X.

2. A telephone number is selected at random from a directory. Suppose X denote the last digit of selected telephone number. Find the probability that the last digit of the selected number is a.6 b. less than 3 . c. greater than or equal to 8