

**Activity Sheet:**

1. A bank claims that 80% of its customers use a cashpoint at least once a month. If this claim is true, what is the probability that in a random sample of 5 customers at least 80% use a cashpoint machine at least once a month?
2. In an observational astronomy experiment, let the average rate of photons reaching the telescope is 4 photons per second (Poisson random variable with mean of 4). Find the probability that 2 photons reaches the telescope in two seconds.
3. If electricity power failures in Hyderabad occur according to a Poisson distribution with an average of 3 failures every twenty weeks, calculate the probability that there will not be more than one failure during a particular week.
4. Following are the scores of Rohit Sharma and Bhuvaneshwar Kumar in recent matches:

Rohit	91	78	12	123	4
Bhuvaneshwar	0	1	53	32	20

Both the players scored 60 runs in the next match. Which of the players has done better against their respective track record?

5. If a production line has a 20% defective rate. Calculate the probability of obtaining the first defected part after three good parts. What is the average number of inspections to obtain the first defective?
6. The maximum weight that an elevator in INSOFE complex can accommodate is 800kg. The average adult weight be about 70 kg with a variance of 200. What is the probability that the lift safely reaches the ground when there are 10 different adults in the lift? What if there are 12 adults?
7. Based on the history collected from multiple service centers, the average life of a certain type of cars from Maruti Suzuki motor is 10 years, with a standard deviation of 2 years. If Maruti is willing to replace only 3% of the motors because of failures, how long a guarantee should they offer? Assume that the lives of the motors follow a normal distribution.

8. A INSOFE student, to test his luck, went to an examination unprepared for his ROTE. It was a MCQ type examination with two choices for each question. There are 50 questions of which at least 20 are to be answered correctly to pass the test. What is the probability that he clears the exam? Each correct answer carries one mark. If each question has 4 choices instead of two. What is the probability that he clears the exam?
9. Assume that Metoie, a large meat supplier across the globe, supplies meat to 10000 Dominos Food chain of stores. The average weight of a goat/whatever the animal is 80 pounds, with a standard deviation of 20 pounds. To main the quality of the meat, CFO checks the weight of a sample of goats and decides whether to accept or reject the lot. She draws a random 50 goats and rejects the sample if average weight of a sample is less than 75 pounds? What is the probability that CFO will reject a truck load of animals?
10. The time required to repair a machine is an exponential random variable with rate  $\lambda = 0.5$  jobs/hour. What is the probability that a repair time exceeds 2 hours?