

# Practical: Estimating the Probability of Rolling a Sum of 3 with Two Dice & Plotting the Graph Using SciLab

## Aim:

To estimate the probability of rolling a sum of 3 with two dice and plotting their graph using SciLab.

## Materials Required:

- SciLab software for simulating dice rolls and plotting results.
- Basic understanding of probability theory and discrete probability distributions.

## Theory (In Detail):

Probability is the measure of the likelihood that an event will occur. In this experiment, we roll two fair six-sided dice and calculate the probability of obtaining a sum of 3. Since each die has six faces numbered from 1 to 6, the total number of possible outcomes when rolling two dice is  $6 \times 6 = 36$ .

1. **Favorable Outcomes:** We need to find all possible pairs (x, y) such that the sum  $x + y = 3$ . The possible pairs are: (1,2) and (2,1). Thus, there are 2 favorable outcomes.

2. **Total Outcomes:** Since each die has 6 faces, the total number of possible outcomes when rolling two dice is  $6 \times 6 = 36$ .

3. **Probability Calculation:** The probability of rolling a sum of 3 is calculated as:

$$P(\text{Sum} = 3) = (\text{Number of Favorable Outcomes}) / (\text{Total Possible Outcomes})$$

$$P(\text{Sum} = 3) = 2 / 36 = 1 / 18 \approx 0.0556$$

## Applications:

- Understanding fundamental probability concepts in games and gambling.
- Applying probability in risk assessment and statistical modeling.
- Using SciLab for simulations to visualize and analyze probability distributions.

## Result:

The probability of rolling a sum of 3 with two dice was estimated as  $1/18$  (approximately 0.0556). A graphical representation was plotted using SciLab to visualize the probability distribution of different sums.