

# PROBABILITY

## RANDOM EXPERIMENTS

### EXERCISE

Define the sample space for the given experiment in the following (1-3):

- Q.1 (a) A coin undergoes two tosses.  
 (b) Contemplate the experiment where a coin is tossed repeatedly until a head appears.
- Q.2 A single toss involves two coins, specifically a one-rupee coin and a two-rupee coin.
- Q.3 Choose two individuals from a group consisting of 3 boys and 2 girls.
- Q.4 When a coin is tossed, and it shows heads, a ball is drawn from a bag containing 3 blue and 4 white balls. On the other hand, if the coin shows tails, a die is thrown. Illustrate the sample space for this experiment.
- Q.5 A bag contains one red die, one white die, and one blue die. A die is randomly chosen from the bag and rolled, and the colour along with the number on its top face is noted.
- Q.6 The experiment involves rolling a die and then tossing a coin once if the die shows an even number. If the die shows an odd number, the coin is tossed twice. Record the sample space for this experiment.
- Q.7 Determine the sample space for the experiment of rolling a pair of dice (one blue and the other red) once. Additionally, calculate the number of elements in the sample space.

### ANSWER KEY

- (a) (HH, HT, TH, TT)  
 (b) (H, TH, TTH, TTTH, TTTTH, ...)
- (HH, HT, TH, TT).
- $\{B_1B_2, B_1B_3, B_1G_1, B_1G_2, B_2B_3, B_2G_1, B_2G_2, B_3G_1, B_3G_2, G_1G_2\}$
- $\{HB_1, HB_2, HB_3, HW_1, HW_2, HW_3, HW_4, T1, T2, T3, T4, T5, T6\}$
- (R1, R2, R3, R4, R5, R6, W1, W2, W3, W4, W5, W6, B1, B2, B3, B4, B5, B6).
- (1HH, 1HT, 1TH, 1TT, 2H, 2T, 3HH, 3HT, 3TH, 3TT, 4H, 4T, 5HH, 5HT, 5TH, 5TT, 6H, 6T).
- Number of elements in sample space =  $6 \times 6 = 36$