Exercise 25.1

Q 1.A coin is tossed 1000 times with the following frequencies:

Head : 445, *Tail : 555*

When a coin is tossed at random, what is the probability of getting

(i).a head?

(ii).a tail?

SOLUTION:

Total number of times a coin is tossed = 1000

Number of times a head comes up = 445

Number of times a tail comes up = 555

(i) Probability of getting a head = $\frac{No.\ of\ heads}{Total\ No.\ of\ trails}$ = $\frac{445}{1000}$ =0.445

(ii) Probability of getting a tail = $\frac{No.\ of\ tails}{Total\ No.\ of\ trails}$ = $\frac{555}{1000}$ = 0.555

Q 2.A die is thrown 100 times and outcomes are noted as given below:

Outcome:	1	2	3	4	5	6
Frequency:	21	9	14	23	18	15

If a die is thrown at random, find the probability of getting a/an:

(i) 3 *(ii) 5* *(iii) 4* *(iv) Even number* *(v) Odd number* *(vi) Number less than 3.*

SOLUTION:

Total number of trials = 100

Number of times "1" comes up = 21

Number of times "2" comes up = 9

Number of times "3" comes up = 14

Number of times "4" comes up = 23

Number of times "5" comes up = 18

Number of times "6" comes up = 15

(i) Probability of getting 3 = $\frac{Frequency\ of\ 3}{Total\ No.\ of\ trails} = \frac{14}{100} = 0.14$

(ii) Probability of getting 5 = $\frac{Frequency\ of\ 5}{Total\ No.\ of\ trails} = \frac{18}{100} = 0.18$

(iii) Probability of getting 4 = $\frac{Frequency\ of\ 4}{Total\ No.\ of\ trails} = \frac{23}{100} = 0.23$

(iv) Frequency of getting an even no. = Frequency of 2 + Frequency of 4 + Frequency of 6 = 9 + 23 + 15 = 47

Probability of getting an even no. = $\frac{Frequency\ of\ even\ number}{Total\ No.\ of\ trails} = \frac{47}{100} = 0.47$

(v) Frequency of getting an odd no. = Frequency of 1 + Frequency of 3 + Frequency of 5 = 21 + 14 + 18 = 53

Probability of getting an odd no. = $\frac{Frequency\ of\ odd\ number}{Total\ No.\ of\ trails} = \frac{53}{100} = 0.53$

(vi) Frequency of getting a no. less than 3 = Frequency of 1 + Frequency of 2 = 21 + 9 = 30

Probability of getting a no. less than 3 = $\frac{Frequency\ of\ number\ less\ than\ 3}{Total\ No.\ of\ trails} = \frac{30}{100} = 0.30$

Q 3.A box contains two pair of socks of two colours (black and white). I have picked out a white sock. I pick out one more with my eyes closed. What is the probability that I will make a pair?

SOLUTION:

No. of socks in the box = 4

Let B and W denote black and white socks respectively. Then we have:

S = {B,B,W,W}

If a white sock is picked out, then the total no. of socks left in the box = 3

No. of white socks left = 2 – 1 = 1

Probability of getting a white sock = $\frac{no.\ of\ white\ socks\ left\ in\ the\ box}{total\ no.\ of\ socks\ left\ in\ the\ box} = \frac{1}{3}$

Q 4.Two coins are tossed simultaneously 500 times and the outcomes are noted as given below:

If same pair of coins is tossed at random, find the probability of getting:

(i) Two heads (ii) One head (iii) No head.

SOLUTION:

Number of trials = 500

Number of outcomes of two heads (HH) = 105

Number of outcomes of one head (HT or TH) = 275

Number of outcomes of no head (TT) = 120

(i) Probability of getting two heads = $\frac{Frequency\ of\ getting\ 2\ heads}{Total\ No.\ of\ trails} = \frac{105}{500} = \frac{21}{100}$

(ii) Probability of getting one head = $\frac{Frequency\ of\ getting\ 1\ heads}{Total\ No.\ of\ trails} = \frac{275}{500} = \frac{11}{20}$

(iii) Probability of getting no head = $\frac{Frequency\ of\ getting\ no\ heads}{Total\ No.\ of\ trails} = \frac{120}{500} = \frac{6}{25}$