



### Exercise 15

Question 1:

- (i) The probability of an impossible event is 0
- (ii) The probability of a sure event is 1
- (iii) For any event E,  $P(E) + P(\text{not } E) = 1$
- (iv) The probability of a possible but not a sure event lies between 0 and 1
- (v) The sum of probabilities of all the outcomes of an experiment is 1

Question 2:

When a coin is tossed, all possible outcomes are either H or T

Total number of possible outcomes = 2

The favorable outcome is T

Number of favorable outcomes = 1

$$= P(T) = \frac{\text{Number of favorable outcomes}}{\text{total number of possible outcomes}} = \frac{1}{2}$$

Question 3:

In a throw of a dice, all possible outcomes are 1, 2, 3, 4, 5, 6

Total number of possible outcomes = 6

(i) Let E be event of getting even number

Then, the favorable outcomes are 2, 4, 6

Number of favorable outcomes = 3

$P(\text{getting a even number}) = P(E) = \frac{3}{6} = \frac{1}{2}$

(ii) Let R be the number less than 5

Then, the favorable outcomes are 1, 2, 3, 4

Number of favorable outcomes = 4

$P(\text{getting a number less than 5}) = P(R) = \frac{4}{6} = \frac{2}{3}$

(iii) Let M be the event of getting a number greater than 2

Then, the favorable outcomes are 3, 4, 5, 6

Number of favorable outcomes = 4

$P(\text{getting a number greater than 2}) = P(M) = \frac{4}{6} = \frac{2}{3}$

(iv) Let N be the number lying between 3 and 6

Then the favorable outcomes are 4, 5

Number of favorable outcomes = 2

$P(\text{getting a number 3 and 6}) = P(N) = \frac{2}{6} = \frac{1}{3}$

(v) Let G be event of getting a number other than 3

Then the favorable outcomes are 1, 2, 4, 5, 6

Number of favorable outcomes = 5

$P(\text{getting a number other than 3}) = P(G) = \frac{5}{6}$

(vi) Let T be event of getting a number 5

Then the favorable outcome is 5

Number of favorable outcomes = 1

$P(\text{getting a number 5}) = P(T) = \frac{1}{6}$

Question 4:

When two coins are tossed simultaneously all possible outcomes are HH, HT, TH, TT

Total number of possible outcomes = 4

(i) Let be event of getting exactly 1 heads

Then, favorable outcomes are HT, TH  
Number of favorable outcomes = 2  
 $P(\text{getting exactly 1 head}) = P(E_1) = 2/4 = 1/2$   
(ii) Let be event of getting at most one head  
So, the favorable outcomes are HT, TH, TT  
Number of favorable outcomes = 3  
 $P(\text{getting at most 1 head}) = P(E_2) = 3/4$   
(iii) Let be the event of getting no tail  
So, the favorable outcome is HH  
Probability of getting no tail =  $P(E_3) = 1/4$

\*\*\*\*\* END \*\*\*\*\*