CHAPTER- Probability

Q1.

A letter of English alphabet is chosen at random. Determine the probability that the chosen letter is a consonant.

Q2.

A die is thrown once. What is the probability of getting a number less than 3 ?

Q3.

If the probability of winning a game is 0.07, what is the probability of losing it ?

Q4.

A die is thrown once. What is the probability of getting a prime number?

Q5.

The probability of selecting a rotten apple randomly from a heap of 900 apples is 0.18. What is the number of rotten apples in the heap?

Q6.

Find the probability of an impossible event.

Q7.

A card is drawn at random from a well shuffled pack of 52 cards. Find the probability of getting a red king.

Q8.

A number is selected at random from 1 to 30. Find the probability that it is a prime number.

Q9.

From the number 3, 5, 5, 7, 7, 7, 9, 9, 9, 9, one number is selected at random, what is the probability that the selected number is mean?

Q10.

A bag contains cards numbered from 1 to 25. A card is drawn at random from the bag. Find the probability that number is divisible by both 2 and 3.

Solution 1.

In the English language there are 26 alphabets. Consonant are 21. The probability of chosen a consonant

$$n(S) = 26$$
$$n(E) = 21$$
$$P(E) = \frac{n(E)}{n(S)} = \frac{21}{26}$$

Solution 2.

We know,
Total possible outcomes are 6
i.e., {1, 2, 3, 4, 5, 6}
Favourable outcome are 2
i.e., {1, 2}
$\therefore$ P (getting number less than 3)

$$= \frac{\text{Number of favourable outcomes}}{\text{Number of all possible outcomes}}$$

$$= \frac{2}{6} = \frac{1}{3}$$ **Ans.**

Solution 3.

We have,

Probability of winning a game *i.e.*,

$$P(W) = 0.07$$

Probability of losing a game *i.e.*, $P(\overline{W})$

$$= 1 - P(W)$$
$$= 1 - 0.07$$
$$= 0.93$$ **Ans.**

Solution 4.

When a die is thrown once,

Total number of possible outcomes = 6

Also, prime numbers from 1 to 6 = {2, 3, 5}

$\Rightarrow$ Number of favourable outcomes = 3

$$\therefore P(\text{prime number}) = \frac{3}{6} = \frac{1}{2}$$

Solution 5.

$$\text{Total apples} = 900$$
$$P(E) = 0.18$$
$$\frac{\text{No. of rotten apples}}{\text{Total no. of apples}} = 0.18$$
$$\frac{\text{No. of rotten apples}}{900} = 0.18$$
$$\text{No. of rotten apples} = 900 \times 0.18$$
$$= 162$$

Solution 6.

Probability of impossible event is 0.

Solution 7.

Total no. of cards, $n(S) = 52$

Number of red kings, $n(E) = 2$

P(a red king), $P(E) = \frac{n(E)}{n(S)} = \frac{2}{52} = \frac{1}{26}$

Solution 8.

Number of possible outcomes,

$$n(S) = 30$$

Prime numbers are 2, 3, 5, 7, 11, 13, 17, 19, 23 and 29.

Number of favourable outcomes, $n(E) = 10$

P(prime), $P(E) = \frac{n(E)}{n(S)} = \frac{10}{30} = \frac{1}{3}$

Solution 9.

Total outcomes, $n(S) = 10$

Mean,

$$M = \frac{3+5+5+7+7+7+9+9+9+9}{10} = \frac{70}{10} = 7$$

Thus 7 is the mean of given numbers and frequency of 7 is 3 in given data.

Number of favourable outcomes,

$$n(E) = 3$$

$$P(\text{mean}), \qquad P(E) = \frac{n(E)}{n(S)} = \frac{3}{10}$$

Solution 10.

Since bag contains 25 cards,

$$n(S) = 25$$

The numbers divisible by 2 and 3 both are 6, 12, 18, 24 which are 4 numbers.

Thus $n(E) = 4$

$P(\text{number divisible by 2 and 3})$

$$P(E) = \frac{n(E)}{n(S)} = \frac{4}{25}$$