

**PROBABILITY**

1. A card is drawn from a pack of cards numbered 1 to 52. The probability that the number on the card is a perfect square is  
(a)  $\frac{1}{13}$  (b)  $\frac{2}{13}$  (c)  $\frac{7}{52}$  (d)  $\frac{5}{52}$
2. A die is thrown once, then the probability of getting a number greater than 3 is  
(a)  $\frac{1}{2}$  (b)  $\frac{2}{3}$  (c) 6 (d) 0
3. When a die is thrown, the probability of getting an odd number less than 3 is  
(a)  $\frac{1}{6}$  (b)  $\frac{1}{3}$  (c)  $\frac{1}{2}$  (d) 0
4. A card is drawn from a deck of 52 cards. The event 'E' is that card which is not ace of hearts. The number of outcomes favourable to E is  
(a) 4 (b) 13 (c) 48 (d) 51
5. One ticket is drawn at random from a bag containing tickets numbered 1 to 40. The probability that the selected ticket has a number which is a multiple of 5 is  
(a)  $\frac{1}{5}$  (b)  $\frac{3}{5}$  (c)  $\frac{4}{5}$  (d)  $\frac{1}{3}$
6. The probability of getting a bad egg in a lot of 400 is 0.035. The number of bad eggs in the lot is  
(a) 7 (b) 14 (c) 21 (d) 28
7. The probability that a card drawn out of a packet of 52 is of diamond is  
(a) 0 (b)  $\frac{1}{52}$  (c)  $\frac{1}{13}$  (d)  $\frac{1}{4}$
8. In simultaneous tossing of two coins, the probability of getting 2 tails is  
(a) 0 (b) 1 (c)  $\frac{1}{2}$  (d)  $\frac{1}{4}$
9. Which of the following can not be the probability of an event ?  
(a)  $\frac{3}{2}$  (b) 4% (c) 0.9 (d)  $\frac{3}{7}$
10. An event is very unlikely to happen. Its probability is closest to  
(a) 0.01 (b) 0.0001 (c) 0.1

11. The probability of sure event is  
(a) 0 (b)  $\frac{1}{2}$  (c)  $\frac{1}{4}$  (d) 1
12. If  $P(A)$  denotes the probability of an event  $A$ , then  
(a)  $P(A) < 0$  (b)  $P(A) > 1$  (c)  $0 \leq P(A) \leq 1$  (d)  $-1 \leq P(A) \leq 1$
13. If for any event  $E$ ,  $P(E) = 0.3$  then  $P(\text{not } E)$  is equal to  
(a) 0.3 (b)  $-0.3$  (c) 0.7 (d)  $-0.7$
14. The probability expressed as a percentage of a particular occurrence can never be  
(a) less than 100 (b) less than 0  
(c) greater than 1 (d) number other than a whole number
15. The probability of getting two tails when three coins are tossed simultaneously is  
(a)  $\frac{1}{8}$  (b)  $\frac{1}{2}$  (c)  $\frac{3}{8}$  (d)  $\frac{5}{8}$
16. A card accidentally dropped from a pack of 52 cards. The probability of its being a card of diamond is  
(a)  $\frac{1}{2}$  (b)  $\frac{1}{4}$  (c)  $\frac{1}{13}$  (d)  $\frac{1}{20}$
17. A letter of English alphabet is chosen at random. The probability that it is a letter of the word "MATHEMATICS" is  
(a)  $\frac{11}{26}$  (b)  $\frac{5}{13}$  (c)  $\frac{9}{26}$  (d)  $\frac{4}{13}$
18. In a single throw of a pair of dice, the probability of getting the sum 12 is  
(a)  $\frac{5}{36}$  (b)  $\frac{1}{9}$  (c)  $\frac{1}{18}$  (d)  $\frac{1}{36}$
19. In a single throw of a dice, the probability of getting a prime number is  
(a)  $\frac{2}{3}$  (b)  $\frac{1}{6}$  (c)  $\frac{1}{3}$  (d)  $\frac{1}{2}$
20. Three coins are tossed. What is the probability of getting neither 3 heads nor 3 tails ?  
(a)  $\frac{1}{2}$  (b)  $\frac{1}{3}$  (c)  $\frac{2}{3}$  (d)  $\frac{3}{4}$
21. The probability that a leap year should have exactly 52 Tuesday is  
(a)  $\frac{2}{7}$  (b)  $\frac{3}{7}$  (c) 1 (d)  $\frac{5}{7}$
22. Among 52 cards, there are 12 face cards. Probability that a card drawn at random is not a face card is  
(a)  $\frac{3}{13}$  (b)  $\frac{9}{13}$  (c)  $\frac{10}{13}$  (d)  $\frac{3}{4}$
23. If an event cannot occur, then its probability is  
(a) 1 (b)  $\frac{3}{4}$  (c)  $\frac{1}{2}$  (d) 0
24. Which of the following cannot be the probability of an event ?  
(a)  $\frac{1}{3}$  (b) 0.1 (c) 3% (d)  $\frac{17}{16}$
25. An event is very unlikely to happen. Its probability is closes to  
(a) 0.0001 (b) 0.001 (c) 0.01 (d) 0.1
26. The probability expressed as a percentage of a particular occurrence can never be  
(a) Less than 100 (b) less than 0  
(c) greater than 1 (d) anything but a whole number
27. A fair dice is rolled. The probability of getting a number more than six is  
(a)  $1 < 0$  (b)  $\geq 1$  (c) 0 (d) Can not be determined

28. In tossing a fair die, the probability of getting an odd number or a number less than 4 is  
 (a) 2 (b)  $\frac{1}{2}$  (c)  $\frac{2}{3}$  (d)  $\frac{3}{4}$
29. The probability of getting 9 with two dice is  
 (a)  $\frac{1}{36}$  (b)  $\frac{1}{9}$  (c)  $\frac{1}{27}$  (d)  $\frac{2}{9}$
30. A card is drawn from well shuffled deck of playing cards. The probability of a face card is  
 (a)  $\frac{1}{13}$  (b)  $\frac{3}{13}$  (c)  $\frac{4}{13}$  (d)  $\frac{2}{13}$
31. In a single throw of a pair of dice, the probability of getting the sum a perfect square is  
 (a)  $\frac{1}{18}$  (b)  $\frac{7}{36}$  (c)  $\frac{1}{6}$  (d)  $\frac{2}{9}$
32. If  $P(E) = 0.05$  the  $P(\text{not } E)$  i.e.  $P(E) = \underline{\hspace{2cm}}$  ?  
 (a) 0.05 (b) 0.5 (c) 0.9 (d) 0.95

### Short Questions

- Box A contains 25 slips of which 19 are marked Rs.1 and other are marked Rs.5 each. Box B contains 50 slips of which 45 are marked Rs.1 each and others are marked Rs.13 each. Slips of both the boxes are poured into a third box and reshuffled. A slip is drawn at random. What is the probability that it is marked other than Rs.1 ?
- A child's game has 8 triangles of which 3 are blue and rest are red, and 10 squares of which 6 are blue and rest are red. One piece is lost at random. Find the probability that it is a : (i) triangle (ii) square (iii) square of blue colour (iv) triangle of red colour.
- A carton of 24 blubs contain 6 defective bulbs. One bulb is drawn at random. What is the probability that the bulb is not defective ? If the bulb selected is defective and it is not replaced and a second bulb is selected at random from the rest, what is the probability that the second bulb is defective ?
- A lot consists of 48 mobile phones of which 42 are good, 3 have only minor defects and 3 have major defect Varnika will buy a phone if it is good but the trader will only buy a mobile if it has no major defect. One phone is selected at random from the lot. What is the probability that it is (i) acceptable to varnika ? (ii) acceptable to the trader ?
- In a game, the entry fee is Rs.5. The game consists of tossing a coin 3 times. If one or two heads show, Sweta gets her entry fee back. If she shows 3 heads, she receives double the entry fees. Otherwise, she will lose. After tossing a coin three times, find the probabilities that she (i) loses the entry fee (ii) gets double entry fee (iii) just gets her entry fee
- A lot of 60 bulbs contain 12 defective ones. One bulbs drawn at random from the lot. What is the probability that this bulb is defective ? Suppose the bulb draw in first attempt is defective and is not replaced. Now, one bulb is drawn at random from the rest. What is the probability that this bulb is not defective ?
- A bag contains 5 black, 7 red & 3 white balls. A ball is drawn from the bag at random. Find the probability that the ball drawn is (i) red (ii) black or white (iii) not black.
- Find the probability of getting 53 Fridays (i) in a leap year (ii) in a non-leap year.
- Out of 400 bulbs in a box. 15 bulbs are defective. One bulb is taken out at random from the box. Find the probability that the drawn bulb is not defective.
- A card is drawn at random from a pack of 52 playing cards. Find the probability that the card drawn is neither an ace nor a jack.
- The king, queen and jack of diamond are removed from a deck of 52 playing cards and then well shuffled. Now, one card is drawn at random from the remaining cards. Determine the probability that the card is (i) a jack (ii) a heart (iii) a red queen

12. Cards bearing numbers 1, 3, 5 ..... 35 are kept in a bag. A card is drawn at random from the bag. Find the probability of getting a card bearing (i) a prime no. less than 15 (ii) a no. divisible by 3 and 5.
13. An integer is chosen between 0 and 100. What is the probability that it is (i) divisible by 9 ? (ii) not divisible by 9 ?
14. A bag contains cards which are numbered from 2 to 90. A card is drawn at random from the bag. Find the probability that it bears (i) a two digit number (ii) a number which is a perfect square.
15. A card is drawn at random from a pack of 52 playing cards. Find the probability that the card drawn is neither a black card nor a king.
16. Two dice are thrown together and the product of numbers appearing on them is noted. Find the probability that the product is less than 12.
17. A die is thrown twice. What is the probability that (i) 3 will not come up either time ? (ii) 3 will come up atleast once ?
18. A die has its six faces marked 0, 1, 1, 1, 6, 6. Two such dice are thrown together and the total score is recorded. (i) How many different scores are possible ? (ii) What is the probability of getting a total of 7 ?
19. A bag contains white, black and red balls only. A ball is drawn at random from the bag. The probability of getting a white ball is  $\frac{3}{10}$  and that of a black ball is  $\frac{2}{5}$ . Find the probability of getting a red ball if the bag contains 20 black balls, then find the total no. of balls in the bag.
20. A bag contains 7 green, 10 blue and 5 red balls. A ball is drawn at random. Find the probability of this ball being a (i) blue ball (ii) red ball or green ball (iii) not a green ball.
21. A bag contains 24 balls of which  $x$  are red,  $2x$  are white and  $3x$  are blue. A ball is selected at random. What is the probability that the drawn ball is (i) not white ? (ii) blue ?

### **LONG TYPES QUESTIONS**

1. A bag contains 6 red, 5 black and 4 white balls. A ball is drawn from the bag at random. Find the probability that the ball drawn is (i) white (ii) red (iii) not black (iv) red or white.
2. 18 cards, numbered 1, 2, 3, ..... 18 are put in a box and mixed thoroughly. A card is drawn at random from the box. Find the probability that the card drawn bears (i) an even numbers (ii) a number divisible by 2 or 3.
3. A card is drawn at random from a well shuffled deck of playing cards. Find the probability that the card drawn is (i) a card of spade or an ace (ii) a red king (iii) neither a king nor a queen (iv) either a king or a queen.
4. Cards marked with numbers 3, 4, 5..... 50 are placed in a box and mixed thoroughly one card is drawn at random from the box. Find the probability that number on the drawn card is (i) divisible by 7 (ii) a number which is a perfect square ?
5. The probability of gussing the correct answer to a certain test is  $\frac{P}{12}$ . If the probability of not guessing the correct answer to this question is  $\frac{1}{3}$ . Find the value of 'P'.
6. A number is selected at random from the number 3, 5, 5, 7, 7, 7, 9, 9, 9, 9. Find the probability that the selected number is their average.
7. If a number  $x$  is chosen from the number 1, 2, 3 and a number  $y$  is selected from the numbers 1, 4, 9. Find the probability that  $xy = 10$ .
8. A number 'x' is chosen from the numbers -4, -3, -2, -1, 0, 1, 2, 3, 4. Find the probability that  $|x| < 3$ .
9. A die has six faces marked 0, 1, 1, 1, 6, 6. Two such dice are thrown together and the total is recorded. (i) How many different scores are possible ? (ii) What is the probability of getting a total of 7 ?
10. A bag contains 5 red balls & some blue balls. If the probability of drawing a blue ball is double that of a red ball, find the number of blue balls in the bag.

### **Value Based Questions**

1. In a survey, it was found that 40% people use petrol, 35% use diesel and remaining use CNG for their vehicles. Find the probability that a person chosen at random use CNG.
  - a) Which fuel out of the above three is appropriate for the welfare of the society?
2. In a survey, it was found that 30% of the population is using non – biodegradable products. While the remaing is using biodegradableproducts.What is the probability that a person chosen at random uses non – biodegradable products?

- i) Which type of products should be used in a society for its proper development – biodegradable or non – biodegradable? Justify your answer.
  
3. A school gives awards to the students of each class – 5 for bravery, 3 for punctuality, 3 for full attendance, 4 for social service and 5 for self confidence. An awarded student is selected at random. What is the probability that he is being awarded for (i) punctuality (ii) Self Confidence.
  - a) Which value out of the above five is most important for the development of society? Justify your answer.
  
4. Arushi, mahi and Saina were fighting to get first chance in a game. Arushi says, “Let us toss two coins. If both head appear, Mahi will take first chance, if both tail appear, Saina will get it and if one head and one tail appears, I will get the chance.”
  - i) What is the probability of Arushi getting the 1<sup>st</sup> chance?
  - ii) Is her decision fair?
  - iii) What quality of her character is being depicted here?
  
5. In a town, 75% population uses biodegradable material and the remaining uses non – biodegradable material. A person is chosen at random from the town.
  - i) What is the probability that he uses non – biodegradable material?
  - ii) Which type of material should we use and why?
  
6. A survey was conducted in a residential society in which it was discovered that 45 households believe in hard work, 28 believe in self confidence and 12 believe in punctuality for attaining success in life. What is the probability that a person chosen at random believes in self confidence?
 

Which value, according to you, contributes the most in attaining success in life?
  
7. In a food survey, 80% of the food samples were found to be adulterated while the remaining samples were pure. If the sample is selected at random, what is the probability that the food is adulterated?
  - i) What does the result of the survey show?
  - ii) How does food adulteration affect our health?
  
8. In a self assessment survey, 45% claimed that they are patriotic, 42% claimed to be non – violent and the remaining claimed to be optimistic. What is the probability of a person chosen at random to be claiming himself (A) patriotic (b) optimistic?
 

Which value do you claim for yourself out of the given three and why?
  
9. In a society, certain number of people worked for three campaigns. Some worked for “ Say no to plastic”. Some for “Say no to crackers” and the remaining for “Say no to child labour”. A person is selected at random from the society. The probability of getting a person from first campaign is  $\frac{3}{10}$  and that of 2<sup>nd</sup> campaign is  $\frac{2}{5}$ . Find the probability of getting a person who worked for the third campaign. If the number of persons in 2<sup>nd</sup> campaign was 20, find the total number of persons involved in the three campaigns.
 

Are such campaigns helpful in spreading awareness among the people? Give your views.