

Board – CBSE

Class – 11

Topic – Probability

Very Short Answer Questions (1 Mark)

Describe the Sample Space for the following experiments (Q. No. 1 to 4)

1. A coin is tossed twice and number of heads is recorded.
2. A card is drawn from a deck of playing cards and its colour is noted.
3. A coin is tossed repeatedly until a tail comes up for the first time.
4. A coin is tossed. If it shows head, we draw a ball from a bag consisting of 2 red and 3 black balls.
If it shows tail, coin is tossed again.

5. Write an example of an impossible event.
6. Write an example of a sure event.
7. Three coins are tossed. Write three events which are mutually exclusive and exhaustive.
8. A coin is tossed n times. What is the number of elements in its sample space?

If E , F and G are the subsets representing the events of a sample space S . What are the sets representing the following events? (Q No 9 to 12).

9. Out of three events atleast two events occur.
10. Out of three events only one occurs.
11. Out of three events only E occurs.
12. Out of three events exactly two events occur.
13. If probability of event A is 1 then what is the type of event 'not A '?
14. One number is chosen at random from the numbers 1 to 21. What is the probability that it is prime?
15. What is the probability that a given two-digit number is divisible by 15?
16. If $P(A \cup B) = P(A) + P(B)$, then what can be said about the events A and B ?
17. If A and B are mutually exclusive events, then what is the probability of $A \cap B$?
18. If A and B are mutually exclusive and exhaustive events then what is the probability of $A \cup B$?
19. The letters of the word EQUATION are arranged in a row. Find the probability that
20. An urn contains 5 blue and an unknown number x of red balls. Two balls are drawn at random.
If the probability of both of them being blue is $\frac{5}{14}$ find x .
21. Out of 8 points in a plane 5 are collinear. Find the probability that 3 points selected at random form a triangle.
22. Find the probability of almost two tails or atleast two heads in a toss of three coins.

23. A, B and C are events associated with a random experiment such that $P(A) = 0.3$, $P(B) = 0.4$, $P(C) = 0.8$, $P(A \cap B) = 0.08$, $P(A \cap C) = 0.28$ and $P(A \cap B \cap C) = 0.09$. If $P(A \cup B \cup C) = 0.75$ then prove that $P(B \cap C)$ lies in the interval $[0.23, 0.48]$
[Hint : $P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(A \cap C) + P(A \cap B \cap C)$].
24. For a post three persons A, B and C appear in the interview. The probability of A being selected is twice that of B and the probability of B being selected is twice that of C. The post is filled. What are the probabilities of A, B and C being selected?
25. A and B are two candidates seeking admission in college. The probability that A is selected is 0.5 and the probability that both A and B are selected is utmost 0.3. Show that the probability of B being selected is utmost 0.8.
26. $S = \{1, 2, 3, \dots, 30\}$, $A = \{x: x \text{ is multiple of } 7\}$, $B = \{x: x \text{ is multiple of } 5\}$, $C = \{x: x \text{ is a multiple of } 3\}$. If x is a member of S chosen at random find the probability that
- $x \in A \cup B$
 - $x \in B \cap C$
 - $x \in A \cap C'$
27. A number of 4 different digits is formed by using 1, 2, 3, 4, 5, 6, 7. Find the probability that it is divisible by 5.
28. A bag contains 5 red, 4 blue and an unknown number of m green balls. Two balls are drawn. If probability of both being green is $\frac{1}{7}$ find m .
29. A ball is drawn from a bag containing 20 balls numbered 1 to 20. Find the probability that the ball bears a number divisible by 5 or 7?
30. What is the probability that a leap year selected at random will contain 53 Tuesdays?

Answer

- $\{0, 1, 2\}$
- $\{\text{Red, Black}\}$
- $\{T, HT, HHT, HHHT, \dots\}$
- $\{HR_1, HR_2, HB_1, HB_2, HB_3, TH, TT\}$
- Getting a number 8 when a die is rolled
- Getting a number less than 7 when a die is rolled

7. $A = \{HHH, HHT, HTH, THH\}$
 $B = \{HTT, THT, HTT\}$
 $C = \{TTT\}$
8. $2n$
9. $(E \cup F \cup G) \cup (E' \cap F \cap G) \cup (E \cap F' \cap G) \cap (E \cap F \cap G')$
10. $(E \cap F' \cap G) \cup (E' \cap F \cap G') \cup (E' \cap F' \cap G)$
11. $(E \cap F' \cap G)$
12. $(E \cap F \cap G') \cup (E \cap F' \cap G) \cup (E' \cap F \cap G)$
13. Impossible event
14. $\frac{8}{21}$
15. $\frac{1}{15}$
16. Mutually exclusive events.
17. 0
18. 1
19. i. All vowels are together
ii. The arrangement starts with a vowel and ends with a consonant.
iii. $\frac{1}{14}$
iv. $\frac{15}{56}$
20. 3
21. $\frac{23}{28}$
22. $\frac{7}{8}$
23. $0.23 \leq P(B) \leq 0.48$
24. $\frac{4}{7}, \frac{2}{7}, \frac{1}{7}$
26. i. $\frac{1}{3}$
ii. $\frac{1}{15}$
iii. $\frac{1}{10}$
27. $\frac{1}{7}$

28. 6

29. $\frac{3}{10}$

30. $\frac{2}{7}$