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CHAPTER : PROBABILITY

Topics to be covered with examples:

- Concept of probability
- Problems involving dices
- Problems involving coins
- Problems involving Cards
- Independent event and mutually exclusive event concept.
- Probability problems involving various scenarios of picking balls. (Single ball, multiple balls at a time, multiple balls with replacement, multiple balls without replacement.

1. A dice is thrown. What is the probability that the number shown on the dice is

(i) an even no;

(ii) on odd no;

(iii) a no divisible by 2;

(iv) a no divisible by 3;

(v) a no less than 4;

(vi) a no less than or equal to 4;

(vii) a no greater than 6;

(viii) a no less than or equal to 6.

2. A card is drawn from a pack of cards. What is the probability that it is?

a. a cards of black suit?

b. a spade card?

c. an honours card of red suit?

d. an honour card of club?

e. a card having the number less than 7?

f. a card having the numbers a multiple of 3?

g. a king or a queen?

h. a digit card of heart?

i. a jack of black suit?

3. From a pack of 52 cards, 2 cards are drawn. What is the probability that it has?

a. Both the Aces

b. Exactly one queen?

c. No honours card?

d. No digits card?

e. One king and one queen?

4. A bag contains 3 red, 5 yellow and 4 green balls. 3 balls are drawn randomly. What is the probability that the balls drawn contain

a. Balls of different colors?

b. Exactly two green balls

c. No yellow ball?

5. If the letters of the word EQUATION be arranged at random, what is the probability that

a. There are exactly six letters between N and E?

b. All vowels are together?

c. All vowels are not together?

Q6. In a box carrying one dozen of oranges, one third have become bad. If 3 oranges are taken out from the box at random, what is the probability that at least one oranges out of the three oranges picked up is good?

(a) 1/55 (b) 54/55 (c) 45/55 (d) 3/55 (e) None of these

Q7. A basket contains 5 white and 9 black balls. There is another basket which contains 7 white and 7 black balls. One ball is to drawn from either of the two baskets. What is the probability of drawing a black ball?

(a) 3/7 (b) 5/7 (c) 4/7 (d) 8/15 (e) None of these

Q8. A bag contains 5 blue and 4 black balls. Three balls are drawn at random. What is the probability that 2 are blue and 1 is black?

(a) 1/3 (b) 2/5 (c) 1/6 (d) 1/5 (e) None of these

Q9. An urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn is not red?

(a) 1/11 (b) 9/20 (c) 2/11 (d) 11/20 (e) None of these

Q10. In a simultaneous throw of two dice, what is the probability of getting a total of 10 or 11?

(a) 7/12 (b) 5/36 (c) 1/6 (d) ¼ (e) None of these

Q111. In a box carrying one dozen of oranges, one third have become bad. If 3 oranges are taken out from the box at random, what is the probability that at least one oranges out of the three oranges picked up is good?

(a) 1/55 (b) 54/55 (c) 45/55 (d) 3/55 (e) None of these

Q12. A basket contains 5 white and 9 black balls. There is another basket which contains 7 white and 7 black balls. One ball is to drawn from either of the two baskets. What is the probability of drawing a black ball?

(a) 3/7 (b) 5/7 (c) 4/7 (d) 8/15 (e) None of these

Q13. A bag contains 5 blue and 4 black balls. Three balls are drawn at random. What is the probability that 2 are blue and 1 is black?

(a) 1/3 (b) 2/5 (c) 1/6 (d) 1/5 (e) None of these

Q14. An urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn is not red?

(a) 1/11 (b) 9/20 (c) 2/11 (d) 11/20 (e) None of these

Q15. In a simultaneous throw of two dice, what is the probability of getting a total of 10 or 11?

(a) 7/12 (b) 5/36 (c) 1/6 (d) ¼ (e) None of these

Q16. In a single throw of two dice what is the probability of not getting the same number on both the dice?

(a) 1/6 (b) 2/3 (c) 5/6 (d) 1/3 (e) None of these

Q17. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is either a red or a king?

(a) 6/13 (b) ½ (c) 7/13 (d) 27/52 (e) None of these

Q18. A bag contains 3 red, 5 yellow and 4 green balls. 3 balls are drawn randomly. What is the probability that the balls drawn contain balls of different colours?

(a) 4/15 (b) 3/11 (c) 1/12 (d) 5/14 (e) None of these

Q19. A bag contains 5 red, 7 yellow and 6 green balls. 3 balls are drawn randomly. What is the probability that balls drawn contain exactly 2 green balls?

(a) 14/68 (b) 13/68 (c) 15/91 (d) 15/68 (e) None of these

Q20. A bag contains 5 red, 6 yellow and 7 green balls. 3 balls are drawn randomly. What is the probability that the balls drawn contain no red ball?

(a) 55/282 (b) 55/272 (c) 143/408 (d) 143/406
(e) None of these

Q21. A box contains 4 green, 5 yellow and 4 white marbles. 3 marbles are drawn at random. What is the probability that all the three marbles are not of same colour?

(a) 9/143 (b) 134/143 (c) 8/143 (d) 135/143
(e) None of these

Q22. A bag contains 4 red and 7 black balls. Two draws of three balls each are made, the ball being replaced after the first draw. What is the chance that the balls were red in the first draw and black in the second?

(a) 28/5445 (b) 25/5448 (c) 28/4554 (d) 25/4554
(e) None of these

Q23. A bag contains 9 red and 7 white balls. Four balls are drawn out one by one and not replaced. What is the probability that they are alternatively of different colours?

(a) 9/65 (b) 6/65 (c) 9/130 (d) 8/130
(e) None of these

Q24. A basket contains 5 white and 9 black balls. There is another basket which contains 7 white and 7 black balls. One ball is to drawn from either of the two baskets. What is the probability of drawing a white ball?

(a) 4/7 (b) 6/7 (c) 3/7 (d) 2/7 (e) None of these

Q25. 8 persons are seated at a round table. What is the probability that 3 particular persons sit together?

(a) 2/7 (b) 1/7 (c) 3/14 (d) 3/14 (e) None of these

Q26. If x number of yellow balls from bag B are taken and placed into bag A and 20% of black balls from bag A are taken and placed into in bag B. If we pick one ball from bag B then the probability that the ball is of black color is 11/26. Then find the value of x?

(a) 5 (b) 6 (c) 3 (d) 2 (e) None of these

Q27. If one ball picked at random from each of the bag A and bag B then find the probability that both of the balls are of the same color?

(a) 21×47/65×75 (b) 22×43/65×75 (c) 11×17/65×75
(d) Can't be determined (e) None of these

Q28. Difference between the number of green balls in bag A and bag C is how much percent more/less than the sum of the number of black balls in bag A and bag C together?

(a) 100% (b) 95% (c) 97.5% (d) 102.5% (e) None of these

Directions (29– 30): A bag contains 6 red balls and 8 green balls. Two balls are drawn at random one after one with replacement. What is the probability that-

Q29. Both the balls are green

(a) 13/49 (b) 15/49 (c) 16/49 (d) 17/49 (e) None of these

Q30. First one is green and second one is red

(a) 16/49 (b) 14/49 (c) 11/49 (d) 12/49 (e) None of these

Q31. A and B are two persons sitting in a circular arrangement with 8 other persons. Find the probability that both A and B sit together.

a) 1/9
b) 2/7
c) 2/9
d) 2/5
e) None of these

Answer

2/9

Explanation : Total outcomes = (10 -1)! = 9! Favourable outcomes = (9 -1)!*2! So p = 2/9

Q32. A speak truth in 60% cases and B in 80% cases. In what percent of cases they likely to contradict each other narrating the same incident?

a) 9/25
b) 7/25
c) 11/25
d) 13/25
e) None of these

Answer – **11/25**

Explanation : P(A) = 3/5 and P(B) = 4/5. Now they are contradicting means one is telling truth and other telling the lie. So, Probability = (3/5)*(1/5) + (2/5)*(4/5)

Q33. **Two person A and B appear in an interview. The probability of A's selection is 1/5 and the probability of B's selection is 2/7. What is the probability that only one of them is selected?**

a) 11/35
b) 12/35
c) 13/35
d) 17/35
e) None of these

Answer & Explanation

Answer – **c) 13/35 Explanation :** A selects and B rejects + B selects and A rejects = (1/5)*(5/7) + (4/5)*(2/7) = 13/35