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Probability Questions for IBPS PO Pre, SBI PO Pre Exams.

Probability Quiz 7

Direction: Read the following questions carefully and choose the right answer.

1. **A player has all the white pieces of the chess. The probability of selecting two same pieces from all white pieces is m/n,what is the value of (m+n)?**

   A. 5 B. 15 C. 157 D. 181 E. None of these

2. **Anuj tosses a coin and then rolls two dices, what is the probability that he gets a heads on coin and then a total of not less than 10 on dices?**

   A. $\frac{1}{12}$ B. $\frac{2}{9}$ C. $\frac{1}{6}$ D. $\frac{1}{18}$ E. $\frac{3}{8}$

3. **A bag has some balls in two colours – black and white. Difference between the numbers of balls of the two colours is three. If probability of getting a black ball if one ball is drawn from the bag is 8/19, find total number of white balls in the bag.**

   A. 6 B. 8 C. 11 D. 14 E. 16

4. **There are nine players in a basketball team and only five play the game, rest are substitutes. If two tallest players must play in the game, what is the probability that a particular player (who is not among the two tallest) plays in the game?**

   A. $\frac{2}{7}$ B. $\frac{1}{6}$ C. $\frac{4}{9}$ D. $\frac{2}{5}$ E. $\frac{3}{7}$

5. **A bag has 6 Blue, 8 Green and some Yellow and Red balls such that the total number of balls in the bag is 25. Probability of drawing a Blue ball followed by a Green or yellow ball, without replacing the blue ball, is 0.15. What is the probability that a randomly drawn ball is Blue or red?**

   A. 0.4 B. 0.25 C. 0.5 D. 0.45 E. 0.6

6. **A bag contains some balls in three colors – Red, Black and White. Probability of getting a Red ball is 1/5 and that of a White ball is 2/5. What would be the probability of getting one Black ball?**

A. $\frac{2}{5}$ B. $\frac{1}{5}$ C. $\frac{3}{5}$ D. $\frac{4}{5}$ E. CND

7. **All the pawns are removed from a chess board. From the remaining pieces two pieces are selected randomly. If both the pieces are white, what is the probability that both are similar.**

A. $\frac{1}{20}$ B. $\frac{1}{8}$ C. $\frac{3}{28}$ D. $\frac{1}{7}$ E. $\frac{1}{14}$

8. **If three different chess pieces are kept randomly on three different boxes of a chess board, what is the probability that no two pieces are in the same row or column?**

A. $\frac{7}{18}$ B. $\frac{110}{217}$ C. $\frac{14}{31}$ D. $\frac{84}{217}$ E. $\frac{21}{31}$

9. **There are 6 red, 4 green and 8 blue colored balls in a bag. A student picks three balls randomly from the bag. Find what will be the probability that all the three balls are not of the same color?**

A. $\frac{5}{51}$ B. $\frac{10}{51}$ C. $\frac{19}{51}$ D. $\frac{40}{51}$ E. $\frac{46}{51}$

10. **There are six empty boxes. Karan puts one book each in two separate boxes and Aman randomly opens boxes until he finds both the books. What is the probability that Karan put books in adjacent boxes and Aman found the books if he didn't open more than three boxes?**

A. $\frac{1}{9}$ B. $\frac{6}{35}$ C. $\frac{3}{11}$ D. $\frac{2}{7}$ E. $\frac{7}{24}$

Correct Answers:

1	2	3	4	5	6	7	8	9	10
D	A	C	E	A	A	C	C	E	B

Explanation:

1. There are 16 pieces in chess

1 king

1 queen

2 rooks7

2 bishops

2 knights

8 pawns

Two pieces can be selected either by selecting two pawns, bishops, knights or rooks

Ways = ${}^{8}C_2 + 3 \times {}^{2}C_2 = 31$

Total ways of selecting 2 pieces = ${}^{16}C_2 = 120$

Probability = $\frac{m}{n} = \frac{31}{120}$

m + n = 120 + 31 = 151

Hence, option D is correct

2.

Probability of getting a head = $\frac{1}{2}$

The number of ways of getting a total of 10 or more on dices

For a total of 10 = 3 [(5, 5) , (6, 4), (4, 6)]

For a total of 11 = 2 [(5, 6) (6, 5)]

For a total of 12 = (6, 6)

Total favorable combinations = 3 + 2 + 1 = 6

Total possible combinations = 6 × 6 = 36

Probability = $\frac{6}{36} = \frac{1}{6}$

Reqd. probability = $\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$

Hence, option A is correct.

3. We have two cases – either black balls are less than white balls or white balls are less than black balls.

Case-1:

Let there be 'b' black balls and 'b+3' white balls

$\frac{{}^{b}C_1}{{}^{(2b+3)}C_1} = \frac{8}{19} \rightarrow \frac{b}{(2b+3)} = \frac{8}{19} \rightarrow b = 8$

Case-2:

Let there be 'b' black balls and 'b – 3' white balls

$\frac{{}^{b}C_1}{{}^{(2b-3)}C_1} = \frac{8}{19} \rightarrow \frac{b}{(2b-3)} = \frac{8}{19}$

→ b = – 8 (negative number of balls is not possible)

Total number of white balls = 8 + 3 = 11

Hence, option C is correct.

4. Out of the five players two are the tallest rest three are to be selected from the remaining 7

Total ways to select = ${}^{7}C_{3} = 35$

If one particular person must play, we first select him and remaining

two players we select from the rest of the six players, ways = ${}^{6}C_{2} = 15$

Probability = $\frac{15}{35} = \frac{3}{7}$

Hence, option E is correct.

5. Let the number of Yellow balls = k, Red balls = 25 – (6 + 8 + k) = 11 – k

Probability (Blue, Green or yellow)

$= \frac{6}{25} \times \frac{8 + k}{24} = 0.15$

$\frac{(8 + k)}{100} = \frac{15}{100}$

k = 7

So, Yellow balls = 7 and Red balls = 11 – 7 = 4

Probability (Ball is red or blue)

$= \frac{(4 + 6)}{25} = \frac{10}{25} = 0.4$

Hence, option A is correct.

6. Probability of getting any one colored ball = probability of getting 1 red ball + probability of getting 1 black ball + probability of getting 1 white ball

Probability of getting any one colored ball = 1

Let the probability of getting a black ball is b. Then

$$1 = \frac{1}{5} + b + \frac{2}{5}$$

$$b = 1 - (\frac{1}{5} + \frac{2}{5}) = \frac{2}{5}$$

Hence, option A is correct.

7. There are 16 remaining pieces

Black → 2 rooks, 2 knights, 2 bishops, King and Queen

White → 2 rooks, 2 knights, 2 bishops, King and Queen

It is known that both the selected pieces are white

There are 3 pairs of similar white pieces and total 8 pieces

Ways to select two similar pieces from 8 white pieces = ${}^{3}C_{1} = 3$

Ways to pick any two white pieces randomly = ${}^{8}C_{2} = 28$

Required Probability = $\frac{3}{28}$

Hence, option C is correct.

8. Let the pieces be A, B and C

To put all three pieces such that, no two are in same row or column

Ways to select box for A = 64

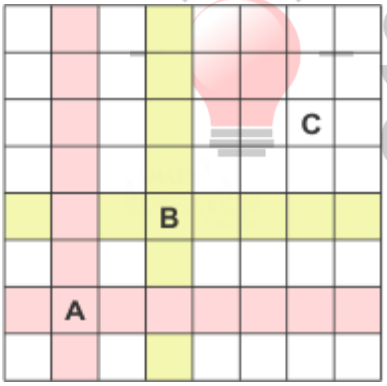
Now in the row and column in which A is placed there are 15 boxes

Now the remaining pieces are = 64 – 15 = 49

Ways to select one box for B = 49

Remaining boxes = 49 – 13 = 36

Ways to select boxes for C = 36



Favorable ways = 64 × 49 × 36

Total ways = 64 × 63 × 62

$$\text{Probability} = \frac{(64 \times 49 \times 36)}{(64 \times 63 \times 62)} = \frac{14}{31}$$

Hence, option C is correct.

9. Total number of balls = 6 + 4 + 8 = 18

Number of ways in which the student can pick three balls = ${}^{18}C_3 = 816$

Number of ways the student can pick all the three balls of same color

$= {}^{6}C_3 + {}^{4}C_3 + {}^{8}C_3 = 80$

Probability of having three balls of same color

$= \frac{80}{816} = \frac{5}{51}$

Probability of having the three balls not of same color

$= 1 - \frac{5}{51} = \frac{46}{51}$

Hence, option E is correct.

10. 1 2 3 4 5 6

These are the six boxes

Probability that Karan selects two adjacent boxes

$= \frac{{}^{5}C_1}{{}^{6}C_2} = \frac{1}{3}$

Let us say books are in box 4 and 5

Now there are two cases

Case 1 : Aman found the books after opening two boxes

So, he can either open 4 then 5 or 5 then 4, ways = 2

Case 2 : Aman opened two right (R) boxes and one wrong (W) box. Order can be either RWR or WRR

Wrong box can be selected in ${}^4C_1$ ways = 4 ways and order of right boxes can be in 2 ways.

Total ways (twice for RWR and WRR) = 2 × (4 × 2) = 16

Total = 16 + 2 = 18

Total ways to open box = ${}^6C_2 + {}^6C_3 = 35$

Probability = $\frac{18}{35}$

Reqd. probability = $\frac{1}{3} \times \frac{18}{35} = \frac{6}{35}$

Hence, option B is correct.