Probability CAT Questions

Example 1: A box contains 3 red balls, 3 blue balls, and 7 green balls. If two balls are drawn at random then what is the probability that both the balls are nongreen?

Answer: $\frac{5}{26}$

Solution: Sample space = $n(S) = {}^{(3+3+7)}C_2 = {}^{13}C_2 = 78$

Favourable number of events = $n(E) = {}^{(3+3)}C_2 = {}^6C_2 = 15$

Required probability = $\frac{n(E)}{n(S)} = \frac{15}{78} = \frac{5}{26}$.

Example 2: Calculate the probability of getting an even number, if a dice is rolled.

Answer: $\frac{1}{2}$

Solution: Sample space $(S) = \{1, 2, 3, 4, 5, 6\}$, so $n(S) = 6$

Let E be the event of getting an even number, then

$E = \{2, 4, 6\}$ so, $n(E) = 3$

Required probability = $\frac{n(E)}{n(S)} = \frac{3}{6} = \frac{1}{2}$.

Sample Probability CAT Questions

Listed below are some of the sample Probability CAT Questions. The candidates can go through the below-mentioned CAT Questions to ace the quantitative ability section of the CAT exam. The Probability CAT Questions given below will provide the candidates with an overview of the type of questions that are asked on this topic.

You must also go through Probability CAT Questions from the previous year to gain a better understanding of the kind of questions asked. Download CAT Question Paper to practice.

Question: In the MBA Programme of a B - School, there are two sections A and B. $1/4^{th}$ of the students in Section A and $4/9^{th}$ of the students in section B are girls. If two students are chosen at random, one each from section A and Section B as a class representative, the probability that exactly one of the students chosen is a girl, is:

Answer: 17/36

Explanation: Selecting a girl from section A and section B is 1/4 and 4/9 respectively.

Selecting a boy from section A and section B is 3/4 and 5/9 respectively.

Case 1: A girl from section A and a boy from section B.

$P_1 = (1/4) \times (5/9) = 5/36$

Case 2: A boy from section A and a girl from section B.

$P_2 = (3/4) \times (4/9) = 12/36$

Required probability $= P_1 + P_2 = 17/36$

Question: If 2 dice are thrown simultaneously, what is the probability that 1 of them shows up '2' and the other shows '5'?

Answer: 1/18

Explanation: Total number of outcomes = 6 x 6 = 36

There are 2 favorable circumstances = (2,5) and (5,2)

Hence, 2/36 = 1/18

Question: A box contains 5 green, 3 black, and 7 red balls. Two balls are selected at random without replacement from the box. What is the probability that both balls are red?

Answer: 1/5

Explanation: Total number of balls = 5 + 3 + 7 = 15.

The number of ways in which 2 balls can be selected = $^{15}C_2$ = (15×14)/(2×1) = 105

Total number of red balls = 7

The number of ways in which 2 red balls can be taken out = $^7C_2$ = (7×6)/(2×1) = 21

The probability of getting 2 red balls = 21/105 = 1/5.

Alternative solution:

The probability of the first ball being red = 7/15.

If the first ball taken out is red, the box, now, has a total of 14 balls of which 6 are red.

The probability of the 2nd ball being red = 6/14

The probability of both balls being red is (7/15)×(6/14) = 1/5.

Note: Here we have to get a red ball in each of the draws and hence we do not have to consider any arrangement, but if we draw balls of different colours, the arrangement will have to be taken into account.

Question: If P(A|B) = 1/3, P(B) = 1/4, and P(A) = 1/2, the probability that exactly one of these events A and B occur is:

Answer: 7/12

Explanation:

$$P(A/B) = \frac{P(A \cap B)}{P(B)}$$

Or, $$\frac{1}{3} = \frac{P(A \cap B)}{(1/4)}$$

Or, $P(A \cap B) = \dfrac{1}{3} \times \dfrac{1}{4} = \dfrac{1}{12}$

$$P(A \cap B) = \dfrac{1}{12}$$

So, we have P(A) = 1/2 and

Therefore, P (only A) = P(A) – P(A ∩ B)

= 1/2 – 1/12 = 5/12.

Similarly, P(B) = 1/4 and P(A ∩ B) = 1/12

Therefore, P(only B) = P(B) – P(A ∩ B)

= 1/4 – 1/12 = 1/6.

Probability that exactly one of A and B happens = P(only A) + P (only B)

= 5/12 + 1/6 = 7/12.

Question: What is the probability of rolling three six-sided dice, and getting a different number on each die?

Answer: 5/9

Explanation: For the first die, we can roll any one of six numbers.

For the second die, we can roll any number save for the number we rolled on the first die, giving us 5 possibilities.

For the third die, we can roll four different numbers (we can't roll the number we rolled on the first or second die.

6 x 5 x 4 = 120 possibilities out of 216 total possibilities. (For total possibilities we get 6 x 6 x 6 = 216).

120/216 = 5/9