

Aptitude-Probability-Problems

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☰ Reference Playlist

<https://youtube.com/playlist?list=PL8p2I9GkIV454LdGfDOW0KkNazKuA-6B2&feature=shared>

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Question 1

A bag contains 6 white and 4 black balls. Two balls are drawn at random. Find the probability that they are of the same colour

- Total cases = $10C_2$
- Balls being same color
 - $6C_2 \times 4C_0 + 6C_0 \times 4C_2$
- Probability = Balls being same color / Total Cases = $7/15$



Question 2

Two dice are thrown. What is the probability that the sum of the numbers on the two faces is divisible by 4 or 6

- Total cases = 2 dices being thrown and getting a number each from them = $6C1 \times 6C1 = 36$

For sum to be divisible by 4 or 6 sum can be 4,6,8,12

For sum to be 4 possible outcomes are

1 3, 2 2, 3 1

$P1 = 3/36$

For sum to be 6 possible outcomes are

1 5, 2 4, 3 3, 4 2, 5 1

$P2 = 5/36$

For sum to be 8 possible outcomes are

2 6, 3 5, 4 4, 6 2, 5 3

$P3 = 5/36$

For sum to be 12 possible outcomes are

6 6

$P1 = 1/36$

Total probability = $14/36 = 7/18$

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Question 3

Two cards are drawn at random from a pack of 52 cards. What is the probability that either both are black or both are queen?

- There 26 black cards and 26 red cards
- 2 Black queens and 2 Red queens
- $(26C2 + 4C2 - 2C2) / 52C2$
 - $2C2$ is subtracted because in $26C2$, there will be already a case where both are queens

- 330/1326



Question 4

A Man and his wife appears for an interview for two vacancies in the same port. The probability of husbands selection is $1/7$ and wife's is $1/5$. What is the probability only one is selected?

- There will be 2 cases
 - Husband gets the job, wife doesnt
 - Husbands selection x Wife not getting selected
 - $1/7 \times 4/5$
 - Wife gets the job, husband doesnt
 - Wifes selection x Husband not getting selected
 - $1/5 \times 6/7$
 - Since only either one happens, we need to use OR (+)
- $1/7 \times 4/5 + 6/7 \times 1/5$



Question 5

A speaks truth in 75% cases and B in 80% cases. In what percentage of cases are they likely to contradict each other in narrating the same incident

- A speaking truth = $75/100$
- B speaking truth = $80 / 100$
- A speaking false = $25/100$
- B speaking false = $20/100$
- Possibility of contracting each other
 - When A speaks false and B speaks truth
 - When A speaks truth and B speaks false
 - $A^F \& B^T$ OR $A^T \& B^F$
 - $25/100 \times 80/100 + 75/100 \times 20/100$

- 35%



Question 6

15 boys and 10 girls, 3 students are selected at random. Probability of 2 boys and 1 girl being selected?

Let S be the sample space and E be the event of selecting 1 girl and 2 boys.

Then, $n(S)$ = Number ways of selecting 3 students out of 25
 $= {}^{25}C_3 = \frac{25 \times 24 \times 23}{3 \times 2 \times 1} = 2300$

$n(E) = ({}^{10}C_1 \times {}^{15}C_2) = 10 \times \frac{15 \times 14}{2} = 1050$

Hence the probability that 1 girl and 2 boys are selected, is,

$$P(E) = \frac{n(E)}{n(S)} = \frac{1050}{2300} = \frac{21}{46}$$



Question 7

Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears a number which is a multiple of 3?

- Tickets which are a multiple of 3
 - 3, 6, 9, 12, 15, 18 = 6 tickets
 - Total tickets = 20
- Probability = $6/20 = 3/10$



Question 8

In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?

- $10/35 = 2/7$



Question 9

A card is drawn from a pack of 52 cards. The probability of getting a queen of the club or a king of heart is?

- Queen of club = 1
- King of heart = 1
- Total cards = 52
- Probability = $1/52 + 1/52 = 2/52 = 1/26$



Question 10

Two cards are drawn from a pack of 52 cards. The probability that either both are red or both are kings, is?

- Red cards = $26C2$
- Kings = $4C2$
- 2 Kings that could be among red cards = $2C2$
- $(26C2 + 4C2 - 2C2) / 52C2$
- $55/221$



Question 11

A speaks truth in 60% cases and B speaks truth in 70% cases. The probability that they will say the same thing while describing a single event is?

- Given
 - A saying truth = $60/100$

- B saying truth = 70/100
- A saying false = 40/100
- B saying false = 30/100
- 2 cases
 - A is true, B is false
 - A is false, B is true
- $A^T \times B^F + A^F \times B^T = 60/100 \times 30/100 + 40/100 \times 70/100$
- $\Rightarrow 0.6 \times 0.7 + 0.4 \times 0.3$
- $\Rightarrow 0.42 + 0.12 = 0.54$