Probability Questions

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843 185359

Q: A problem is given to three students whose chances of solving it are 1/2, 1/3 and 1/4 respectively. What is the probability that the problem will be solved?

A) 1/4 B) 1/2
C) 3/4 D) 7/12

Answer & Explanation

Answer: C) 3/4

Explanation:

Let A, B, C be the respective events of solving the problem and $\overline{A}$, $\overline{B}$, $\overline{C}$ be the respective events of not solving the problem.

Then A, B, C are independent event

$\therefore \overline{A}$, $\overline{B}$, $\overline{C}$ are independent events

Now, P(A) = 1/2 , P(B) = 1/3 and P(C)=1/4

$P(\overline{A}) = \frac{1}{2}$, $P(\overline{B}) = \frac{2}{3}$, $P(\overline{C}) = \frac{3}{4}$

$\therefore$ P(none solves the problem) = P(not A) and (not B) and (not C)

$= P(\overline{A} \cap \overline{B} \cap \overline{C})$

$= P(\overline{A})P(\overline{B})P(\overline{C})$

$\left[\because \overline{A}, \overline{B}, \overline{C} \text{ are Independent}\right]$

$= \frac{1}{2} \times \frac{2}{3} \times \frac{3}{4}$

$= \frac{1}{4}$

Hence, P(the problem will be solved) = 1 - P(none solves the problem)

$= 1 - \frac{1}{4} =$ **3/4**

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Exam Prep: AIEEE , Bank Exams , CAT , GATE
Job Role: Bank Clerk , Bank PO

258 138635

Q: Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

A) 1/2 B) 3/5
C) 9/20 D) 8/15

Answer & Explanation

Answer: C) 9/20

Explanation:

Here, S = {1, 2, 3, 4, ..., 19, 20}.

Let E = event of getting a multiple of 3 or 5 = {3, 6 , 9, 12, 15, 18, 5, 10, 20}.

P(E) = n(E)/n(S) = 9/20.

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710 126925

Q: A bag contains 6 white and 4 black balls .2 balls are drawn at random. Find the probability that they are of same colour.

A) 1/2 B) 7/15
C) 8/15 D) 1/9

Answer & Explanation

Answer: B) 7/15

Explanation:

Let S be the sample space

Then n(S) = no of ways of drawing 2 balls out of (6+4) =$10C_2$ 10 = $\frac{10*9}{2*1}$ =45

Let E = event of getting both balls of same colour

Then,n(E) = no of ways (2 balls out of six) or (2 balls out of 4)

$= 6C_2 + 4C_2 = \frac{6*5}{2*1} + \frac{4*3}{2*1} = 15+6 = 21$

Therefore, P(E) = n(E)/n(S) = 21/45 = 7/15

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319 109371

Q: 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?

A) 52/221 B) 55/190
C) 55/221 D) 19/221

Answer & Explanation

Answer: C) 55/221

Explanation:

We have n(s) =$52C_2$ 52 = 52*51/2*1= 1326.

Let A = event of getting both black cards

B = event of getting both queens

A∩B = event of getting queen of black cards

n(A) = $\frac{52*51}{2*1}$ = $26C_2$ = 325, n(B)= $\frac{26*25}{2*1}$ = 4*3/2*1= 6 and n(A∩B) = $4C_2$ = 1

P(A) = n(A)/n(S) = 325/1326;

P(B) = n(B)/n(S) = 6/1326 and

P(A∩B) = n(A∩B)/n(S) = 1/1326

P(A∪B) = P(A) + P(B) - P(A∩B) = (325+6-1) / 1326 = 330/1326 = 55/221

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170 102130

Q: A bag contains 4 white, 5 red and 6 blue balls. Three balls are drawn at random from the bag. The probability that all of them are red, is:

A) 2/91 B) 1/22
C) 3/22 D) 2/77

Answer & Explanation

Answer: A) 2/91

Explanation:

Let S be the sample space.

Then, n(S) = number of ways of drawing 3 balls out of 15 = $15C_3$ = $\frac{15*14*13}{3*2*1}$ = 455.

Let E = event of getting all the 3 red balls.

n(E) = $5C_3$ = $\frac{5*4}{2*1}$ = 10.

=> P(E) = n(E)/n(S) = 10/455 = 2/91.

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234 100886

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

A) 2/7 B) 5/7
C) 1/5 D) 1/2

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190 79134

Q: Two dice are tossed. The probability that the total score is a prime number is:

A) 5/12 B) 1/6
C) 1/2 D) 7/9

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282 74176

Q: A man and his wife appear in an interview for two vacancies in the same post. The probability of husband's selection is (1/7) and the probability of wife's selection is (1/5). What is the probability that only one of them is selected ?

A) 2/7 B) 1/7
C) 3/4 D) 4/5

Answer & Explanation

Answer: A) 2/7

Explanation:

Let A = Event that the husband is selected and B = Event that the wife is selected.

Then, $P(A) = \frac{1}{7}$ and $P(B) = \frac{1}{5}$.

$\therefore \quad P(\overline{A}) = \left(1 - \frac{1}{7}\right) = \frac{6}{7}$ and $P(\overline{B}) = \left(1 - \frac{1}{6}\right) = \frac{4}{5}$.

$\therefore$ Required probability = P [(A and not B) or (B and not A)]

= P [(A and $\overline{B}$) or (B and $\overline{A}$)]

= P (A and $\overline{B}$) + P (B and $\overline{A}$)

= P(A)·P($\overline{B}$) + P($\overline{B}$)·P($\overline{A}$) = $\left(\frac{1}{7} \times \frac{4}{5}\right) + \left(\frac{1}{5} \times \frac{6}{7}\right) = \frac{10}{35} = \frac{2}{7}$.

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