How many different ways are possible to arrange the letters of the word MACHINE so that the vowels may occupy only the odd positions?

800

125

348

576Correct Answer.

5040You Answered.

Right Answer Explanation:

We have 4 consonants & 3 vowels in the 7 - letter word MACHINE.
Now, if vowels have to occupy odd places that means we have to arrange the 3 vowels at the 4 available odd places. This can be done in $^4P_3$ ways.
The remaining 4 places have to be filled in with the remaining 4 letters, which can be done in $^4P_4$ ways.
So, total ways = $^4P_3 \times {}^4P_4$ = 4! 4! = 24 × 24 = 576.

Directions: A four digit number is formed by using the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways without repetition.

How many such numbers can be formed?

840Your answer is correct

560

480

720

540

Right Answer Explanation:

At the first place any one digit out of 7 can come.
At the second place any one digit out of remaining 6 can come.
At the third place any one digit out of remaining 5 can come.
At the fourth place any one digit out of remaining 4 can come.
Therefore,

7 x 6 x 5 x 4 = 840

Directions: A four digit number is formed by using the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways without repetition.

How many of them are greater than 3,400?

840

560Your answer is correct

480

120

600

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Right Answer Explanation:

Number greater than 3,000 are 5 × 6 × 5 × 4 = 600
Number between 3,000 and 3,400 are 1 × 2 × 5 × 4 = 40
So numbers greater than 3,400 are = 560

Directions: A four digit number is formed by using the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways without repetition.

How many of them are exactly divisible by 2?

560

360Your answer is correct

120

630

720

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Right Answer Explanation:

____ ____ ____ ____
6 × 5 × 4 × 3 = 360 ways
Last digit should be even and can be filled in 3 ways (2, 4, 6).

Directions: A four digit number is formed by using the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways without repetition.

How many of them are exactly divisible by 25?

20

35

40Correct Answer.

50

60You Answered.

Right Answer Explanation:

Last two-digit should be either 25 or 75
Total numbers with last two-digit 25 are = $5 \times 4 \times 1 \times 1$ = 20
Total numbers with last two-digit 75 are = $5 \times 4 \times 1 \times 1$ = 20
Total numbers = 20 + 20 = 40

How many four digits numbers that are divisible by 4 can be formed using 1, 2, 3, 4, 5, 6 and 7 in all possible ways without repetition?

150

160You Answered.

120

200Correct Answer.

420

Right Answer Explanation:

Last two digits of the four digit number can be 12, 16, 24, 32, 36, 52, 56, 64, 72, 76 (10 ways)
Other two digits can be filled in 5×4 = 20 ways
Total number of ways = 20×10 = 200 ways

A certain code consists of 5 variables, with each variable having 4 different constant values possible. What is the total number of coded messages that can be sent with 5 constants one from each variable?

$1,024 \times 5\,!$Correct Answer.

1,024

5^4You Answered.

5 !

2,048

Right Answer Explanation:

For every constant value of a variable, there are 4 constant values of each of the other 4 variables.
Also the positions of the variables in the arrangement can be changed in 5! ways.
$\therefore$ The total number of possible codes = $4 \times 4 \times 4 \times 4 \times 4 \times 5! = 1,024 \times 5!$.

In a letter lock, each of three rings is marked with 15 letters. What is the maximum number of unsuccessful attempts that one has to make before the lock is opened?

3,364You Answered.

3,365

3,374Correct Answer.

3,375

225

Right Answer Explanation:

The total number of different attempts = 15 × 15 × 15 = 3,375
∴ Only one attempt out of the above is successful.
The maximum number of unsuccessful attempts = 3,374

At an election, a voter may vote for any number of candidates that is not greater than the number of members to be chosen. There are 7 candidates and 4 members to be chosen. In how many ways can a person vote?

7^4

28You Answered.

76

98Correct Answer.

35

Right Answer Explanation:

He may vote for 1, 2, 3 or 4 candidates.
∴ He can vote in $^7C_1 + {}^7C_2 + {}^7C_3 + {}^7C_4 = 98$ ways.

Four-letter words are formed using 17 consonants and 5 vowels. How many will have 2 different vowels in the middle and a consonant at each end?

5,780Correct Answer.

5,440

6,700

7,225

5,040You Answered.

Right Answer Explanation:

The two vowels can be arranged in 5 × 4 = 20 ways.
The 17 consonants can take the two places in 17 × 17 = 289 ways.
Since the same consonant can appear in both places.
∴ Total number of four-letter words of the required kind = 20 × 289 = 5,780.

Two out of six papers set for an examination are in mathematics. What are the numbers of ways in which the papers can be set so that the two mathematics papers are not together?

720

480Your answer is correct

240

600

360

Right Answer Explanation:

Total number of ways of arranging 6 papers = 6! = 720.
We consider the two mathematics papers to be together, i.e. as a single paper.
∴ Ways of arranging 5 paper = 5! × 2 = 240 (since for every arrangement of 5 papers, the two mathematics papers can be arranged amongst themselves in 2 ways).
∴ Number of arrangements in which the mathematics papers are not together = 720 - 240 = 480.

Five men and four women are to be seated on 9 adjacent seats in a cinema hall in such a way that no two women sit together. Find the number of ways in which they can be arranged.

43,200Correct Answer.

5 ! × 6 !

11 !

6 ! × 4 !

5! × 4!You Answered.

Right Answer Explanation:

M_1 M_2* M_3* M_4 * M_5* Five men can be seated in 5! ways. The women can occupy any of the places marked *. Thus the women can be seated in ${}^6P_4$ = 360 ways.
∴ Total number of ways = 5! × 360 = 43,200

There are 6 students of which 3 belong to the first year class, 2 belong to the second year class and one is in the third year. In how many ways can they stand in a line so that the students from the same class are together?

12

72Correct Answer.

36

81

120You Answered.

Right Answer Explanation:

The first year students can be arranged among themselves in 3! ways, second year in 2! ways and the third year student can stand in one way. For each arrangement of the students in their respective groups, the three groups can be arranged in 3! ways. ∴ Number of ways of arrangement = 3! × 2! × 1 × 3! = 72 ways.

How many numbers between 100 and 1,000 can be formed using the digits 0, 2, 4, 6, 8, 5, if (i) Repetition of digits in a number is not allowed? (ii) Repetition of digits is allowed?

120, 216

100, 180Your answer is correct

120, 180

100, 216

100, 120

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Right Answer Explanation:

(1) The hundred's place can be filled in 5 ways (0 cannot come in the first place), the ten's in 5 ways, and the one's in 4 ways. ∴ Number of ways = 5 × 5 × 4 = 100. (2) The hundred's place in 5 ways, the ten's in 6 ways, and the one's in 6 ways. ∴ Number of ways = 180.

In how many ways can one or more balls be selected from a bag, which contains 6 different balls?

31

32

63Correct Answer.

64

720You Answered.

Right Answer Explanation:

The required number of selections is the number of ways of selecting one or more objects from n different objects = 2^n - 1. This is as we can either select a ball or not. So for every ball there are 2 selections.
In this case, number of selections = 2^6 - 1 = 63.

A pearl bangle is studded with 18 pearls od different colours. What is the total number of ways in which pearls studded in the bangle can be arranged, so that there is always one pearl between a red and blue pearl?

2 × 19!

2 × 18!You Answered.

18 × 19!

$\frac{20!}{2}$

$2 \times 16!$Correct Answer.

Right Answer Explanation:

Number of ways in which red and blue pearl are arranged = 2 ways
Number of ways in which other pearls can be arranged between red and blue = 16 ways
Remaining 15 pearls can be arranged in 15! Ways
Hence, possible number of ways of arranging the pearls = $2 \times 16 \times 15! = 2 \times 16!$ ways

A five-digit number, divisible by 3, is to be formed using the numerals 0, 1, 2, 3, 4 and 5 without repetition. The total number of ways in which this can be done is

600You Answered.

3,125

216Correct Answer.

240

120

Right Answer Explanation:

Since the number to be formed is divisible by 3, therefore, we can use the digits either from the set {1, 2, 3, 4, 5} or from the set {0, 1, 2, 4, 5} for the sum of digits to be used is to be a multiple of 3. First set gives 5! and the second set gives $4 \times 4!$ numbers.
Thus, the total number of ways = $5! + 4 \times 4! = 120 + 96 = 216$

The number of ways in which `n` distinct objects can be put into two different boxes so that no box remains empty is

$2^n - 1$You Answered.

$n^2 - 1$

$2^n - 2$Correct Answer.

$2^n - 3$

2^n

Right Answer Explanation:

Number of ways in which 'n' distinct objects can be put into two different boxes = 2^n
(Because each object can be placed in 2 ways)
Number of ways in which one box remains empty = 2
Required ways = $2^n - 2$

A box contains two white balls, three black balls and four red balls. The number of ways in which three balls can be drawn from the box so that at least one of the balls is black is

84You Answered.

74

64Correct Answer.

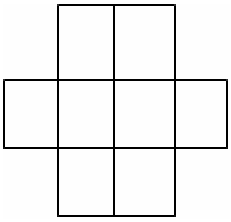
20

96

Right Answer Explanation:

Total ways such that at least one is black = total - when none is black = ${}^{9}C_3$ - ${}^{6}C_3$ = 84 - 20 = 64.

Six X have to be placed in the squares of the figure given such that each row contains at least one X. In how many ways can this be done?



25

24

27

26Correct Answer.

30You Answered.

Right Answer Explanation:

There are eight boxes. Number of ways in which six 'X' can be put into the eight boxes = ${}^{8}C_6$ = 28. There are only two ways when one of three rows has no 'X'.

x	x	x	x
	x	x	

	x	x	
x	x	x	x

So number of ways in which each row contains at least one 'X' = 28 - 2 = 26.

Given three different green dyes, two different blue dyes and four different red dyes, how many combinations of dyes can be chosen taking at least one green and one red dye?

288

315

420Your answer is correct

512

720

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Right Answer Explanation:

Number of ways of selecting green dyes = $^3C_1 + {}^3C_2 + {}^3C_3$ (Either one can choose one or two or all three) = 2^3 - 1 = 7.
Number of ways of selecting blue dyes = $^2C_0 + {}^2C_1 + {}^2C_2$ = 2^2 = 4
Number of ways of selecting red dyes = $^4C_1 + {}^4C_2 + {}^4C_3 + {}^4C_4$ = 2^4 - 1 = 15
Total number of combinations = 15 × 4 × 7 = 420.

The number of ways of selecting 8 balls out of an unlimited number of white, red and blue balls is

60You Answered.

45Correct Answer.

50

30

8

Right Answer Explanation:

Let x_1, x_2, x_3 be the number of white, red and blue balls selected.
∴ $x_1 + x_2 + x_3 = 8$.
Total number of ways = $^{n+r-1}C_{r-1} = {}^{8+3-1}C_{3-1} = {}^{10}C_2 = 45$.

Eight chairs are numbered 1 to 8. Two women and three men wish to occupy one chair each. First the women choose the chairs from amongst the chairs marked 1 to 4; and then the men select the chairs from amongst the remaining. The number of possible arrangements is

$^4C_3 . {}^4C_2$

$^4C_2 . {}^4P_2$

$^4P_2 . {}^4P_3$

$^4P_2 \times {}^6P_3$Your answer is correct

$^4P_2 \times {}^6P_2$

Right Answer Explanation:

First 2 women are arranged in 4 chairs, thus no. of ways = $^4P_2$
Then the 3 men are to be arranged in the remaining 6 chairs, thus number of ways = $^6P_3$
Thus the required number is $^4P_2 \times {}^6P_3$.

A family consists of a grandfather, 6 sons and daughters and 4 grandchildren. They are to be seated in a row for dinner. The grandchildren wish to occupy the two seats at each end and the grandfather refuses to have any grandchild on either side of him. In how many ways can the seating arrangements be made for the dinner?

84,600

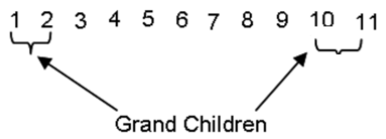
86,600

86,400Your answer is correct

68,400

14,400

Right Answer Explanation:



Grandchildren can sit in 4! ways.(at 1, 2, 10, 11th places)
After arranging grandchildren, grandfather can take any seat out of 4, 5, 6, 7, 8 i.e. in 5 ways.
Sons and daughters can be arranged at any of the remaining places in 6! ways.
Total number of ways = $6! \times 5 \times 4! = 6! \times 5! = 86,400$

A person wishes to make up as many different parties as he can out of his 20 friends, such that each party consists of the same number of persons. No two parties have the same group of friends. The number of friends he should invite at a time is

5

10Your answer is correct

8

12

20
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Right Answer Explanation:

Suppose, he invites r friends at a time. Then, the total number of parties is $^{20}C_r$. We have to find the maximum value of $^{20}C_r$ which is for r = 10 (if n is even, then ^nC_r is maximum for r = n/2). Hence, he should invite 10 friends at a time in order to form the maximum number of parties.

Two C.I.D inspectors, A and B, are given a case to solve. The chance that A solves the case is 1/5 and that of B is 1/6. Find the probability when
a. the case is solved
b. B solves the case, but A does not
c. the case is not solved

$\frac{1}{2}, \frac{1}{5}, \frac{2}{5}$

$\frac{1}{3}, \frac{2}{15}, \frac{2}{3}$ Correct Answer.

$\frac{1}{4}, \frac{2}{5}, \frac{3}{5}$ You Answered.

$\frac{1}{30}, \frac{2}{15}, \frac{29}{30}$

Right Answer Explanation:

P (A) = probability that A solves the case $= \frac{1}{5}$. $\therefore$ P (A') $= \frac{4}{5}$.
P (B) = probability that A solves the case $= \frac{1}{6}$. $\therefore$ P (B') $= \frac{5}{6}$.
The probability that the case is solved = 1 - (probability that the case is not solved)
= 1 - [P (A') × P (B')] = 1 - [(4/5) (5/6)] = 1 $- \frac{4}{6} = \frac{1}{3}$.
The probability that B solves the case but A does not = P (A') × P (B) = (4/5) × (1/6) = 2/15.
The probability that the case is not solved is [P (A') × P(B')] = [(4/5) (5/6)] = 2/3.

In a collection of 6 Mathematics books and 4 Physics books arranged in a book shelf, the probability that 3 particular Mathematics books will be together is

$\frac{1}{8}$ You Answered.

$\frac{1}{10}$

$\frac{1}{15}$ Correct Answer.

$\frac{1}{12}$

Right Answer Explanation:

Considering the 3 particular Mathematics books as one group, we now have a total of 8 books (3 Mathematics, 4 Physics and 1 group of 3 particular Mathematics books).
Number of ways in which these books are together $= {}^{8}P_{8} \times {}^{3}P_{3} =$ 8! x 3!
Total number of ways of arranging 10 books (6 M + 4 P) $= {}^{10}P_{10} =$ 10!
Required probability $= \frac{8!.3!}{10!} = \frac{3 \times 2}{10 \times 9} = \frac{1}{15}$

N cadets have to stand in a row. If all possible permutations are equally likely, then the probability of two particular cadets standing side by side is

$\frac{4}{N}$

$\frac{3}{N^2}$ You Answered.

$\frac{1}{2N}$

$\frac{2}{N}$ Correct Answer.

Right Answer Explanation:

Total permutations of N cadets = N!
If 2 particular cadets stand together, then we have to arrange (N – 1) things, considering the 2 together as a group.
This can be done in (N – 1)!.2! ways, as 2 candidates can swap places between themselves.
Probability that two particular cadets will stand side by side = $\frac{(N-1)!}{N!} \times 2!$ = $\frac{(N-1)!}{N(N-1)!}$.2!
= $\frac{2}{N}$

In a survey of seventy businessmen, it is found that twenty of them own only scooters, ten own only bikes and 15 own only cars. Five businessmen own all the three. Find the probability that a businessmen selected at random possess only two items.

$\frac{1}{7}$

$\frac{2}{7}$ Correct Answer.

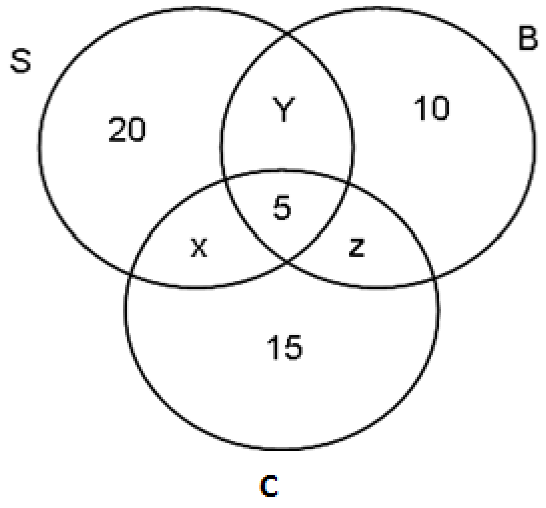
$\frac{3}{7}$ You Answered.

$\frac{4}{7}$

Right Answer Explanation:

From the Venn diagram,
20 + 10 + 15 + 5 + (x + y + z) = 70
Therefore,
x + y + z = 20
Therefore,

The required probability = 20/70 = 2/7



The probability of having 53 Mondays in a non-leap year is

$\frac{2}{7}$ You Answered.

$\frac{3}{7}$

$\frac{1}{7}$ Correct Answer.

$\frac{1}{53}$

Right Answer Explanation:

A year has 365 days i.e. 52 weeks & 1 day.
Now, for 53 Mondays, the extra/odd day has to be a Monday.

Now, the probability of extra day falling on a Monday = $\frac{1}{7}$.

A basket contains seven apples and fourteen oranges. If we select two at random then what is the probability that both are different?

$\frac{2}{3}$

$\frac{7}{20}$ You Answered.

$\frac{7}{15}$ Correct Answer.

$\frac{7}{30}$

Right Answer Explanation:

Case (1): Event A: First is apple; second is orange. Then P (A) = (7/21) × (14/20) = 7/30.
Case (2): Event B: First is orange; second is apple. Then P (B) = (14/21) × (7/20) = 7/30.
So, the required probability is P (A) + P (B) = 7/15.

Eddy and Alex play a game where they roll two dice and get to draw four cards based on the result of the roll of the dice. The arrangement is such that the person who rolls a number more than 7 first, gets to draw four cards from a pack of 52 cards and replaces the cards. What is the probability that Eddy gets 4 Kings in his second go, assuming Eddy starts the game?

$\frac{5}{12} \times \frac{1}{^{52}C_4}$

$\frac{5}{12} \times \frac{11}{^{52}C_4}$ You Answered.

$\frac{7}{12} \times \frac{7}{12} \times \frac{5}{12} \times \frac{1}{13}$Correct Answer.

$\frac{5}{11} \times {}^{52}C_4$

Right Answer Explanation:

The probability of getting a sum greater than 7 is 5/12, and the probability of getting 4 Kings in any of the draws is 1/ 13.

Hence, required probability = $\frac{7}{12} \times \frac{7}{12} \times \frac{5}{12} \times \frac{1}{13}$.

A person was dialing a telephone. He forgot the last three digits of the six-digit telephone number but remembered that the number formed by the last three digits in the same order was a perfect square. What is the probability that he dialed a right number?

$\frac{1}{32}$ Correct Answer.

$\frac{1}{46}$

$\frac{1}{49}$

$\frac{1}{36}$ You Answered.

Right Answer Explanation:

We have 000, 001, 004, 009, 016,. ... 961. (Note that $31^2 = 961 < 1000$ and $32^2 = 1024 > 1000$). Thus there are 32 perfect square numbers, which can be formed using 3 digits. From 32 available choices the person will select 1 hence the probability is 1/32.

A company secretary has ten letters and as many addressed envelopes to post the letters in. She puts the letters in the envelopes randomly and sends them for posting. What is the probability that at least one letter is put in an incorrect envelope?

(10 - 1)/10

1/10

(10! - 1)/10!Correct Answer.

$\frac{1}{10!}$ You Answered.

Right Answer Explanation:

Total number of ways of putting 10 letters in 10 envelopes = 10! out of which there`s only one is the right way.
Total numbers of incorrect ways = 10! - 1!.

The probability that Anu would be alive in 2050 is $\frac{1}{7}$ and that of her husband being alive is $\frac{1}{6}$. What is the probability that their kids will have at least one of the parents alive in 2050?

$\frac{3}{7}$

$\frac{5}{7}$

$\frac{2}{7}$ Correct Answer.

$\frac{13}{42}$ You Answered.

Right Answer Explanation:

1/7 × 5/6 + 1/6 × 6/7 + 1/7 × 1/6 = 2/7.

The probabilities of the three doctors A, B and C getting success in an operation are 0.5, 0.2 and 0.3 respectively. Find the probability that the operation is not successful.

0.78

0.64You Answered.

0.56

0.28Correct Answer.

Right Answer Explanation:

Since A, B or C could do the operation independently, these are mutually exclusive events Therefore, the required probability is (1 - 0.5) × (1 - 0.2) × (1 - 0.3) = 0.28.

From a pack of 52 cards, all face cards are removed and four cards are drawn. Then the probability that they are of different suit and different denomination is

$(9/10)^4$You Answered.

$\frac{10 \times 9 \times 8 \times 7}{10^4}$

$\frac{10x9x8x7}{^{40}C_4}$ Correct Answer.

$\left(\frac{9}{13}\right)^4$

Right Answer Explanation:

Since the face cards are removed there will be 10 cards of each suit.
Total number of ways of drawing four cards = $^{40}C_4$.
Favourable number of cases will be 10 x 9 × 8 × 7

Hence the required probability is $\frac{10 \times 9 \times 8 \times 7}{^{40}C_4}$

If four whole numbers taken at random are multiplied together, then the probability that the last digit in the product is 1, 3, 7, or 9 is

$\frac{4}{25}$

$\frac{4}{10}$

$\frac{2}{5}$

$\frac{16}{625}$ Your answer is correct

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Right Answer Explanation:

The last digit in the product can be one of the required digits if and only if the last digit of each of the numbers is one of the numbers 1, 3, 7 or 9. ∴ Probability of choosing each of the four numbers is 4/10.
As last digit of required numbers can be chosen in four different ways and total number of ways of choosing a digit at units place is 10.

Required probability = $\frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} \times \frac{2}{5} = \left(\frac{2}{5}\right)^4 = \frac{16}{625}$.

The probability of winning a match is 0.25. If a person plays four matches, what are the chances that he will win in at least one of the four matches?

0.75

0.48

$\frac{150}{256}$

$\frac{175}{256}$ Your answer is correct

Right Answer Explanation:

The probability of not winning a match is 0.75.
So, the probability that at least one of the four matches will win is =1 - $(0.75)^4$ = 175/256.

Two dice are rolled one after the other. The probability that the number on the first is smaller than the number on the second is

$\frac{1}{2}$

$\frac{7}{18}$ You Answered.

$\frac{3}{4}$
$\frac{5}{12}$ Correct Answer.

Right Answer Explanation:

Total number of cases = 6^2 = 36
Favourable cases (1, 2) (1, 3) (1, 4) (1, 5) (1, 6)
(2, 3) (2, 4) (2, 5) (2, 6)
(3, 4) (3, 5) (3, 6)
(4, 5) (4, 6) & (5, 6) i.e. 15

$\therefore$ Required probability = $\frac{15}{36} = \frac{5}{12}$.

The probability that a leap year selected at random contains either 53 Sundays or 53 Mondays, is

$\frac{2}{7}$ You Answered.
$\frac{4}{7}$
$\frac{3}{7}$ Correct Answer.
$\frac{1}{7}$

Right Answer Explanation:

A leap year has 366 days or 52 weeks + 2 days. This means that 52 Sundays will be there but for the 53^{rd}, we have to evaluate the possibility of the 2 extra or odd days to fall on Sunday or Monday.
The possible outcomes for 2 odd days can be (Mon, Tue); (Tue, Wed); (Wed, Thu); (Thu, Fri); (Fri, Sat);
(Sat, Sun); (Sun, Mon)
Favourable cases = 3. $\therefore$ Required probability = $\frac{3}{7}$.

The probability that a student will succeed in IIT entrance test is 0.3, and that he will succeed in Roorkee entrance test is 0.5. If the probability that he will be successful in both of them is 0.2, then the probability that he will not succeed in either of them is

0.4Correct Answer.

0.3

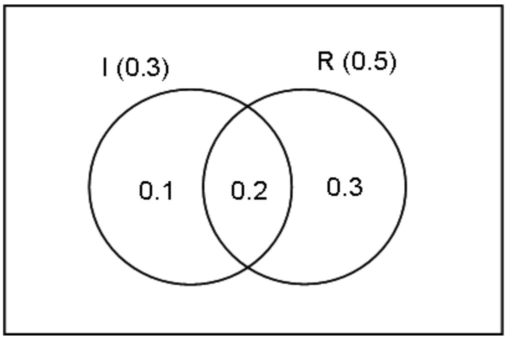
0.2

0.6You Answered.

Right Answer Explanation:

Probability of success in IIT entrance = 0.3

$\Rightarrow$ Probability of failure = 0.7



Secondly, probability of success in Roorkee entrance = 0.5
Probability that he does not succeed in either of these = 1 - Probability that he succeeds in any one of the two
= 1 - [0.1 + 0.2 + 0.3] = 1 - 0.6 = 0.4.

A man and his wife appear for an interview for two posts. The probability of the husband`s selection is $\frac{1}{7}$ and that of the wife`s selection is 1/5. What is the probability that only one of them will be selected?

$\frac{1}{7}$

$\frac{2}{7}$ Correct Answer.

$\frac{3}{7}$ You Answered.

$\frac{12}{35}$

Right Answer Explanation:

Probability (only one of them is selected) = P (only husband or only wife is selected)= P (husband is selected and wife is not)or P (wife is selected & husband is not)

$= \frac{1}{7} \times \frac{4}{5} + \frac{6}{7} \times \frac{1}{5} = \frac{10}{35} = \frac{2}{7}$.

The numbers 1, 2, 3, ….,100 are written on 100 cards with one number on each card. The cards are placed into a hat and one card is selected. The size and shape of each card is such that the probability of having selected the card labelled with the number n is equal to n times the probability of having selected the card labelled 1. What is the probability that the card labelled 50 was selected?

$\frac{1}{50}$

$\frac{1}{88}$ You Answered.

$\frac{1}{101}$ Correct Answer.

$\frac{2}{127}$

Right Answer Explanation:

Let 'x' be the probability that the card labelled '1' is selected.
The probability that the card labelled '2' is selected = 2x.
The probability that the card labelled '3' is selected = 3x and so on.
Now, x + 2x + 3x + ……… + 100x = 1

$\Rightarrow x\left(\frac{100\times101}{2}\right) = 1$

$\Rightarrow x = \frac{1}{50\times101}$

The required probability = 50x = 50 × $\frac{1}{50\times101} = \frac{1}{101}$.

A box contains 5 yellow and an unknown number of red balls. None of them are similar. When two balls are drawn at random, the probability of both being yellow is $\frac{5}{14}$. Find the number of red balls.

12

3Your answer is correct

9

15

Right Answer Explanation:

Let x be the number of red balls.
∴ Total number of balls = 5 + x.
The probability of both the drawn balls being yellow is : ${}^5C_2$ / [${}^{5+x}C_2$] = 5!/[3!2!] × 2!(3 + x)! / [(5 + x)!]
∴ (5) (4) / [(4 + x) (5 + x)] = 5 / 14 ∴ x^2 + 9x - 36 = 0.
∴ (x + 12) (x - 3) = 0
∴ x = - 12, or x = 3.
The negative value is naturally not admissible

A bag contains 6 white and 9 black balls. If three balls are drawn at random, find the probability that all of them are black.

$\frac{84}{445}$

$\frac{12}{65}$ Your answer is correct

$\frac{74}{455}$

$\frac{3}{5}$

Right Answer Explanation:

Total number of outcomes = $^{15}C_3$ = 455
Number of favorable outcomes = $^{9}C_3$ = 84
∴ Probability = 84/455 = 12/65

Cards are drawn one by one form a deck of 52 cards without replacement. The chance that four cards are drawn before the first ace (fifth card) is

$\frac{4}{48} \times \frac{1}{4}$

$\frac{48 \times 47 \times 46 \times 45 \times 4}{52 \times 52 \times 52 \times 52 \times 52} \times \frac{4}{52}$ You Answered.

$\frac{48 \times 47 \times 46 \times 45}{52 \times 51 \times 50 \times 49} \times \frac{44}{48}$

$\frac{48 \times 47 \times 46 \times 45}{52 \times 51 \times 50 \times 49} \times \frac{4}{48}$ Correct Answer.

Right Answer Explanation:

Required probability = P (drawing a non-ace at each of the first four draws and at fifth draw, an ace)

$= \frac{48}{52} \times \frac{47}{51} \times \frac{46}{50} \times \frac{45}{49} \times \frac{4}{48}$.

Amit`s chance of winning a single match of tennis against Mohit is $\frac{3}{4}$. Find the chance that in a series of five matches with Mohit, Amit wins exactly 3 matches.

1/4

$\frac{3}{5}$ You Answered.

7/9

$\frac{135}{512}$ Correct Answer.

Right Answer Explanation:

p = ¾ q = ¼ n = 5, r = 3

Here p is probability of Amit winning a match , n number of matches played and r number of matches won by Amit

$P(r=3) = {}^nC_r\, p^r\, q^{n-r} = {}^5C_3\, (3/4)^3 \,.\, (1/4)^2 = \frac{135}{512}$

6 guys are waiting for an interview in conference hall. There are 8 rooms in the office in which the interview are held. Then the probability that each of them enter a different room for the interview is

$\frac{P(9,6)}{6^6}$ You Answered.

$\frac{P(8,6)}{8^6}$ Correct Answer.

$\frac{8^6}{9^6}$

$\frac{C(8,6)}{8^6}$

Right Answer Explanation:

6 people can enter in 8 rooms in P(8, 6) ways.
The favorable number of ways, i.e. if they can enter more than one room = 86.

So, the required probability = $\frac{P(8,6)}{8^6}$.

A drawer contains 8 pairs of socks. If 6 socks are taken at random and without replacement, then the probability that there is at least one matching pair among 6 socks is

$\frac{111}{143}$ Correct Answer.

$\frac{117}{143}$ You Answered.

$\frac{119}{143}$

$\frac{32}{143}$

Right Answer Explanation:

$\frac{16\times14\times12\times10\times8\times6}{16\times15\times14\times13\times12\times11} = \frac{32}{143}$

Probability that there is at least one matching pair = 1 – P(No matching pair) = 1 – $\frac{32}{143} = \frac{143-32}{143} = \frac{111}{143}$.