MATHS

BOOKS - MODERN PUBLICATION

PROBABILITY

Example

1. If a four digit number is formed by using the digits 1,2,3 and 5 with no repetition, then the probability that the number is divisible by 5 is :

Watch Video Solution

2. If a leap year is selected at random, what is the chance that it will contain 53 tuesdays?

Watch Video Solution

3. If $P(A) = \frac{1}{5}$ and $P(A - B) = \frac{1}{6}$, find the value of $P(A \cap B)$.

Watch Video Solution

4. IF $P(A) = \frac{4}{5}$ and $P\left(\frac{B}{A}\right) = \frac{2}{5}$, find $P(A \cap B)$.

Watch Video Solution

5. Ten cards numbered 1 to 10 are placed in a box, mixed up thoroughly and then one card is drawn randomly. If it is known that the number on the drawn card is more than 3, what is the probability that it is an even number?

Watch Video Solution

6. A die is thrown three times. Events A and B are defined as below: A : 4 on the third throw B : 6 on the first and 5 on the second throw Find the probability of A given that B has already occurred.

Watch Video Solution

7. Consider the experiment of tossing a coin. If the coin shows head, toss it again but if it shows tail, then throw a die. Find the conditional probability of the event that the die

shows a number greater than 4, given that there is at least one tail.

Watch Video Solution

8. If $P(A) = \frac{2}{5}$ and $P(B) = \frac{1}{3}$, A and B are independent events, then find the value of $P(A \cap B)$.

Watch Video Solution

9. If A and B are independent events such that $P(A) = \frac{3}{10}, P(B) = \frac{2}{5}$, then find : $P(A \text{ and } B)$

Watch Video Solution

10. If A and B are independent events such that $P(A) = \frac{3}{10}, P(B) = \frac{2}{5}$, then find : $P(A \text{ or } B)$

Watch Video Solution

11. One card is drawn from a pack of 52 cards so that each card is equally likely to be selected. Prove that the following cases are independent: A: " The card drawn is a spade" B:" the card drawn is an ace".

Watch Video Solution

12. One card is drawn from a pack of 52 cards so that each card is equally likely to be selected. Prove that the following cases are independent:

A:"the card drawn is black" B:" the card drawn is a king"

Watch Video Solution

13. An unbiased die is thrown twice. Let the event A be ‘odd number on the first throw’ and B the event ‘odd number on the second throw’. Check the independence of the events A and B.

Watch Video Solution

14. Three coins are tossed simultaneously. Consider the event E 'three heads or three tails', F 'at least two heads' and G 'at most two heads'. Of the pairs (E,F), (E,G) and (F,G), which are independent? which are dependent?

Watch Video Solution

15. The probability of student A passing an examination is $\frac{2}{9}$ and of student B is $\frac{5}{9}$. Assuming the two events : 'A passes', 'B passes'

as independent. Find the probability of: only A passing the examination

Watch Video Solution

16. The probability of student A passing an examination is $\frac{2}{9}$ and of student B is $\frac{5}{9}$. Assuming the two events : 'A passes', 'B passes' as independent. Find the probability of: only one of them passing the examination.

Watch Video Solution

17. A husband and his wife appear for an interview for two parts. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is probability that only one of them is selected?

Watch Video Solution

18. In a hockey match two teams A and B scored same number of goals upto the end of the games so as to decide the winner, the referee asked both the captains to throw a die

alternately and decided that the team, whose captain gets a six first, will be declared the winner. If the captain of team A was asked to start, find their respective probabilities of winning the match and state whether the decision of the referee was fair or not.

Watch Video Solution

19. A speaks truth in 60% of the cases, while B in 90% of the cases. In what percentage are they likely to contradict each other in stating the same fact? In the case of contradiction do you

think , the statement of B will carry more weight as he speaks truth in more number of case than A?

Watch Video Solution

20. The probabilities of two students A and B coming to the school in time are $\frac{3}{7}$ and $\frac{5}{7}$ respectively. Assuming that the events, 'A coming in time' and 'B coming in time' are independent, find the probability of only one of them coming to the school in time. Write at

least one advantage of coming to school in time.

Watch Video Solution

21. A and B throw a pair of dice alternately. A wins the game if he gets a total of 7 and B wins if he gets a total of 10. If A starts the game, find the probability that B wins.

Watch Video Solution

22. A bag A contains 8 white and 7 black balls while the other bag B contains 5 white and 4 black balls. One ball is randomly picked up from the bag A and mixed up with the balls in the bag B. Then a ball is randomly drawn out from it. Find the probability that the ball drawn is white.

Watch Video Solution

23. If A and B are two independent events such that : $P(\overline{A} \cap B) = \frac{2}{15}$ and $P(A \cap \overline{B}) = \frac{1}{6}$,

then find $P(A)$ and $P(B)$.

Watch Video Solution

24. When two coins are tossed simultaneously. Find the probability of getting.

at least one head

Watch Video Solution

25. How many times must a fair coin be tossed so that the probability of getting at least one

head is more than 80%?

Watch Video Solution

26. f A and B are two independent events, then the probability of occurrence of at least one of A and B is given by = $1 - P(A')P(B')$

Watch Video Solution

27. A and B appeared for an interview. The probability of their selection is $\frac{1}{5}$ and $\frac{1}{3}$

respectively. Find the probability that both selected

Watch Video Solution

28. A and B appeared for an interview. The probability of their selection is $\frac{1}{2}$ and $\frac{1}{3}$ respectively. Find the probability that at least one of them selected

Watch Video Solution

29. A problem in Mathematics is given to three students whose chances of solving it are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$. What is the probability in the following cases? : that the problem is solved.

Watch Video Solution

30. A problem in Mathematics is given the three students whose chances of solving it are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$. What is the probability in the following cases ? : Only one of them solves it correctly.

Watch Video Solution

31. A problem in Mathematics is given the three students whose chances of solving it are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$. What is the probability in the following cases ? : At least one of them solves it.

Watch Video Solution

32. In a set of 10 coins, 2 coins with heads on both sides. A coin is selected at random from this set and tossed five times. Of all the five

times, the result was head, find the probability that the selected coin had heads on both sides.

Watch Video Solution

33. A person has undertaken a construction job. The probabilities are 0·65 that there will be strikes 0·80, that the construction job will be completed on time if there is no strike, and 0·32 that the construction job will be completed on time if there is a strike. Determine the probability that the construction job will be completed on time.

Watch Video Solution

34. There are two bags I and II. Bag I contains 4 white and 3 red balls while another Bag II contains 3 white and 7 red balls. One ball is drawn at random from one of the bags and it is found to be white. Find the probability that it was drawn from Bag I.

Watch Video Solution

35. A bag X contains 4 white balls and 2 black balls, while another bag Y contains 3 white balls and 3 black balls. Two balls are drawn (without replacement) at random from one of the bags and were found to be one white and one black. Find the probability that the balls were drawn from bag Y.

Watch Video Solution

36. Assume that the chances of a patient having a heart attack is 40%. It is also assumed that a

meditation and yoga course reduce the risk of heart attack by 30% and prescription of certain drug reduces its chances by 25%. At a time a patient can choose any one of the two options with equal probabilities. It is given that after going through one of the two options the patient selected at random suffers a heart attack. Find the probability that the patient followed a course of meditation and yoga?

Watch Video Solution

37. An insurance company insured 2000 scooter drivers, 4000 car drivers and 6000 truck drivers. The probability of an accidents are 0.01, 0.03 and 0.15 respectively. One of the insured persons meets with an accident. What is the probability that he is a scooter driver?

Watch Video Solution

38. A card from a pack of 52 playing cards is lost. From the remaining cards of the pack, three cards are drawn at random(without

replacement) and re found to be all spades. Find the probability that the lost card being a spade.

Watch Video Solution

39. Three persons A,B and C apply for a job of manager in a private company. Chances of their selection are in the ratio 1:2:4. The probabilities that A,B and C can introduce changes to improve profits of the company are 0.8, 0.5 and 0.3 respectively. If the change does not take

place, find the probability that it is due to appointment of C.

Watch Video Solution

40. A man is known to speak the truth 3 out of 5 times. He throws a die and reported that it is a number greater than 4. Find the probability that it is actually a number greater than 4.

Watch Video Solution

41. In a bolt factory, machines A, B and C manufacture respectively 25%, 35%, 40% of the total. Of their output 5,4 and 2% are defective. A bolt is drawn at random from the product. What is the probability that the bolt drawn is defective?

Watch Video Solution

42. In a bolt factory, three machines A, B and C manufacturers 25, 35 and 40 percent of the total bolts . Of their output $5, 4$ and 2 percent

are defective respectively. A bolt is drawn at random and found to be defective. Find the probability that it was manufactured by machine B.

Watch Video Solution

43. In answering a question in a multiple choice test a student either knows the answer or guesses. Let $\frac{3}{4}$ be the probability that he knows the answer and $\frac{1}{4}$ be the probability that he guesses. Assuming that a student who guesses at the answer will be correct with probability $\frac{1}{4}$

. What is the probability that a student knows the answer, given that he answered it correctly ?

 Watch Video Solution

44. A girl throws a die. If she gets 5 or 6, tosses a coin three times and notes the number of heads. If she gets 1,2,3 or 4, she tosses a coin two times and notes the number of heads. If she obtained exactly two heads, what is the probability that she throws 1,2,3 or 4 with the die.

Watch Video Solution

45. Bag I contains 3 red and 4 black balls and Bag II contains 4 red and 5 black balls. One ball is transferred from Bag I to Bag II and then a ball is drawn from Bag II. The ball so drawn is found to be red in colour. Find the probability that the transferred ball is black

Watch Video Solution

46. There see three coins,one is a two headed coin (having head on both the faces),another is a biased coin that comes up heads 75% of the time and the third is anunbiased coin.One of the three coins is choosen at random and tossed.Of it shows head,what is probability that it was the two headed coin?

Watch Video Solution

47. Suppose that the reliability of a HIV test is specified as follows: Of people having HIV, 90%

of the test detect the disease but 10% go undetected. Of people free of HIV, 99% of the test are judged HIV–ive but 1% are diagnosed as showing HIV+ive. From a large population of which only 0.1% have HIV, one person is selected at random, given the HIV test, and the pathologist reports him/her as HIV+ive. What is the probability that the person actually has HIV?

 Watch Video Solution

48. A random variable 'X' has a probability distribution P(X) of the following form (K is constant):

X :	0	1	2	3
P(X) :	3K	2K	K	0

Find K.

Watch Video Solution

49. A bag contains 2 white and 1 red ball. One ball is drawn at random and then put back in the bag after noting its colour. The process is

repeated again. If 'X' denotes the number of red balls recorded in the two draws, describe 'X'.

 Watch Video Solution

50. A person plays a game of tossing a coin thrice. For each head he is given Rs 2 by the organiser of the game and for each tail he has to give Rs 1.50 to the organiser. Let X denote the amount gained or lost by the person. Show that 'X' is a random variable and exhibit it as a function on the sample space of the experiment.

Watch Video Solution

51. A fair die is tossed twice. If the number appearing on the top is less than 3, it is a success, find the probability distribution of successes.

Watch Video Solution

52. A coin is biased so that the head is 3 times as likely to occur as tail. If the coin is tossed 3

times, find the probability distribution of number of tails.

Watch Video Solution

53. Find the probability distribution of number of heads in two tosses of a coin

Watch Video Solution

54. Find the probability distribution for the number of girls in a family with three children,

assuming equal probability for a child being a boy or a girl.

Watch Video Solution

55. Four defective oranges are accidently mixed with 16 good ones and by looking at them it is not possible to differentiate between them. Three oranges are drawn at random from the lot. Find the probability distribution of X, the number of defective oranges.

Watch Video Solution

56. Let a pair of dice be thrown and the random variable X be the sum of the numbers that appear on the two dice. Find the mean (or expectation) of X.

Watch Video Solution

57. Find the mean and variance of the number obtained on a throw of an unbiased die.

Watch Video Solution

58. Find the mean and variance of the number of heads on the throw of three coins.

Watch Video Solution

59. Two cards are drawn simultaneously (without replacement) from a well-shuffled pack of 52 cards . Find the mean and variance of the number of red cards .

Watch Video Solution

60. A die tossed twice . Getting a number greater than 4 is considered a success . Find the variance of the probability distribution of the number of successes .

Watch Video Solution

61. From a lot of 10 items containing 3 defective items a sample of 4 items is drawn at random. Let the random variable 'X' denote the number of defective items in the sample. If the sample is

drawn without replacement, find: the probability distribution of X.

Watch Video Solution

62. From a lot of 10 items containing 3 defective items a sample of 4 items is drawn at random. Let the random variable 'X' denote the number of defective items in the sample. If the sample is drawn without replacement, find: mean of X.

Watch Video Solution

63. From a lot of 10 items containing 3 defective items a sample of 4 items is drawn at random. Let the random variable 'X' denote the number of defective items in the sample. If the sample is drawn without replacement, find: variance of X.

64. There is a group of 50 people who are patriotic out of which 20 believe in non-violence. Two persons are selected at random out of them, write the probability distribution

for the selected persons who are non-violent. Also find the mean of the distribution. Explain the importance of non-violence in patriotism.

Watch Video Solution

65. Three numbers are selected at random (without replacement) from first 6 positive integers. Let X denote the largest of the three numbers obtained. Find the probability distribution of X. Also, find the mean and variance of the distribution.

Watch Video Solution

Watch Video Solution

66. Six balls are drawn successively from an urn containing 7 red and 9 black balls. Tell whether or not the trials of drawing black balls are Bernoulli trials when after each draw the ball drawn is : replaced in the urn.

Watch Video Solution

67. Six balls are drawn successively from an urn containing 7 red and 9 black balls. Tell whether

or not the trials of drawing black balls are Bernoulli trials when after each draw the ball drawn is : not replaced in the urn.

Watch Video Solution

68. An experiment succeeds thrice as often as it fails. Find the probability that in the next five trials, there will be at least 3 successes.

Watch Video Solution

69. A coin is tossed 6 times. Find the probability of obtaining no head.

Watch Video Solution

70. A coin is tossed 6 times. Find the probability of obtaining 4 heads.

Watch Video Solution

71. A pair of dice is thrown 4 times. If getting a doublet is considered a success, find the probability distribution of number of successes.

Watch Video Solution

72. A pair of dice is thrown 4 times. If getting a doublet is considered a success then find the probability of exactly 2 successes.

Watch Video Solution

73. The probability that a student entering the university will graduate is 0.4. Find the probability that out of 3 students of the University: none will graduate.

74. The probability that a student entering the university will graduate is 0.4. Find the probability that out of 3 students of the University: only one will graduate.

75. The probability that a student entering the university will graduate is 0.4. Find the probability that out of 3 students of the University: all will graduate. Whay graduation is minimum qualification for all good well paid jobs?

Watch Video Solution

76. Ten eggs are drawn successively with replacement from a lot containing 10%

defective eggs. Find the probability that there is at least one defective egg.

Watch Video Solution

77. An owner of a small hotel with 5 rooms is thinking of buying T.V. sets to rent them to room occupants when demanded. He expects that about half of his customers will be willing to get sets on rent. He buys three T.V. sets. Assuming 100% occupancy at all times, find out the probability that: a customer who requests for T.V. will get one.

Watch Video Solution

78. An owner of a small hotel with 5 rooms is thinking of buying T.V. sets to rent them to room occupants when demanded. He expects that about half of his customers will be willing to get sets on rent. He buys three T.V. sets. Assuming 100% occupancy at all times, find out the probability that: some demand will be refused.

Watch Video Solution

79. The probability of a shooter hitting a target is $\frac{3}{4}$. How many minimum number of times must he/she fire so that the probability of hitting the target at least once is more than 0.99?

Watch Video Solution

80. Five dice are thrown 729 times. How many times do you expect that at least four dice to show five or six?

Watch Video Solution

81. In a backward state, there are 729 families having six children each. If probability of survival of a girl is $\frac{1}{3}$ anf that of a boy is $\frac{2}{3}$, find the number of families having 2 girls and 4 boys. Do you believe that a female child is neglected in backward areas. What steps should be taken to restore respect of a female child in society?

 Watch Video Solution

82. A die is thrown again and again until three sixes are obtained. Find the probability of obtaining the third six in the sixth trial of the die.

Watch Video Solution

83. In an exam, 10 questions of true-false type are asked. A student tosses a fair coin to determine his answer to each question. If the coin falls heads, he answers true and if it falls tails, he answers false. Show that the

probability that he answers at most 7 questions correctly is $\frac{121}{128}$.

Watch Video Solution

84. Find the mean of the binomial distribution $B\left(5, \frac{1}{2}\right)$

Watch Video Solution

85. The sum of the mean and variance of a Binomial distribution of 6 trials is $\frac{10}{3}$, find the

Binomial distribution.

Watch Video Solution

86. The sum of mean and variance of a binomial distribution is 15 and the sum of their squares is 117. Find the Binomial distribution.

Watch Video Solution

87. The mean and variance of the binomial distribution are 4 and $\frac{4}{3}$ respectively. Find p.

Watch Video Solution

88. A and B are two candidates seeking admission in a college. The probability that A is selected is 0.7 and the probability that exactly one of them is selected is 0.6. Find the probability that B is selected.

Watch Video Solution

89. The probability of simultaneous occurrence of at least one of two events A and B is p. If p is

the probability that exactly one A, B occurs is q, then prove that :

$P(A') + P(B') = 2 - 2p + q$

Watch Video Solution

90. 10% of the bulbs produced in a factory are red colour and 2% are red and defective. If one bulb is picked up at random, determine the probability of its being defective if it is red.

Watch Video Solution

91. Three machines E_1, E_2, E_3 in a certain factory produce 50%, 25% and 25% respectively of the total daily output of electric tubes. It is known that 4% of the tubes produced by each of machines E_1 and E_2 are defective, and that 5% of those produced on E_3 are defective. If one tube is picked up at random from a day's production, calculate the probability that it is defective.

 Watch Video Solution

92. Determine variance and S.D. od the number of heads in three tosses of a coin.

Watch Video Solution

Exercise

1. Compute $P(A \mid B)$,if $P(B) = 0.5$ and $P(A \cap B) = 0.32$

Watch Video Solution

2. If $P(A) = \frac{7}{13}, P(B) = \frac{9}{13}$ and $P(A \cap B) = \frac{4}{13}$, evaluate $P(A \mid B)$

Watch Video Solution

3. If A and B are two events such that $P(A) = \frac{1}{4}, P(B) = \frac{1}{2}$ and $P(A \cap B) = \frac{1}{8}$ find $P(\neg A \text{ and } \neg B)$

Watch Video Solution

4. If $P(A) = 0.8, P(B) = 0.5$ and $P\left(\frac{B}{A}\right) = 0.4$, find : $P(A \cap B)$

Watch Video Solution

5. If $P(A) = 0.8, P(B) = 0.5$ and $P(B/A) = 0.4$, find

(i) $P(A \cap B)$

(ii) $P(A/B)$

(iii) $P(A \cup B)$

Watch Video Solution

Watch Video Solution

6. If $P(A) = 0.8, P(B) = 0.5$ and $P(B/A) = 0.4$, find

(i) $P(A \cap B)$

(ii) $P(A/B)$

(iii) $P(A \cup B)$

Watch Video Solution

7. If $P(A) = 0.3, P(B) = 0.6$ and $P(B/A) = 0.5$, find $P(A/B)$.

Watch Video Solution

8. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$ find: $P(A \cap B)$

Watch Video Solution

9. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$ find: $P(A \mid B)$

Watch Video Solution

10. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$ find: $P(B \mid A)$

Watch Video Solution

11. If $P(A) = 0.6, P(B) = 0.7$ and $P(A \cup B) = 0.9$, then find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{A}\right)$

Watch Video Solution

12. Determine $P(E \mid F)$ if A coin is tossed three times, where : E : head on third toss , F : heads on first two tosses

Watch Video Solution

13. Determine $P(E \mid F)$ if A coin is tossed three times, where : E : at least two heads , F : at most two heads

Watch Video Solution

14. Determine $P(E \mid F)$: if A coin is tossed three times, where : E : at most two tails , F : at least one tail

Watch Video Solution

15. A die is thrown three times :

E : 4 appears on the third toss .

F : 6 and 5 appear repectively on first two torses.

Find $P(E/F)$.

Watch Video Solution

16. Determine $P(E \mid F)$ Mother, father and son line up at random for a family picture :E : son on one end, F : father in middle

Watch Video Solution

17. A black and a red dice are rolled :Find the conditional probability of obtaining a sum greater than 9, given that the black die resulted in a 5.

Watch Video Solution

18. A black and a red dice are rolled: Find the conditional probability of obtaining the sum 8, given that the red die resulted in a number less than 4.

Watch Video Solution

19. Let E and F be events with $P(E) = \frac{3}{5}, P(F) = \frac{3}{10}$ and $P(E \cap F) = \frac{1}{5}$. Are E and F independent?

Watch Video Solution

20. A fair die is rolled. Consider events $E = \{1, 3, 5\}$, $F = \{2, 3\}$, and $G = \{2, 3, 4, 5\}$

find : $P(E \mid F)$ and $P(F \mid E)$

Watch Video Solution

21. A fair die is rolled. Consider events $E = \{1, 3, 5\}$, $F = \{2, 3\}$, and $G = \{2, 3, 4, 5\}$

find : $P(E \mid G)$ and $P(G \mid E)$

Watch Video Solution

22. A fair die is rolled. Consider events $E = \{1, 3, 5\}$, $F = \{2, 3\}$, and $G = \{2, 3, 4, 5\}$ find : $P(E \cup F \mid G)$ and $P(E \cap F \mid G)$

Watch Video Solution

23. A family has two children. What is the probability that both the children are boys given that at least one of them is a boy ?

Watch Video Solution

24. A family has two children. What is the probability that both the children are boys given that at least one of them is a boy ?

Watch Video Solution

25. If there are two children in a family,find the probability that there is atleast one girl in a family.

Watch Video Solution

26. Two coins are tossed. What is the probability of getting 2 heads if it is known that at least one head comes up?

Watch Video Solution

27. In a school, there are 1000 students, out of which 430 are girls. It is known that out of 430, 10% of the girls study in class XII. What is the probability that a student chosen randomly studies in Class XII given that the chosen student is a girl?

Watch Video Solution

28. A die is thrown twice and the sum of the numbers appearing is observed to be 6. What is the conditional probability that the number 4 has appeared at least once?

Watch Video Solution

29. Given that the two numbers appearing on throwing two dice are different. Find the

probability of the event ‘the sum of numbers on the dice is 4’.

Watch Video Solution

30. Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the conditional probability that both are girls given that the youngest is a girl.

Watch Video Solution

31. Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the conditional probability that both are girls given that at least one is a girl?

Watch Video Solution

32. Let E and F be events with $P(E) = \frac{3}{5}, P(F) = \frac{3}{10}$ and $P(E \cap F) = \frac{1}{5}$. Are E and F independent?

Watch Video Solution

33. Two events E and F are such that: $P(E) = 0.6, P(F) = 0.2$ and $P(E \cup F) = 0.68$. Are E and F independent?

Watch Video Solution

34. A die marked 1, 2, 3 in red and 4, 5, 6 in green is tossed. Let A be the event, 'the number is even,' and B be the event, 'the number is red'. Are A and B independent?

Watch Video Solution

35. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(A \cap B)$

Watch Video Solution

36. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(A \cup B)$

Watch Video Solution

37. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(A \mid B)$

Watch Video Solution

38. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(B \mid A)$

Watch Video Solution

39. If $P(A) = \frac{1}{2}, P(B) = \frac{7}{12}p$ (not A or not B)= $\frac{1}{4}$

State whether A and B are independent .

Watch Video Solution

40. If A and B are two events such that $P(A) = \frac{1}{4}, P(B) = \frac{1}{3}$ and $P(A \cup B) = \frac{1}{2}$, show that A and B are independent events.

Watch Video Solution

41. Given two independent events A and B such that $P(A) = 0.3$, and $P(B) = 0.6$ Find: $P(A$ and B)

Watch Video Solution

42. Given two independent events A and B such that $P(A) = 0.3$, and $P(B) = 0.6$ Find: P(A and not B)

Watch Video Solution

43. Given two independent events A and B such that $P(A) = 0.3$, and $P(B) = 0.6$ Find: P(A or B)

Watch Video Solution

44. Given two independent events A and B such that $P(A) = 0.3,$ and $P(B) = 0.6$ Find: P(neither Anor B)

Watch Video Solution

45. If $P(A) = 0.2, P(A \cup B) = 0.5,$ find P(B).

Here A and B are independent events .

Watch Video Solution

46. If $P(A) = 0.35, P(A \cup B) = 0.60,$ find $P(B)$. where A and B are independent events.

Watch Video Solution

47. If A and B are two independent events such that $P(A \cup B) = 0.6$ and $P(A) = 0.2$ find

P(B).

Watch Video Solution

48. If $P(A) = 0.5, P(A \cup B) = 0.7$, find P(B) .

Here A and B are independent events .

Watch Video Solution

49. Given that the events A and B are such that $P(A) = \frac{1}{2}, P(A \cup B) = \frac{3}{5}$ and $P(B) = p$ .Find p if they are independent.

Watch Video Solution

50. If $P(A) = \frac{1}{3}, P(B) = \frac{1}{5}$ and $P(A \cup B) = \frac{11}{30}$, then find $P(A/B)$.

Watch Video Solution

51. Let A and B be two independent events such that: $P(A) = \frac{1}{4}, P(B) = \frac{1}{2}$, find : $P(A \text{ or } B)$

Watch Video Solution

52. Let A and B be two independent events such that: $P(A) = \frac{1}{4}, P(B) = \frac{1}{2}$, find : P(neither A nor B)

Watch Video Solution

53. A coin is tossed thrice and all eight outcomes are assumed equally likely. In which of the following cases are the events A and B independent? A: "the first throw results in head" B:"the last throw results in tail"

Watch Video Solution

54. A coin is tossed thrice and all eight outcomes are assumed equally likely. In which of the following cases are the events A and B independent? A: " the number of heads is two" B:"the last throw results in head"

Watch Video Solution

55. A die is thrown. If E is the event ‘the number appearing is a multiple of 3’ and F be the event

'the number appearing is even' then find whether E and F are independent ?

56. One card is drawn at random from a pack of well shuffled deck of 52 cards. IN which of the following cards are the events E and F independent? : E: the card drawn is spade F: the card drawn is an ace

57. One card is drawn at random from a well shuffled deck of 52 cards. In which of the following cases are the events E and F independent ?E : 'the card drawn is black' F : 'the card drawn is a king'

58. One card is drawn at random from a well shuffled deck of 52 cards. In which of the following cases are the events E and F

independent ?E : 'the card drawn is a king or queen' F : 'the card drawn is a queen or jack'.

Watch Video Solution

59. The odds in favour of an event are $3:4$. Find the probability of : occurrence

Watch Video Solution

60. The odds in favour of an event are $3:4$. Find the probability of : non-occurrence of the event.

Watch Video Solution

61. Two cards are drawn at random and without replacement from a pack of 52 playing cards. Find the probability that both the cards are black.

Watch Video Solution

62. The probability of student A passing an examination is $\frac{3}{7}$ and of student B passing is $\frac{5}{7}$. Assuming the two events "A passes, B passes",

as independent, find the probability of : only A passing the examination.

Watch Video Solution

63. The probability of student A passing an examination is $\frac{3}{7}$ and of student B passing is $\frac{5}{7}$. Assuming the two events "A passes, B passes", as independent, find the probability of : only one of them passing the examination

Watch Video Solution

64. Given that the two numbers appearing on throwing two dice are different. Find the probability of the event 'the sum of numbers on the dice is 4'.

Watch Video Solution

65. A box of oranges is inspected by examining three randomly selected oranges drawn without replacement. If all the three oranges are good, the box is approved for sale, otherwise, it is rejected. Find the probability

that a box containing 15 oranges out of which 12 are good and 3 are bad ones will be approved for sale.

Watch Video Solution

66. A die is thrown. If E is the event 'the number appearing is a multiple of 3' and F be the event 'the number appearing is even' then find whether E and F are independent ?

Watch Video Solution

67. Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that both balls are red.

Watch Video Solution

68. Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that first ball is black and second is red.

Watch Video Solution

69. Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that one of them is black and other is red.

Watch Video Solution

70. An urn contains 10 black and 5 white balls. Two balls are drawn from the urn one after the other without replacement. What is the probability that both drawn balls are black?

Watch Video Solution

71. A bag contains 5 white and 3 black balls. Four balls are successively drawn out without replacement . What is the probability that they are alternately of different colours ?

Watch Video Solution

72. A bag contains 4 red and 3 black balls. A second bag contains 2 red and 4 black balls. One bag is selected at random. From the

selected bag, one ball is drawn. Find the probability that the ball drawn is red.

Watch Video Solution

73. Three cards are drawn successively, without replacement from a pack of 52 well shuffled cards. What is the probability that first two cards are kings and the third card drawn is an ace?

Watch Video Solution

74. A bag A contains 6 white and 7 black balls while the other bag B contains 4 white and 5 black balls. A ball is transferred from the bag A to the bag B. Then a ball is drawn from the bag B. Find the probability that the ball drawn is white.

Watch Video Solution

75. There are three urns A,B and C . Urn A contains 4 white balls and 5 blue balls . Urn B contains 3 white balls and 4 blue balls . Urn C

contains 3 white balls and 6 blue balls . One ball is drawn from each of these urns . What is the probability that out of these three balls drawn, two are white balls and one is a blue ball ?

Watch Video Solution

76. A speaks truth in 70% of the cases and B in 80% of the cases. In what percent of cases are they likely to agree in stating the fact ? Do you think, when they agree mean both are speaking truth ?

Watch Video Solution

Watch Video Solution

77. A speaks truth in 75% of cases and B in 80% of cases. The percentage of cases theyare likely to contradict each other in stating the same acr, is

Watch Video Solution

78. A and B toss a coin alternately till one of them tosses a head and wins the game. If A

starts the game, find their respective probability of winning.

79. A and B throw a die alternatively till one of them gets a '6' and wins the game. Find their respective probabilities of winning, if A starts first.

80. A and B throw a die alternatively till one of them gets a '6' and wins the game. Find their respective probabilities of winning, if A starts first.

Watch Video Solution

81. A and B throw a pair of dice alternately, till one of them gets a total of 10 and wins the game. Find their respective probabilities of winning if A starts first.

Watch Video Solution

82. A, B and C in tum throw a die and one who gets a 6 first wins the game. A takes the first chance followed by B and C, and the process is repeated till one of them who gets a 6, wins the game. Find the probabilities of each for winning the game .


Watch Video Solution

83. A, B and C in tum throw a die and one who gets a 6 first wins the game. A takes the first chance followed by B and C, and the process is repeated till one of them who gets a 6, wins the game. Find the probabilities of each for winning the game .

Watch Video Solution

84. Three ships A, B, C sail from England to India. Odds in favour of their arriving safely are

$2:5, 3:7, 6:1$ respectively. Find the chance that they will arrive safely.

Watch Video Solution

85. A husband and his wife appear for an interview for two parts. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is probability that both of them will be selected?

Watch Video Solution

86. Amit and Nisha appear for an interview for two vacancies in a company. The probability of Amit's selection is $\frac{1}{5}$ and that of Nisha's selection is $\frac{1}{6}$. What is the probability that both of them are selected?

Watch Video Solution

87. A problem is given to three students, whose chances of solving it are : $\frac{1}{3}, \frac{1}{2}$ and $\frac{1}{5}$ respectively. Find the probability that exactly one of them may solve it.

Watch Video Solution

88. A bag contains 50 tickets numbered 1, 2, 3, .., 50 of which 5 are drawn at random and arranged in ascending order of magnitude $x_1 < x_2 < x_3 < x_4 < x_5$ Find the probability that $x_3 = 30$.

a. $\frac{.^{20}C_2 \times .^{29}C_2}{.^{50}C_5}$

b. $\frac{.^{20}C_2}{.^{50}C_5}$

c. $\frac{.^{29}C_2}{.^{50}C_5}$

d. None of these

Watch Video Solution

89. A bag contains 100 bolts and 300 nuts, 50% of each have been rusted. One item is chosen at random. Find the probability that chosen item is rusted or a bolt.

Watch Video Solution

90. If A and B are two events such that $P(A) = \frac{1}{4}, P(B) = \frac{1}{2}$ and $P(A \cap B) = \frac{1}{8}$ find $P(\neg A \text{ and } \neg B)$

Watch Video Solution

91. Three coins are tossed once. Find the probability of getting: at least two tails.

Watch Video Solution

92. Three coins are tossed once. Find the probability of getting

at least two heads.

Watch Video Solution

93. The probability of A and B achieving a target is $\frac{3}{4}$ and $\frac{5}{6}$ respectively. If both of them try then find the probability that at least one of them will achieve the target

Watch Video Solution

94. The probability of A hitting a target is $\frac{4}{5}$ and that of B hitting it is $\frac{2}{3}$. They both fire at the target . Find the probability that : only one of them will hit the target.

Watch Video Solution

95. A die is tossed thrice. Find the probability of getting an odd number at least once.

Watch Video Solution

96. A problem in Mathematics is given to three students whose chances of solving it are : $\frac{1}{2}, \frac{1}{4}$ and $\frac{1}{5}$. What is the probability that at least one of them may solve it?

Watch Video Solution

97. A problem is given to three students, whose chances of solving it are : $\frac{1}{3}, \frac{1}{5}$ and $\frac{1}{6}$. What is the probability that exactly one of them may solve it.

Watch Video Solution

98. A and B try to solve the problem independently. The probability that A solves the problem is $\frac{1}{2}$ and that B solves the problem is $\frac{1}{3}$. Find the probability that : both of them solve the problem.

Watch Video Solution

99. Probability of solving specific problem independently by A and B are $\frac{1}{2}$ and $\frac{1}{3}$ respectively. If both try to solve the problem independently, find the probability that the problem is solved.

Watch Video Solution

100. A and B appeared for an interview. The probability of their selection is $\frac{1}{3}$ and $\frac{1}{4}$

respectively. Find the probability that both selected

Watch Video Solution

101. A and B appeared for interview. The probability of their selection is : $\frac{1}{3}$ and $\frac{1}{4}$ respectively. Find the probability that : at least one of them selected.

Watch Video Solution

102. A husband and his wife appear for an interview for two parts. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is probability that both of them will be selected?

Watch Video Solution

103. A husband and his wife appear for an interview for two parts. The probability of husband's selection is $\frac{1}{7}$ and that of wife's

selection is $\frac{1}{5}$. What is probability that only one of them is selected?

Watch Video Solution

104. A husband and his wife appear for an interview for two parts. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is probability that at least one of them will be selected?

Watch Video Solution

105. A husband and his wife appear for an interview for two parts. The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is probability that none of them will be selected?

Watch Video Solution

106. A can solve 90% of the problems given in a book and B can solve only 70% problems. What is the probability that at least one of them will

solve the problem selected at random from the book?

Watch Video Solution

107. An anti-air craft gun can take maximum four at an enemy plane, moving away from it. The probabilities oh hitting the plane at first, second, third and fourth shot are $0.4, 0.3, 0.2$ and 0.1 respectively. What is the probability that the gun hits the plane? Do you agree with us that the success will raise the morale of Indian Army?

Watch Video Solution

108. In a lot of 12 microwave ovens, there are 3 defective units. A person has ordered 4 of these units and since each is identically packed. What is the probability that : all units are good.

Watch Video Solution

109. In a lot of 12 microwave ovens, there are 3 defective units. A person has ordered 4 of these

units and since each is identically packed. What is the probability that : exactly 3 units are good.

110. A card from a pack of 52 cards is lost. From the remaining cards of the pack, two cards are drawn and are found to be both diamonds. Find the probability of the lost card being a diamond.

111. A card from a pack of 52 playing cards is lost. From the remaining cards of the pack, two cards are drawn and are found to be all both clubs. Find the probability that the lost card being a clubs.

Watch Video Solution

112. A man is known to speak the truth 3 out of 4 times. He throws a die and reports that it is a six. Find the probability that it is actually a six.

Watch Video Solution

113. Two bags contain : 4 red and 4 black. 2 red and 6 black balls One ball is drawn at random from one of the bags and found to be red. Find the probability that it was drawn from the second bag.

Watch Video Solution

114. Two bags contain 6 red and 3 black, 5 red and 5 black balls. One ball is drawn at random from one of the bags and found to be red. Find

the probability that it was drawn from the second bag.

Watch Video Solution

115. Two bags contain 6 red and 4 black, 3 red and 3 black balls. One ball is drawn at random from one of the bags and found to be red. Find the probability that it was drawn from the second bag.

Watch Video Solution

116. Bag I contains 3 red and 4 black balls while another Bag II contains 5 red and 6 black balls. One ball is drawn at random from one of the bags and it is found to be red. Find the probability that it was drawn from Bag II.

Watch Video Solution

117. There are two bags I and II . Bag I contains 4 white and 3 red balls and bag II contains 6 white and 5 red balls. One ball is drawn at random from one of the bags and is found to

be red. Find the probability that it was drawn from bag II.

Watch Video Solution

118. A bag contains 4 red and 4 black balls, another bag contains 2 red and 6 black balls. One of the two bags is selected at random and a ball is drawn from the bag which is found to be red. Find the probability that the ball is drawn from the first bag.

Watch Video Solution

119. Bag I contains 3 red and 4 black balls, Bag II contains 5 red and 6 black balls. One bag is chosen at random and a ball is drawn which is found to be red. Find the probability that it was drawn from Bag I.

Watch Video Solution

120. Bag I contains 5 red and 7 white balls and bag 11 contains 4 red and 8 white balls. One of the bags is selected at random and a ball is

drawn from it. The ball is found to be red. Find the probability that ball is drawn from bag II.

121. Give three identical boxes I , II and III, each containing two coins. In box I both coins are gold coins, in box II both are silver coins and in box III there is one gold and one silver coin. A person chooses a box at random and takes out a coin. If the coin is of gold, what is the probability that the other coin in the box is also of gold ?

Watch Video Solution

122. In a tape recorder factory, three machines A, B and C produced 50%, 30% and 20% of total production. The percentage of the defective output of these machines are 3%, 4% and 5% respectively. A tape recorder is selected randomly and found to be defective, find the probability that it is produced by machine A.

Watch Video Solution

123. A motorcycle manufacturing company has two plants A and B. Plant A produces 70% of motorcycle and plant B produces 30% . At plant A, 80 of motorcycles are rated as of standard quality and at plant B, 90% of the motorcycles are rated as of standard quality . A motorcycle is chosen at random and is found to be of standard quality . What is the chance that it has come from plant A ?

Watch Video Solution

124. A motorcycle manufacturing company has two plants A and B. Plant A produces 70% of motorcycle and plant B produces 30% . At plant A, 80 of motorcycles are rated as of standard quality and at plant B, 90% of the motorcycles are rated as of standard quality . A motorcycle is chosen at random and is found to be of standard quality . What is the chance that it has come from plant A ?

Watch Video Solution

125. An insurance company insured 2000 scooters and 3000 motorcycles. The probability of an accident involving scooter and a motorcycle is 0.01 and 0.02. What is the probability that the accidented vehicle was a motorcycle.

Watch Video Solution

126. A doctor is to visit a patient. From the past experience, it is known that the probabilities that he will come by train, bus, scooter or by

other means of transport are respectively $\frac{3}{10}, \frac{1}{5}, \frac{1}{10}$ and $\frac{2}{5}$. The probabilities that he will be late are $\frac{1}{4}, \frac{1}{3}, \frac{1}{12}$, if he comes by train, bus and scooter respectively, but if he comes by other means of transport, then he will not be late. When he arrives, he is late. What is the probability that he comes by train?

Watch Video Solution

127. A man is known to speak the truth 3 out of 4 times. He throws a die and reports that it is a six. Find the probability that it is actually a six.

Watch Video Solution

128. A bag contains 4 balls. Two balls are drawn at random and are found to be white. What is the probability that all balls are white?

Watch Video Solution

129. Of the students in a college, it is known that 60% reside in hostel and 40% are day scholars (not residing in hostel). Previous year results report that 30% of all students who

reside in hostel attain A grade and 20% of day scholars attain A grade in their annual examination. At the end of the year, one student is chosen at random from the college and he has an A grade, what is the probability that the student is a hostlier?

Watch Video Solution

130. A laboratory blood test is 99% effective in detecting a certain disease when it is in fact, present. However, the test also yields a false positive result for 0.5% of the healthy person

tested (i.e. if a healthy person is tested, then, with probability 0.005, the test will imply he has the disease). If 0.1 percent of the population actually has the disease, what is the probability that a person has the disease given that his test result is positive ?

Watch Video Solution

131. Suppose a girl throws a die. If she gets a 5 or 6, she tosses a coin three times and notes the numbers of heads. If she gets 1,2,3, or 4, she tosses a coin once and notes whether a head or

a tail is obtained. If she attained exactly one head what is the probability that she threw 1,2,3, or 4 with the die?

Watch Video Solution

132. There see three coins,one is a two headed coin (having head on both the faces),another is a biased coin that comes up heads 75% of the time and the third is anunbiased coin.One of the three coins is choosen at random and tossed.Of it shows head,what is probability that it was the two headed coin?

Watch Video Solution

133. In a cer tain college, 4% of boys and 1% of girls are taller than 1.75 metres. Furthermore, 60% of the students in the college are girls. A student is selected at random from the college and is found to be taller than 1.75 metres. Find the probability that the selected student is girl.

Watch Video Solution

134. Coloured balls are distributed in three bags as shown in the following table:

Bag	Colour of the ball		
	Black	White	Red
I	1	2	3
II	2	4	1
III	4	5	3

A bag is selected at random and then two balls are randomly drawn from the selected bag. They happen to be black and red. Find the probability that they come from bag I?

Watch Video Solution

135. Three bags contain balls as shown in the table below:

Bag	Number of white balls	Number of Black balls	Number of Red balls
I	1	2	3
II	2	1	1
III	4	3	2

A bag is chosen at random and two balls are drawn from it. They happen to be white and red. What is the probability that they come from the III bag?

Watch Video Solution

136. An urn contains 5 red and 2 black balls. Two balls are randomly drawn. Let X represent the

number of black balls. What are the possible values of X? Is X a random variable ?

137. Let X represent the difference between the number of heads and the number of tails obtained when a coin is tossed 6 times. What are possible values of X?

138. A random variable 'X' has the following probability distribution:

X:	−2	−1	0	1	2	3
P(X):	0·1	K	0·2	2K	0·3	K

Find the value of K

Watch Video Solution

139. A random variable 'X' has the following probability distribution:

X:	-2	-1	0	1	2	3
P(X):	0·1	K	0·2	2K	0·3	K

Find

$P(X \leq 1)$

Watch Video Solution

140. A random variable 'X' has the following probability distribution:

X:	-2	-1	0	1	2	3
P(X):	0·1	K	0·2	2K	0·3	K

Find

$P(X \geq 0)$

Watch Video Solution

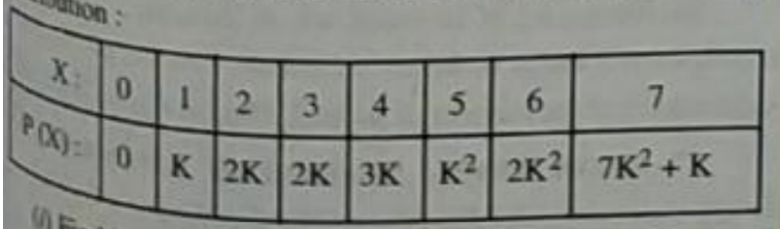
141. A random variable has the following probability distribution :

X :	0	1	2	3	4	5	6	7
P(X) :	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2 + K$

Find K.

Watch Video Solution

142. A random variable has the following probability distribution :



X :	0	1	2	3	4	5	6	7
P(X) :	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2 + K$

Obtain

$P(X \leq 5)$ and $P(2 \leq X \leq 5)$

Watch Video Solution

143. An unbiased coin is thrown thrice. If the random variable X denotes the number of heads obtained, describe the probability distribution of X .

Watch Video Solution

144. Find the probability distribution of the number of tails when two coins are tossed.

Watch Video Solution

145. Find the probability distribution of the number of tails when two coins are tossed.

Watch Video Solution

146. A coin is tossed 5 times . X is the number of heads of observed . Find the probability

distribution of X .

Watch Video Solution

147. Find the Probability distribution of the number of heads when three coins are tossed.

Watch Video Solution

148. Find the probability distribution of the number of tails when three coins are tossed simultaneously.

Watch Video Solution

149. Find the probability distribution of number of heads in four tosses of a coin.

Watch Video Solution

150. Find the Probability distribution of the number of heads when three coins are tossed.

Watch Video Solution

151. Find the probability distribution of the number of sixex in two tosses of a die .

Watch Video Solution

152. Find the probability distribution of number of doublets in three throws of a pair of dice.

Watch Video Solution

153. Find the probability distribution of the number of successes in two tosses of a die,

where a success is defined as : number greater than 4

154. Find the probability distribution of the number of successes in two tosses of a die, where a success is defined as : six appears on at least one die.

155. Find the probability distribution of number of doublets in three throws of a pair of dice.

Watch Video Solution

156. A pair of dice is thrown 4 times. If getting a doublet is considered a success, find the probability distribution of number of successes.

Watch Video Solution

157. Let X denote the number of hours you study during a randomly selected school day. The probability that X can take the values x, has the following form, where k is some unknown constant.:

$$P(X=x)=\begin{cases}0.1 & \text{if} \quad x=0 \\ kx & \text{if} \quad x=1 \text{ or } 2 \\ k(5-x) & \text{if} \quad x3 \text{ or } 4 \\ 0 & otherwise\end{cases}$$

Find the value of k.

Watch Video Solution

158. Let X denote the number of hours you study during a randomly selected school day. The probability that X can take the values x, has the following form, where k is some unknown constant.:

$$P(X=x)=\begin{cases}0.1 & \text{if} \quad x=0 \\ kx & \text{if} \quad x=1 \text{ or } 2 \\ k(5-x) & \text{if} \quad x3 \text{ or } 4 \\ 0 & otherwise\end{cases}$$

What is the probability that you study at least two hours ? Exactly two hours? At most two hours?

Watch Video Solution

159. Let X denote the number of hours you study during a randomly selected school day. The probability that X can take the values x, has the following form, where k is some unknown constant.:

$$P(X=x)=\begin{cases}0.1 & \text{if} \quad x=0 \\ kx & \text{if} \quad x=1 \text{ or } 2 \\ k(5-x) & \text{if} \quad x3 \text{ or } 4 \\ 0 & otherwise\end{cases}$$

What is the probability that you study at least two hours ? Exactly two hours? At most two hours?

Watch Video Solution

160. Let X denote the number of hours you study during a randomly selected school day. The probability that X can take the values x, has the following form, where k is some unknown constant.:

$$P(X=x)=\begin{cases}0.1 & \text{if} \quad x=0 \\ kx & \text{if} \quad x=1 \text{ or } 2 \\ k(5-x) & \text{if} \quad x3 \text{ or } 4 \\ 0 & otherwise\end{cases}$$

What is the probability that you study at least two hours ? Exactly two hours? At most two hours?

Watch Video Solution

161. Two cards are drawn successively with replacement from a well-shuffled deck of 52 cards. Find the probability distribution of the number of aces.

Watch Video Solution

162. Two cards are drawn successively with repalcement from a well-shuffled pack of 52 cards. Find the probability distribution of the number of kings and hence find the mean of the distribution .

Watch Video Solution

163. Two cards are drawn from a well shuffled pack of 52 cards. Find the probability distribution of queens if cards are drawn at random.

Watch Video Solution

164. Two cards are drawn successively with replacement from a well-shuffled deck of 52

cards. Find the probability distribution of the number of aces.

Watch Video Solution

165. Two cards are drawn successively with repalcement from a well-shuffled pack of 52 cards. Find the probability distribution of the number of kings and hence find the mean of the distribution .

Watch Video Solution

166. Two cards are drawn one by one without replacement from a well shuffled deck of 52 cards. Find the probability distribution of the number of face cards.

Watch Video Solution

167. Two cards are drawn one by one without replacement from a well shuffled deck of 52 cards. Find the probability distribution of the number of spades.

Watch Video Solution

168. Two cards are drawn successively with replacement from a well-shuffled deck of 52 cards. Find the probability distribution of the number of aces.

Watch Video Solution

169. Two cards are drawn successively with replacement from a well-shuffled deck of 52 cards. Find the probability distribution of the number of aces.

Watch Video Solution

170. From a lot of 30 bulbs which include 6 defectives, a sample of 4 bulbs is drawn at random with replacement. Find the probability distribution of the number of defective bulbs.

Watch Video Solution

171. Three cards are drawn successively with replacement from well- shuffled deck of 52 cards. A random variable X denotes the

number of spades in three cards. Determine the probability distribution of X .

Watch Video Solution

172. An urn contains 4 white and 3 red balls. Let 'X' be the number of red balls in a random draw of three balls. Find the mean and variance of X.

Watch Video Solution

173. A coin is biased so that the head is 3 times as likely to occur as tail. If the coin is tossed twice, find the probability distribution of number of tails.

Watch Video Solution

174. A die tossed twice . Getting a number greater than 4 is considered a success . Find the variance of the probability distribution of the number of successes .

Watch Video Solution

175. Find the probability distribution of green balls drawn when 3 balls are drawn one by one without replacement from a bag containing 3 'green and 5 white balls

Watch Video Solution

176. 3 defective bulbs are mixed up with 7 good ones. 3 bulbs are drawn at random. Find the probability distribution of the defective bulbs.

Watch Video Solution

177. A coin is biased so that the head is 3 times as likely to occur as tail. If a coin is tossed twice, find the probability distribution of number of tails.

Watch Video Solution

178. We take 8 identical slpis of paper, write the number 0 on one of them, number 1 on three of the slips, the number 2 on three of the slips and

number 3 on one of the slpis. These slips are folded, put in a box and thoroughly mixed. One slip is then drawn at random from the box. If Z is the random variable denoting the number written on the drawn slip, find the probability distribution of Z.

Watch Video Solution

179. From a lot of 10 bulbs which include 3 defectives, a sample of 2 bulbs is drawn at random. Find the probability distribution of the number of defective bulbs.

Watch Video Solution

180. A coin is tossed 5 times . X is the number of heads of observed . Find the probability distribution of X .

Watch Video Solution

181. The mean of the number of heads in the two tosses of a coin is _____.

Watch Video Solution

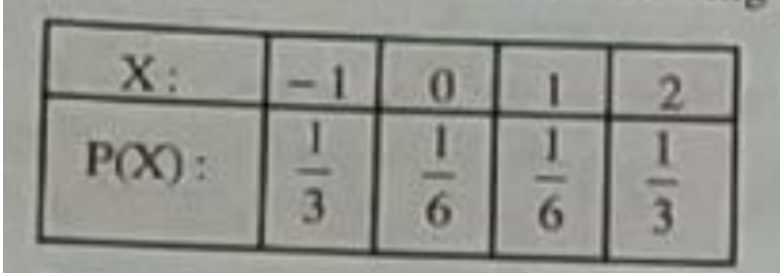
182. A random variable has the following probability distribution :

X :	−1	0	1	2
P(X) :	$\frac{1}{3}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{3}$

Does it represent a probability function?

Watch Video Solution

183. A random variable has the following probability distribution :

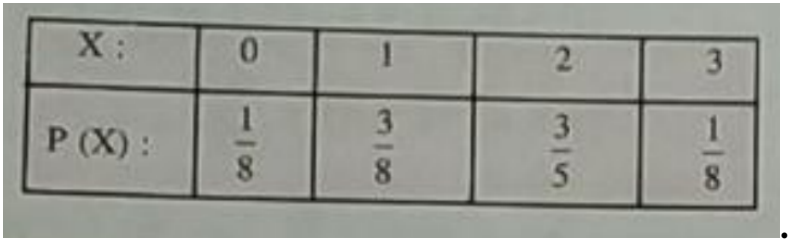


X :	−1	0	1	2
P(X) :	$\frac{1}{3}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{3}$

If yes, find its mean and variance.

Watch Video Solution

184. Find the mean, variance for the following probability distribution:



X :	0	1	2	3
P (X) :	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{5}$	$\frac{1}{8}$

.

Watch Video Solution

185. Find μ, σ_x^2 and σ_x for the following probability distributions:

X :	0	1	3	5
P(X) :	0·2	0·5	0·2	0·1

Watch Video Solution

186. Find μ, σ_x^2 and σ_x for the following probability distributions:

X :	−2	−1	0	1	2
P(X) :	0·2	0·2	0·4	0·2	0·1

Watch Video Solution

Watch Video Solution

187. Find μ, σ_x^2 and σ_x for the following probability distributions:

X :	−3	−1	0	4
P(X) :	0·2	0·4	0·3	0·1

Watch Video Solution

188. Find μ, σ_x^2 and σ_x for the following probability distributions:

X :	1	2	3	−2	−1
P(X) :	0·10	0·35	0·20	0·30	0·05

Watch Video Solution

189. Two dice are thrown simultaneously. If X denotes the number of sixes, find the expectation of X.

Watch Video Solution

190. Find the mean and variance of the number obtained on a throw of an unbiased die.

Watch Video Solution

191. Let X denote the sum of the numbers obtained when two fair dice are rolled. Find the variance and standard deviation of X.

Watch Video Solution

192. Find the mean and variance of the probability distribution of the number of sixes in three tosses of a die.

Watch Video Solution

193. Find the probability distribution of number of doublets in three throws of a pair of dice.

Watch Video Solution

194. Two cards are drawn simultaneously (without replacement) from a well-shuffled pack of 52 cards . Find the mean and variance of the number of red cards .

Watch Video Solution

195. Two cards are drawn simultaneously (or successively without replacement) from a well shuffled pack of 52 cards. Find the mean, variance and standard deviation of the number of kings.

196. Two cards are drawn successively with replacement from a well-shuffled deck of 52 cards. Find the probability distribution of the number of aces.

Watch Video Solution

197. A coin is tossed 4 times. Let X denote the number of heads. Find the probability distribution of X, its mean and variance.

Watch Video Solution

198. Find the mean and variance of the number of heads on the throw of three coins.

Watch Video Solution

199. Two numbers are selected at random (without replacement) from the first six positive integers. Let X denote the larger of the two numbers obtained. Find E(X).

Watch Video Solution

200. Two bad eggs are mixed accidently with 10 good ones. Find the probability distribution of the number of bad eggs in 3 eggs drawn at random in succession, without replacement fro a lot. Find the mean number of bad eggs drawn.

Watch Video Solution

201. A class has 15 students whose ages are 14, 17, 15, 14, 21, 17, 19, 20, 16, 18, 20, 17, 16, 19 and 20 years. One student is selected in such a manner that each has the same chance of being chosen and the age X of the selected student is recorded. What is the probability distribution of the random variable X? Find mean, variance and standard deviation of X.

Watch Video Solution

202. There are 40 scholars in a class, out of which 10 are sports- persons. Three scholars are selected at random out of them. Find the probability distribution for the selected persons who are sports-persons. Find the mean of the distribution.

 Watch Video Solution

203.

X :	1	2	3	4	5
P(X) :	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	p

The probability distribution of a random variable 'X', taking values 1,2,3,4,5 is given: Find the value of p.

Watch Video Solution

204.

X :	1	2	3	4	5
P(X) :	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	p

The probability distribution of a random variable 'X', taking values 1,2,3,4,5 is given: Find the mean of X.

Watch Video Solution

205.

X :	1	2	3	4	5
P(X) :	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	p

The probability distribution of a random variable 'X', taking values 1,2,3,4,5 is given: Find the variance of X.

Watch Video Solution

206. From a lot of 15 bulbs which include 5 defectives, a sample of 4 bulbs is drawn one by

one with replacement. Find the probability distribution of the number of defective bulbs. Hence, find the mean of the distribution.

Watch Video Solution

207. Find the probability distribution of white balls drawn when 3 balls are drawn one by one without replacement from a bag containing 4 white and 6 red balls .

Watch Video Solution

208. Two numbers are selected at random (without replacement) from the first six positive integers. Let X denote the larger of the two numbers obtained. Find E(X).

Watch Video Solution

209. An urn contains 3 white and 6 red balls. 4 balls are drawn one by one with replacement from the urn.Find the probability distribution of the number of red balls drawn. Also find mean and variance of the distribution.

Watch Video Solution

210. Obtain binomial distribution, if : $n = 6, p = \frac{1}{3}$.Find the mean

Watch Video Solution

211. Obtain binomial distribution, if : $n = 5, p = \frac{1}{6}$

Watch Video Solution

212. Suppose X has a binomial distribution $B\left(6, \frac{1}{2}\right)$. Show that $X = 3$ is the most likely outcome .

Watch Video Solution

213. A coin is tossed 7 times. What is the probability that head appears on odd number of times?

Watch Video Solution

214. A coin is tossed 7 times. What is the probability that tail appears on odd number of times?

Watch Video Solution

215. A coin is tossed 5 times. What is the probability that head appears on odd number of times?

Watch Video Solution

216. A coin is tossed 5 times . What is the probability of getting at least 3 heads ?

Watch Video Solution

217. A coin is tossed 5 times. What is the probability of getting : at most 2 heads.

Watch Video Solution

218. A coin is tossed 5 times. What is the probability of getting : no head.

Watch Video Solution

219. A coin is tossed 5 times. What is the probability of getting : 3 heads?

Watch Video Solution

220. A coin is tossed 6 times. Find the probability of obtaining 4 heads.

Watch Video Solution

221. If a fair coin is tossed 10 times, find the probability of: exactly six heads

Watch Video Solution

222. If a fair coin is tossed 10 times, find the probability of: at least six heads

Watch Video Solution

223. If a fair coin is tossed 10 times, find the probability of: at most six heads

Watch Video Solution

224. Find the probability of getting 5 exactly twice in 7 throws of a die.

225. Find the probability of throwing at most 2 sixes in 6 throws of a single die.

226. A die is thrown 6 times. If getting an odd number is a success, what is the probability of at least 4 successes.

Watch Video Solution

227. A die is thrown 6 times. If 'getting an odd number' is a success, what is the probability of 5 successes?

Watch Video Solution

228. A die is thrown 6 times. If getting an odd number is a success, what is the probability of at least 4 successes.

Watch Video Solution

229. A die is thrown 6 times. If getting an 'odd number' is success, find the probability of 5 successes.

Watch Video Solution

230. A die is thrown 6 times. If getting an 'odd (even) number' is success, find the probability no success?

Watch Video Solution

231. A die is thrown 10 times. If getting an even number is considered a success, find the probability of at least 9 successes.

Watch Video Solution

232. A pair of dice is thrown 7 times. If 'getting a total of 7' is considered 'success', find the probability of getting : no success.

Watch Video Solution

233. A pair of dice is thrown 7 times. If 'getting a total of 7' is considered 'success', find the probability of getting : at least 6 successes.

Watch Video Solution

234. Ten eggs are drawn successively with replacement, from a lot containing 10% defectice eggs. Find the probability that there is at least one defective egg.

Watch Video Solution

235. Find the probability of getting 5 exactly twice in 7 throws of a die.

Watch Video Solution

236. Find the probability of throwing at most 2 sixes in 6 throws of a single die.

Watch Video Solution

237. The probability of a shooter hitting a target is $\frac{3}{4}$. If he shoots 10 times, find the probability of hitting 8 targets successfully.

Watch Video Solution

238. Suppose that 90% of people are right-handed. What is the probability that at most 6 of a random sample of 10 people are right-handed?

Watch Video Solution

239. Four dice are thrown simultaneously. If the occurrence of 2, 4 or 6 in single die is considered a success, find the probability of at least three successes.

Watch Video Solution

240. Four dice are thrown simultaneously. If the occurrence of2, 3 or 4 in single die is considered a success, find the probability of at least three successes.

 Watch Video Solution

241. A bag consists of 10 balls each marked with one of the digits 0 to 9. If four balls are drawn successively with replacement from the bag,

what is the probability that none is marked with the digit 0?

Watch Video Solution

242. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn, its mark is noted down and it is replaced. If 6 balls are drawn in this way, find the probability that all will bear 'X' mark.

Watch Video Solution

243. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn, its mark is noted down and it is replaced. If 6 balls are drawn in this way, find the probability that not more than 2 will bear 'Y' mark.

Watch Video Solution

244. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn,

its mark is noted down and it is replaced. If 6 balls are drawn in this way, find the probability that at least one ball will bear 'Y' mark.

Watch Video Solution

245. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn, its mark is noted down and it is replaced. If 6 balls are drawn in this way, find the probability that the number of balls with 'X' mark and 'Y' mark will be equal.

Watch Video Solution

246. There are 5% defective items in a large bulk of items. What is the probability that a sample of 10 items will include not more than one defective item?

Watch Video Solution

247. The items produced by a company contain 10% defective items. Show that the probability

of getting 2 defective items in a sample of 8 itmes is $\frac{28 \times 9^6}{10^8}$.

Watch Video Solution

248. In a box containing 100 bulbs, 10 are defective. The probability that out of a sample of 5 bulbs none is defective is :

Watch Video Solution

249. In a box containing 100 bulbs, 10 are defective. What is the probability that out of a sample of 5 bulbs, exactly 2 are defective?

Watch Video Solution

250. The probability that a bulb produced by a factory will fuse after 150 days of use is 0.05. Find the probability that out of 5 such bulbs more than one will fuse after 150 days of use.

Watch Video Solution

251. In a hurdle race, a player has to cross 10 hurdles. The probability that he will clear each hurdle is $\frac{5}{6}$. What is the probability that he will knock down fewer than 2 hurdles?

Watch Video Solution

252. Assume that on an average one telephone number out of 15 called between 2 P.M. and 3 P.M. on week days is busy. What is the probability that if six randomly selected

telephone numbers are called, at least three of them will be busy?

Watch Video Solution

253. If getting a '5' or a '6' in the throw of an unbiased die is a 'success' and the random variable 'X' denotes the number of successes in six throws of the die, find $P_X[X \geq 4]$

Watch Video Solution

254. On a multiple choice examination with three possible answers for each of the five questions, what is the probability that a candidate would get four or more correct answers just by guessing ?

Watch Video Solution

255. In a hospital, there are 5 dialysis machine. The chance of any one of them being defective during a day is $\frac{1}{10}$. Find the probability that two machines will be out of order on the same

day. What is the probability that at least one machine is in working order? Is this situation alright for a small hospital?

Watch Video Solution

256. Calculate P(r) for $r = 1, 2, 3, 4 \text{ and } 5$ by using the recurrence formula of the binomial distribution for the following. Hence, draw the histogram for the distribution: $p = \frac{1}{3}, n = 5$

Watch Video Solution

257. Calculate P(r) for $r = 1, 2, 3, 4$ and 5 by using the recurrence formula of the binomial distribution for the following. Hence, draw the histogram for the distribution: $p = \frac{1}{3}, n = 5$

Watch Video Solution

258. Five dice are thrown 729 times. How many times do you expect that at least four dice to show five or six?

Watch Video Solution

259. An unbiased coin is tossed 4 times. Find the mean and variance of the number of heads obtained.

Watch Video Solution

260. If the mean and variance of a binomial distribution are 9 and 6 respectively, find the number of trials.

Watch Video Solution

261. The sum of mean and variance of a binomial distribution of 18 trials is 10, find the Binomial distribution.

Watch Video Solution

262. If the sum of the mean and variance of a binomial distribution of 5 trials is $\frac{35}{16}$, find the distribution.

Watch Video Solution

263. The mean and variance of a binomial variable X are respectively 4 and $\frac{4}{5}$. Find $P(X \geq 3)$

Watch Video Solution

264. If the sum of mean and variance of a binomial distribution is 1.8 for five trials, find the distribution.

Watch Video Solution

265. Determine the binomial distribution whose mean is 10 and whose standard deviation is $2\sqrt{2}$.

Watch Video Solution

266. Find the binomial distribution whose: mean is 4 and variance is 3.

Watch Video Solution

267. Find the binomial distribution whose: mean is 9 and variance is 6.

Watch Video Solution

268. If 12 dice are rolled at random, obtain the mean and variance of the distribution of successes, if 'getting a number greater than 4' is considered a success.

Watch Video Solution

269. A die is thrown 20 times and getting a number 'greater than 4' is considered a success. Find the mean and the variance of the number of successes.

Watch Video Solution

270. 10 coins are tossed at random. Obtain the mean and variance of the number of heads obtained.

Watch Video Solution

271. The sum and product of the mean and variance of a binomial distribution are 3.5 and 3 respectively. Find the binomial distribution.

Watch Video Solution

272. A die is thrown 6 times. Find the mean and variance of the number of aces.

Watch Video Solution

273. Eight dice are rolled at random. Find the mean and variance of number of successes if : getting an odd number is success.

Watch Video Solution

274. Eight dice are rolled at random. Find the mean and variance of number of successes if : getting a number less than 3 is success.

Watch Video Solution

275. Two dice are rolled at random 5 times. Obtain the mean and variance of the distribution of doublets obtained.

Watch Video Solution

276. The mean and variance of a binomial variable X are respectively 4 and $\frac{4}{3}$. Find $P(X \geq 1)$

Watch Video Solution

277. If the sum of mean and variance of a binomial distribution is 4.8 for five trials, find the distribution.

Watch Video Solution

278. A discrete random variable 'X' has mean equal to 3 and variance equal to 2. Assuming that the underlying distribution of 'X' is binomial, find the distribution and hence obtain: $P(X = 0)$

Watch Video Solution

279. A discrete random variable 'X' has mean equal to 3 and variance equal to 2. Assuming that the underlying distribution of 'X' is binomial, find the distribution and hence obtain: $P(X = 0)$

Watch Video Solution

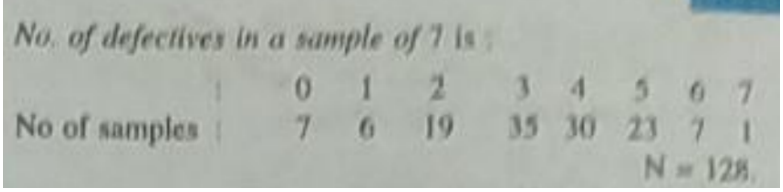
280. Determine the binomial distribution whose mean is 10 and whose standard deviation is 8.

Watch Video Solution

281. Determine the binomial distribution whose mean is 10 and whose standard deviation is 8.

Watch Video Solution

282. The screws produced by a certain machine were checked by examining samples of 7. The following table shows the distribution of 128 samples according to the number of defective items they contained.



No. of defectives in a sample of 7 is :

	0	1	2	3	4	5	6	7
No of samples	7	6	19	35	30	23	7	1

N = 128.

Fit a binomial distribution and find the expected frequencies if the chance of screw being defective is $\frac{1}{2}$. Also find the mean and variance of the fitted distribution.

Watch Video Solution

283. Given that E and F are events such that $P(E) = 0.6, P(F) = 0.3$ and $P(E \cap F) = 0.2$ find $P(E \mid F)$ and $P(F \mid E)$

Watch Video Solution

Watch Video Solution

284. Compute $P(A \mid B)$,if $P(B) = 0.5$ and $P(A \cap B) = 0.32$

Watch Video Solution

285. If $P(A) = 0.8, P(B) = 0.5$ and $P\left(\frac{B}{A}\right) = 0.4$, find : $P(A \cap B)$

Watch Video Solution

286. If $P(A) = 0.8, P(B) = 0.5$ and $P(B \mid A) = 0.4$ find: $P(A \mid B)$

Watch Video Solution

287. If $P(A) = 0.8, P(B) = 0.5$ and $P\left(\frac{B}{A}\right) = 0.4$, find : $P(A \cap B)$

Watch Video Solution

288. Evaluate $P(A \cup B)$, if $2P(A) = P(B) = \frac{5}{13}$ and $P(A/B) = \frac{2}{5}$.

Watch Video Solution

289. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$ find: $P(A \cap B)$

Watch Video Solution

290. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$ find: $P(A \mid B)$

Watch Video Solution

291. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$ find: $P(B \mid A)$

Watch Video Solution

292. Determine $P(E \mid F)$ if A coin is tossed three times, where : E : head on third toss , F : heads on first two tosses

Watch Video Solution

293. Determine $P(E \mid F)$ if A coin is tossed three times, where : E : at least two heads , F : at most two heads

Watch Video Solution

294. Determine $P(E \mid F)$: if A coin is tossed three times, where : E : at most two tails , F : at least one tail

Watch Video Solution

295. Determine $P(E \mid F)$ if two coins are tossed once, where : E : tail appears on one coin, F : one coin shows head

Watch Video Solution

296. Determine $P(E \mid F)$ if two coins are tossed once, where : E : no tail appears, F : no head appears

Watch Video Solution

297. Determine $P(E \mid F)$ if A die is thrown three times, where : E : 4 appears on the third toss, F : 6 and 5 appears respectively on first two tosses

Watch Video Solution

298. Determine $P(E \mid F)$ Mother, father and son line up at random for a family picture :E : son on one end, F : father in middle

Watch Video Solution

299. A black and a red dice are rolled :Find the conditional probability of obtaining a sum greater than 9, given that the black die resulted in a 5.

Watch Video Solution

300. A black and a red dice are rolled: Find the conditional probability of obtaining the sum 8, given that the red die resulted in a number less than 4.

Watch Video Solution

301. A fair die is rolled. Consider events $E = \{1, 3, 5\}$, $F = \{2, 3\}$, and $G = \{2, 3, 4, 5\}$ find : $P(E \mid F)$ and $P(F \mid E)$

Watch Video Solution

302. A fair die is rolled. Consider events $E = \{1, 3, 5\}$, $F = \{2, 3\}$, and $G = \{2, 3, 4, 5\}$ find : $P(E \mid G)$ and $P(G \mid E)$

Watch Video Solution

303. A fair die is rolled. Consider events $E = \{1, 3, 5\}$, $F = \{2, 3\}$, and $G = \{2, 3, 4, 5\}$ find : $P(E \cup F \mid G)$ and $P(E \cap F \mid G)$

Watch Video Solution

304. Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the conditional probability that both are girls given that the youngest is a girl.

305. Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the conditional probability

that both are girls given that at least one is a girl?

Watch Video Solution

306. An instructor has a question bank consisting of 300 easy True / False questions, 200 difficult True / False questions, 500 easy multiple choice questions and 400 difficult multiple choice questions. If a question is selected at random from the question bank, what is the probability that it will be an easy

question given that it is a multiple choice question?

Watch Video Solution

307. Given that the two numbers appearing on throwing two dice are different. Find the probability of the event 'the sum of numbers on the dice is 4'.

Watch Video Solution

308. Consider the experiment of throwing a die, if a multiple of 3 comes up, throw the die again and if any other number comes, toss a coin. Find the conditional probability of the event 'the coin shows a tail', given that 'at least one die shows a 3'.

Watch Video Solution

309. If $P(A) = \frac{1}{2}$, P(B) = 0, P(A//B) is :

A. 0

B. $\frac{1}{2}$

C. not defined

D. 1

Answer:

Watch Video Solution

310. If A and B are two events such that $A \cap B \neq \phi, P\left(\frac{A}{B}\right) = P\left(\frac{B}{A}\right)$. Then.

A. $A \subset BbutA \neq B$

B. $A = B$

C. $A \cap B = \phi$

D. $P(A) = P(B)$

Answer:

Watch Video Solution

311. If $P(A) = \frac{3}{5}, P(B) = \frac{1}{5}$ find $P(A \cap B)$ if A and B are independent events.

Watch Video Solution

312. Two cards are drawn at random and without replacement from a pack of 52 playing cards. Find the probability that both the cards are black.

Watch Video Solution

313. A box of oranges is inspected by examining three randomly selected oranges drawn without replacement. If all the three oranges are good, the box is approved for sale, otherwise, it is rejected. Find the probability

that a box containing 15 oranges out of which 12 are good and 3 are bad ones will be approved for sale.

Watch Video Solution

314. A fair coin and an unbiased die are tossed. Let A be the event 'head appears on the coin' and B be the event '3 on the die'. Check whether A and B are independent events or not.

Watch Video Solution

315. A die marked 1, 2, 3 in red and 4, 5, 6 in green is tossed. Let A be the event, 'the number is even,' and B be the event, 'the number is red'. Are A and B independent?

Watch Video Solution

316. Let E and F be events with $P(E) = \frac{3}{5}, P(F) = \frac{3}{10}$ and $P(E \cap F) = \frac{1}{5}$. Are E and F independent?

Watch Video Solution

317. Given that the events A and B are such that $P(A) = \frac{1}{2}, P(A \cup B) = \frac{3}{5}$ and $P(B) = p$ .Find p if they are independent.

Watch Video Solution

318. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(A \cap B)$

Watch Video Solution

319. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(A \cup B)$

Watch Video Solution

320. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(A \mid B)$

Watch Video Solution

321. Let A and B be independent events with $P(A) = 0.3$ and $P(B) = 0.4$ Find: $P(B \mid A)$

Watch Video Solution

322. If A and B are two events such that : $P(A) = \frac{1}{4}, P(B) = \frac{1}{2}$ and $P(A \cap B) = \frac{1}{8}$, find P(not A and not B).

Watch Video Solution

323. Events A and B are such that $P(A) = \frac{1}{2}, P(B) = \frac{7}{12}$ and P(not A or not B) $= \frac{1}{4}$. State whether A and B are independent.

Watch Video Solution

324. Given two independent events A and B such that $P(A) = 0.3$, and $P(B) = 0.6$ Find: $P(A$ and B)

Watch Video Solution

325. Given two independent events A and B such that $P(A) = 0.3$, and $P(B) = 0.6$ Find: P(A and not B)

Watch Video Solution

326. Given two independent events A and B such that $P(A) = 0.3$, and $P(B) = 0.6$ Find: P(A or B)

Watch Video Solution

327. Given two independent events A and B such that $P(A) = 0.3,$ and $P(B) = 0.6$ Find: P(neither Anor B)

Watch Video Solution

328. A die is tossed thrice. Find the probability of getting an odd number at least once.

Watch Video Solution

329. Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that both balls are red.

Watch Video Solution

330. Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that first ball is black and second is red.

Watch Video Solution

331. Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that one of them is black and other is red.

Watch Video Solution

332. Probability of solving specific problem independently by A and B are $\frac{1}{2}$ and $\frac{1}{3}$ respectively. If both try to solve the problem

independently, find the probability that the problem is solved.

Watch Video Solution

333. Probability of solving specific problem independently by A and B are $\frac{1}{2}$ and $\frac{1}{3}$ respectively. If both try to solve the problem independently, find the probability that exactly one of them solves the problem.

Watch Video Solution

334. One card is drawn at random from a pack of well shuffled deck of 52 cards. IN which of the following cards are the events E and F independent? : E: the card drawn is spade F: the card drawn is an ace

 Watch Video Solution

335. One card is drawn at random from a pack of well shuffled deck of 52 cards. IN which of the following cards are the events E and F

independent? : E: the card drawn is black F: the card drawn is a king

Watch Video Solution

336. One card is drawn at random from a well shuffled deck of 52 cards. In which of the following cases are the events E and F independent ?E : 'the card drawn is a king or queen' F : 'the card drawn is a queen or jack'.

Watch Video Solution

337. In a hostel, 60% of the students read Hindi news paper, 40% read English news paper and 20% read both Hindi and English news papers. A student is selected at random. Find the probability that she reads neither Hindi nor English news papers.

Watch Video Solution

338. In a hostel, 60% of the students read Hindi newspaper, 40% read English newspaper and 20% read both Hindi and English news paper. A

student is selected at random. If she reads Hindi newspaper, find the probability that she reads English newspaper.

Watch Video Solution

339. In a hostel, 60% of the students read Hindi newspaper, 40% read English newspaper and 20% read both Hindi and English news paper. A student is selected at random. If she reads English newspaper, find the probability that she reads Hindi newspaper.

Watch Video Solution

340. The probability of obtaining an even prime number on each die, when a pair of dice is rolled is:

A. 0

B. $\frac{1}{3}$

C. $\frac{1}{12}$

D. $\frac{1}{36}$

Answer:

Watch Video Solution

341. Two events A and B will be independent, if:

A. A and B are mutually exclusive

B. $P(A'B') - [1 - P(A)][1 - P(B)]$

C. $P(A) = P(B)$

D. $P(A) + P(B) = 1$

Answer:

Watch Video Solution

342. An urn contains 5 red and 5 black balls. A ball is drawn at random, its colour is noted and is returned to the urn. Moreover, 2 additional balls of the colour drawn are put in the urn and then a ball is drawn at random. What is the probability that the second ball is red?

Watch Video Solution

343. A bag contains 4 red and 4 black balls, another bag contains 2 red and 6 black balls. One of the two bags is selected at random and

a ball is drawn from the bag which is found to be red. Find the probability that the ball is drawn from the first bag.

Watch Video Solution

344. Of the students in a college, it is known that 60% reside in hostel and 40% are day scholars (not residing in hostel). Previous year results report that 30% of all students who reside in hostel attain A grade and 20% of day scholars attain A grade in their annual examination. At the end of the year, one

student is chosen at random from the college and he has an A grade, what is the probability that the student is a hostlier?

Watch Video Solution

345. In answering a question in a multiple choice test a student either knows the answer or guesses. Let $\frac{3}{4}$ be the probability that he knows the answer and $\frac{1}{4}$ be the probability that he guesses. Assuming that a student who guesses at the answer will be correct with probability $\frac{1}{4}$. What is the probability that a

student knows the answer, given that he answered it correctly ?

346. A laboratory blood test is 99% effective in detecting a certain disease when it is in fact, present. However, the test also yields a false positive result for 0.5% of the healthy person tested (i.e. if a healthy person is tested, then, with probability 0.005, the test will imply he has the disease). If 0.1 percent of the population actually has the disease, what is the probability

that a person has the disease given that his test result is positive ?

Watch Video Solution

347. A coin is tossed 5 times . What is the probability of getting 5 heads ?

Watch Video Solution

348. A die is tossed once. The probability of getting an odd number is :

Watch Video Solution

349. A factory has two machines A and B. Past record shows that machine A produced 60% of the items of output and machine B produced 40% of the items. Further, 2% of the items produced by machine A and 1% produced by machine B were defective. All the items are put into one stockpile and then one item is chosen at random from this and is found to be defective. What is the probability that it was produced by machine B?

Watch Video Solution

350. Two cars are 351 km apart. They start at the same time and drive towards each other. One travels at 70 km/hr and the other travels at 65 km/hr. How much time do they take to meet each other?

Watch Video Solution

351. A coin is tossed once, what is the probability that one head occurs?

Watch Video Solution

352. A manufacturer has three machine operators A, B and C. The first operator A produces 1% defective items, where as the other two operators B and C pro duce 5% and 7% defective items respectively. A is on the job for 50% of the time, B is on the job for 30% of the time and C is on the job for 20% of the time. A defective item is produced, what is the probability that it was produced by A?

Watch Video Solution

353. A card from a pack of 52 cards is lost. From the remaining cards of the pack, two cards are drawn and are found to be both diamonds. Find the probability of the lost card being a diamond.

Watch Video Solution

354. Probability that A speaks truth is $\frac{4}{5}$. A coin is tossed. A reports that a head appears. The probability that actually there was head is

A. $\frac{4}{5}$

B. $\frac{1}{2}$

C. $\frac{1}{5}$

D. $\frac{2}{5}$

Answer:

Watch Video Solution

355. If A and B are two events such that $A \subset B$ and $P(B) \neq 0$, then which of the following is correct?

A. $P\left(\frac{A}{B}\right) = \frac{P(B)}{P(A)}$

B. $P\left(\frac{A}{B}\right) < P(A)$

C. $P\left(\frac{A}{B}\right) \geq P(A)$

D. none of these

Answer:

Watch Video Solution

356. State which of the following are not the probability distributions of a random variable.

Give reasons for your answer.

X	0	1	2
P(X)	0.4	0.4	0.2

Watch Video Solution

357. State which of the following are not the probability distributions of a random variable. Give reasons for your answer.

X	0	1	2	3	4
P(X)	0.1	0.5	0.2	−0.1	0.3

Watch Video Solution

358. State which of the following are not the probability distributions of a random variable. Give reasons for your answer.

Y	−1	0	1
P(Y)	0.6	0.1	0.2

Watch Video Solution

359. State which of the following are not the probability distributions of a random variable.

Give reasons for your answer.

Z	3	2	1	0	−1
P(Z)	0.3	0.2	0.4	0.1	0.05

Watch Video Solution

360. An urn contains 5 red and 2 black balls. Two balls are randomly drawn. Let X represent the number of black balls. What are the possible values of X? Is X a random variable ?

Watch Video Solution

361. Let X represent the difference between the number of heads and the number of tails obtained when a coin is tossed 6 times. What are possible values of X?

Watch Video Solution

362. Find the probability distribution of number of heads in two tosses of a coin

Watch Video Solution

363. Find the probability distribution of number of tails in the simultaneous tosses of three coins.

Watch Video Solution

364. Find the probability distribution of number of heads in four tosses of a coin.

Watch Video Solution

365. Find the probability distribution of the number of successes in two tosses of a die, where a success is defined as : number greater than 4

Watch Video Solution

366. Find the probability distribution of the number of successes in two tosses of a die, where a success is defined as : six appears on at least one die.

Watch Video Solution

367. From a lot of 30 bulbs which include 6 defectives, a sample of 4 bulbs is drawn at random with replacement. Find the probability distribution of the number of defective bulbs.

Watch Video Solution

368. A coin is biased so that the head is 3 times as likely to occur as tail. If the coin is tossed

twice, find the probability distribution of number of tails.

Watch Video Solution

369. A random variable has the following probability distribution :

X	0	1	2	3	4	5	6	7
P(X)	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2+k$

Find K.

Watch Video Solution

370. A random variable has the following probability distribution :

X	0	1	2	3	4	5	6	7
P(X)	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2+k$

Find

$P(X < 3)$

Watch Video Solution

371. A random variable has the following probability distribution :

X	0	1	2	3	4	5	6	7
P(X)	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2+k$

Find

$P(X > 6)$

Watch Video Solution

372. A random variable has the following probability distribution :

Find P(0

Watch Video Solution

373. The random variable X has a probability distribution P(X) of the following form, where k is some number : $P(x) = \{(k, , \text{if}„ x = 0), (2k, , \text{if}„ x = 1), (3k, , \text{if}„ x = 2), (0, , , ,) :\}$ Determine the value of k.

Watch Video Solution

374. The random variable X has a probability distribution P(X) of the following form, where k is some number : $P(x) = \{(k, , \text{if}„ x = 0), (2k, , \text{if}„ x = 1), (3k, , \text{if}„$

$x = 2), (0, , , ,) :\}$ find

$P(X < 2), P(X \leq 2), P(X \geq 2).$

Watch Video Solution

375. Find the mean number of heads in three tosses of a fair coin.

Watch Video Solution

376. Two dice are thrown simultaneously. If X denotes the number of sixes, find the

expectation of X.

Watch Video Solution

377. Two numbers are selected at random (without replacement) from the first six positive integers. Let X denote the larger of the two numbers obtained. Find E(X).

Watch Video Solution

378. Let X denote the sum of the numbers obtained when two fair dice are rolled. Find the variance and standard deviation of X.

Watch Video Solution

379. A class has 15 students whose ages are 14, 17, 15, 14, 21, 17, 19, 20, 16, 18, 20, 17, 16, 19 and 20 years. One student is selected in such a manner that each has the same chance of being chosen and the age X of the selected student is recorded. What is the probability distribution of

the random variable X? Find mean, variance and standard deviation of X.

Watch Video Solution

380. In a meeting, 70% of the members favour and 30% oppose a certain proposal. A member is selected at random and we take $X = 0$ if he opposed, and $X = 1$ if he is in favour. Find $E(X)$ and $Var(X)$.

Watch Video Solution

381. The mean of the numbers obtained on throwing a die having written 1 on three faces, 2 on two faces and 5 on one face is:

A. 1

B. 2

C. 5

D. $\frac{8}{3}$

Answer:

Watch Video Solution

382. Suppose that two cards are drawn at random from a deck of cards. Let X be the number of aces obtained. Then the value of E(X) is:

A. $\frac{37}{221}$

B. $\frac{5}{13}$

C. $\frac{1}{13}$

D. $\frac{2}{13}$

Answer:

Watch Video Solution

383. A die is thrown 6 times. If 'getting an odd number' is a success, what is the probability of 5 successes?

Watch Video Solution

384. A die is thrown 6 times. If getting an odd number is a success, what is the probability of at least 4 successes.

Watch Video Solution

385. A die is thrown 6 times. If getting an 'odd number' is success, find the probability at most 5 successes.

386. A pair of dice is thrown 4 times. If getting a doublet is considered a success then find the probability of exactly 2 successes.

387. There are 5% defective items in a large bulk of items. What is the probability that a sample of 10 items will include not more than one defective item?

Watch Video Solution

388. Five cards are drawn successively with replacement from a well-shuffled deck of 52 cards. What is the probability that all the five cards are spades?

Watch Video Solution

389. Five cards are drawn successively with replacement from a well-shuffled deck of 52 cards. What is the probability that only 3 cards are spades?

Watch Video Solution

390. Five cards are drawn successively with replacement from a well-shuffled deck of 52 cards. What is the probability that none is a spade?

Watch Video Solution

391. The probability that a bulb produced by a factory will fuse after 150 days of use is 0.05. Find the probability that out of 5 such bulbs none will fuse after 150 days of use.

Watch Video Solution

392. The probability that a bulb produced by a factory will fuse after 150 days of use is 0.05. Find the probability that out of 5 such bulbs

not more than one will fuse after 150 days of use.

393. The probability that a bulb produced by a factory will fuse after 150 days of use is 0.05. Find the probability that out of 5 such bulbs more than one will fuse after 150 days of use.

394. The probability that a bulb produced by a factory will fuse after 150 days of use is 0.05. Find the probability that out of 5 such bulbs at least one bulb will fuse after 150 days of use.

Watch Video Solution

395. A bag consists of 10 balls each marked with one of the digits 0 to 9. If four balls are drawn successively with replacement from the bag, what is the probability that none is marked with the digit 0?

Watch Video Solution

396. In an examination, 20 questions of true-false type are asked. Suppose a student tosses a fair coin to determine his answer to each question. If the coin falls heads, he answers 'true', if it falls tails, he answers 'false'. Find the probability that he answers at least 12 questions correctly.

Watch Video Solution

397. Suppose X has a binomial distribution $B\left(6, \frac{1}{2}\right)$. Show that $X = 3$ is the most likely outcome .

Watch Video Solution

398. On a multiple choice examination with three possible answers for each of the five questions, what is the probability that a candidate would get four or more correct answers just by guessing ?

Watch Video Solution

Watch Video Solution

399. A person buys a lottery ticket in 50 lotteries, in each of which his chance of winning a prize is $\frac{1}{100}$. What is the probability that he will win a prize at least once.

Watch Video Solution

400. A person buys a lottery ticket in 50 lotteries, in each of which his chance of winning

a prize is $\frac{1}{100}$. What is the probability that he will win a prize exactly once.

Watch Video Solution

401. A person buys a lottery ticket in 50 lotteries, in each of which his chance of winning a prize is $\frac{1}{100}$. What is the probability that he will win a prize at least twice?

Watch Video Solution

402. Find the probability of getting 5 exactly twice in 7 throws of a die.

Watch Video Solution

403. Find the probability of throwing at most 2 sixes in 6 throws of a single die.

Watch Video Solution

404. It is known that 10% of certain articles manufactured are defective. What is the probability that in a random sample of 12 such articles, 9 are defective?

Watch Video Solution

405. In a box containing 100 bulbs, 10 are defective. The probability that out of a sample of 5 bulbs none is defective is :

A. 10^{-1}

B. $\left(\frac{1}{2}\right)^5$

C. $\left(\frac{9}{10}\right)^5$

D. $\frac{9}{10}$

Answer:

Watch Video Solution

406. The probability that a student is not a swimmer is $\frac{1}{5}$. Then the probability that out of five students, four are swimmers is:

A. ${}^5C_4\left(\frac{4}{5}\right)^4\frac{1}{5}$

B. $\left(\frac{4}{5}\right)^4\frac{1}{5}$

C. ${}^5C_1\frac{1}{5}\left(\frac{4}{5}\right)^4$

D. none of these

Answer:

Watch Video Solution

407. A and B are two events such that $P(A) \neq 0$. Find $P(B \mid A)$,if : A is a subset of B

Watch Video Solution

408. A and B are two events such that $P(A) \neq 0$. Find $P(B \mid A)$,if : $A \cap B = \phi$

Watch Video Solution

409. A family has two children. What is the probability that both the children are boys given that at least one of them is a boy ?

Watch Video Solution

410. A couple has two children, find the probability that both children are females, if it is known that the elder childis a female.

Watch Video Solution

411. Suppose that 5% of men and 0.25% of women have grey hair. A grey haired person is selected at random. What is the probability of this person being male? Assume that there are equal number of males and females.

Watch Video Solution

412. Suppose that 90% of people are right-handed. What is the probability that at most 6 of a random sample of 10 people are right-handed?

Watch Video Solution

413. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn, its mark is noted down and it is replaced. If 6

balls are drawn in this way, find the probability that all will bear 'X' mark.

414. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn, its mark is noted down and it is replaced. If 6 balls are drawn in this way, find the probability that not more than 2 will bear 'Y' mark.

415. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn, its mark is noted down and it is replaced. If 6 balls are drawn in this way, find the probability that at least one ball will bear 'Y' mark.

Watch Video Solution

416. An urn contains 25 balls of which 10 balls bear a mark 'X' and the remaining 15 bear a mark 'Y'. A ball is drawn at random from the urn,

its mark is noted down and it is replaced. If 6 balls are drawn in this way, find the probability that the number of balls with 'X' mark and 'Y' mark will be equal.

Watch Video Solution

417. In a hurdle race, a player has to cross 10 hurdles. The probability that he will clear each hurdle is $\frac{5}{6}$. What is the probability that he will knock down fewer than 2 hurdles?

Watch Video Solution

418. A die is thrown again and again until three sixes are obtained. Find the probability of obtaining the third six in the sixth throw of the die.

Watch Video Solution

419. If a leap year is selected at random, what is the chance that it will contain 53 tuesdays?

Watch Video Solution

420. Two dice are thrown simultaneously. Find the probability of getting six as a product.

Watch Video Solution

421. How many times must a man toss a fair coin so that the probability of getting at least one head is more than 90%?

Watch Video Solution

422. In a game, a man wins a rupee for a six and loses a rupee for any other number when a fair die is thrown. The man decided to throw a die thrice but to quit as and when he gets a six. Find the expected value of the amount he wins / loses.

Watch Video Solution

423. Suppose we have four boxes A,B,C and D containing coloured marbles as given below:

Box	Marble colour		
	Red	White	Black
A	1	6	3
B	6	2	2
C	8	1	1
D	0	6	4

One of the boxes has been selected at random and a single marble is drawn from it. If the marble is red, what is the probability that it was drawn from box A?

Watch Video Solution

424. Suppose we have four boxes A,B,C and D containing coloured marbles as given below:

Box	Marble colour		
	Red	White	Black
A	1	6	3
B	6	2	2
C	8	1	1
D	0	6	4

One of the boxes has been selected at random and a single marble is drawn from it. If the marble is red, what is the probability that it was drawn from box B?

Watch Video Solution

425. Suppose we have four boxes A,B,C and D containing coloured marbles as given below:

Box	Marble colour		
	Red	White	Black
A	1	6	3
B	6	2	2
C	8	1	1
D	0	6	4

One of the boxes has been selected at random and a single marble is drawn from it. If the marble is red, what is the probability that it was drawn from box C?

Watch Video Solution

426. Assume that the chances of a patient having a heart attack is 40%. It is also assumed that a meditation and yoga course reduce the risk of heart attack by 30% and prescription of certain drug reduces its chances by 25%. At a time a patient can choose any one of the two options with equal probabilities. It is given that after going through one of the two options the patient selected at random suffers a heart attack. Find the probability that the patient followed a course of meditation and yoga?

 Watch Video Solution

427. If each element of a second order determinant is either zero or one, what is the probability that the value of the determinant is positive? (Assume that the individual entries of the determinant are chosen independently, each value being assumed with probability $\frac{1}{2}$)

Watch Video Solution

428. An electronic assembly consists of two subsystems, say, A and B. From previous testing

procedures, the following probabilities are assumed to be known : $P(A$ fails $) = 0.2, P($B fails alone $) = 0.15, P(A$ and B fail $) = 0.15$ Evaluate the following probabilities: P(A fails | B has failed)

Watch Video Solution

429. An electronic assembly consists of two subsystems, say, A and B. From previous testing procedures, the following probabilities are assumed to be known : $P(A$ fails $) = 0.2, P($B fails alone $) = 0.15, P(A$ and B fail $) = 0.15$

Evaluate the following probabilities: P(A fails | B has failed)

430. Bag I contains 3 red and 4 black balls and Bag II contains 4 red and 5 black balls. One ball is transferred from Bag I to Bag II and then a ball is drawn from Bag II. The ball so drawn is found to be red in colour. Find the probability that the transferred ball is black

431. If A and B are two events such that $P(A) \neq 0$ and $P\left(\frac{B}{A}\right) = 1$, then

A. $A \subset B$

B. $B \subset A$

C. $B = \phi$

D. $A = \phi$

Answer:

Watch Video Solution

432. If $P\left(\frac{A}{B}\right) > P(A)$, then which of the following is correct : :

A. $P\left(\frac{B}{A}\right) < P(B)$

B. $P(A \cap B) < P(A) \cdot P(B)$

C. $P\left(\frac{B}{A}\right) > P(B)$

D. $P\left(\frac{B}{A}\right) = P(B)$

Answer:

Watch Video Solution

433. If A and B are any two events such that :

$P(A) + P(B) - P(A \text{ and } B) = P(A)$`, then

A. $P\left(\frac{B}{A}\right) = 1$

B. $P\left(\frac{A}{B}\right) = 1$

C. $P\left(\frac{B}{A}\right) = 0$

D. $P\left(\frac{A}{B}\right) = 0$

Answer:

Watch Video Solution

434. A committee of 4 students is selected at random from a group consisting 8 boys and 4 girls. Given that there is at least one girl in the committee, calculate the probability that there are exactly 2 girls in the committee.

Watch Video Solution

435. A bag contains 5 red marbles and 3 black marbles. Three marbles are drawn one by one without replacement. What is the probability

that at least one of three marbles drawn be black if the first marble is red?

Watch Video Solution

436. A and B throw a pair of dice alternately. A wins the game if he gets a total of 6 and B wins if he gets a total of 7. If A starts the game, find the probability of winning the game by A in third row of pair of dice.

Watch Video Solution

437. Four balls are to be drawn without replacement from a box containing 8 red and 4 white balls. If X denotes the number of red balls drawn, find the probability distribution of X.

Watch Video Solution

438. Find the probability that in 10 throws of a fair die a score, which is a multiple of 3, will be obtained in at least 8 of the throws.

Watch Video Solution

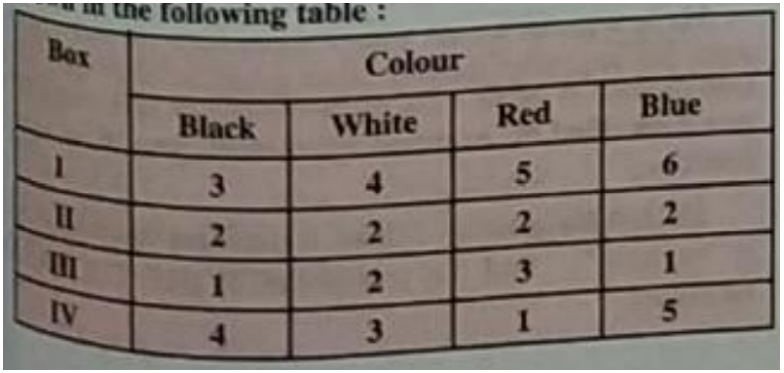
439. If A and B are two events such that $P(A) \neq 0$ and $P\left(\frac{B}{A}\right) = 1$, then

Watch Video Solution

440. A and B are two events such that $P(A) \neq 0$. Find $P(B \mid A)$,if : $A \cap B = \phi$

Watch Video Solution

441. Coloured balls are distributed in four boxes as shown in the following table:



the following table :

Box	Colour			
	Black	White	Red	Blue
I	3	4	5	6
II	2	2	2	2
III	1	2	3	1
IV	4	3	1	5

A box is selected at random and then a box is randomly drawn from the selected box. The colour of the ball is black, what is the probability that ball is drawn from the box III?

Watch Video Solution

442. Suppose we have four boxes A,B,C and D containing coloured marbles as given below:

Box	Marble colour		
	Red	White	Black
A	1	6	3
B	6	2	2
C	8	1	1
D	0	6	4

One of the boxes has been selected at random and a single marble is drawn from it. If the marble is red, what is the probability that it was drawn from box A?

Watch Video Solution

443. Suppose we have four boxes A,B,C and D containing coloured marbles as given below:

Box	Marble colour		
	Red	White	Black
A	1	6	3
B	6	2	2
C	8	1	1
D	0	6	4

One of the boxes has been selected at random and a single marble is drawn from it. If the marble is red, what is the probability that it was drawn from box B?

Watch Video Solution

444. Suppose we have four boxes A,B,C and D containing coloured marbles as given below:

Box	Marble colour		
	Red	White	Black
A	1	6	3
B	6	2	2
C	8	1	1
D	0	6	4

One of the boxes has been selected at random and a single marble is drawn from it. If the marble is red, what is the probability that it was drawn from box C?

Watch Video Solution

445. Bag I contains 3 red and 4 black balls and Bag II contains 4 red and 5 black balls. One ball is transferred from Bag I to Bag II and then a ball is drawn from Bag II. The ball so drawn is found to be red in colour. Find the probability that the transferred ball is black

Watch Video Solution

446. Suppose that 5% of men and 0.25% of women have grey hair. A grey haired person is selected at random. What is the probability of

this person being male? Assume that there are equal number of males and females.

Watch Video Solution

447. Assume that the chances of a patient having a heart attack is 40%. It is also assumed that a meditation and yoga course reduce the risk of heart attack by 30% and prescription of certain drug reduces its chances by 25%. At a time a patient can choose any one of the two options with equal probabilities. It is given that after going through one of the two options the

patient selected at random suffers a heart attack. Find the probability that the patient followed a course of meditation and yoga?

Watch Video Solution

448. If each element of a second order determinant is either zero or one, what is the probability that the value of the determinant is positive? (Assume that the individual entries of the determinant are chosen independently, each value being assumed with probability $\frac{1}{2}$)

Watch Video Solution

Watch Video Solution

449. An electronic assembly consists of two subsystems, say, A and B. From previous testing procedures, the following probabilities are assumed to be known : $P(A \text{ fails }) = 0.2, P(\text{B fails alone }) = 0.15, P(A \text{ and B fail }) = 0.15$ Evaluate the following probabilities: P(A fails | B has failed)

Watch Video Solution

450. An electronic assembly consists of two subsystems, say, A and B. From previ ous testing procedures, the following probabilities are assumed to be known : $P(A$ fails $) = 0.2, P($B fails alone $) = 0.15, P(A$ and B fail $) = 0.15$ Evaluate the following probabilities: P(A fails alone)

Watch Video Solution

451. A box contains 16 bulbs out of which 4 bulbs are defective. 3 bulbs are drawn one by

one from the box without replacement. Find the probability distribution of the number of defective bulbs.

Watch Video Solution

452. From a lot of 30 bulbs which include 6 defectives, a sample of 4 bulbs is drawn at random with replacement. Find the probability distribution of the number of defective bulbs.

Watch Video Solution

453. In a game, a man wins a rupee for a six and loses a rupee for any other number when a fair die is thrown. The man decided to throw a die thrice but to quit as and when he gets a six. Find the expected value of the amount he wins / loses.

Watch Video Solution

454. A die is thrown 7 times. If getting an "even number" is "success", find the probability of getting at least 6 succecces.

Watch Video Solution

455. A die is thrown 8 times. If getting an even number is considered a success, find the probability of at least 7 successes.

Watch Video Solution

456. A die is thrown 3 times. If getting an multiple of 3 is considered a success, find the probability of at least 2 successes.

Watch Video Solution

457. If on an average, out of 10 ships, one is drowned, then what is the probability that out of 5 ships, atleast 4 each safely?

Watch Video Solution

458. Suppose that a radio tube insrted into a certain type of set has a probability0.2 of functioning more than 500 hours. If we test 4 tubes, what is the probability that exactly three of these function for more than 500 hours,`.

Watch Video Solution

459. A die is thrown again and again until three sixes are obtained. Find the probability of obtaining the third six in the sixth throw of the die.

Watch Video Solution

460. An experiment succeeds twice as often as it fails. Find the probability that in the next six trials, there will be at least 4 successes.

Watch Video Solution

461. How many times must a man toss a fair coin so that the probability of getting at least one head is more than 90%?

Watch Video Solution

462. Fit a binomial distribution to the following data:

X :	0	1	2	3	4
f :	28	62	46	10	4

Watch Video Solution

463. A man takes a step forward woth probability 0.4 and backward woth probability 0.6. Then, find the probability that at the end of eleven steps he is one step away from the starting point

Watch Video Solution

464. Out of (2n+1) tickets consecutively numbered, three are drawn at random. Find the

chance that the numbers on them are in AP.

Watch Video Solution

465. If A and B are mutually exclusive, then $P(A \cap B)$ is equal to _____.

Watch Video Solution

466. Let E and F be events with $P(E) = \frac{3}{5}, P(F) = \frac{3}{10}$ and $P(E \cap F) = \frac{1}{5}$. Are E and F independent?

Watch Video Solution

467. If A and B are two independent events such that $P(A) = \frac{5}{13}, P(B) = \frac{2}{13}$, then $P(A \cap B)$ is equal to _____.

Watch Video Solution

468. A pair of dice is tossed once and X denotes the sum of numbers that appears on the two dice, then $P(X \leq 4) =$_ _ _ _.

Watch Video Solution

469. A die is tossed thrice. Find the probability of getting an odd number at least once.

Watch Video Solution

470. Write the formula of Bayes' Theorem with its conditions.

Watch Video Solution

471. The mean of the number of heads in the two tosses of a coin is _____.

Watch Video Solution

472. Obtain binomial distribution, if : $n = 6, p = \frac{1}{3}$.Find the mean

Watch Video Solution

473. Suppose X has a probability distribution $B\left(6, \frac{1}{2}\right)$. find which value of X is most likely outcome.

Watch Video Solution

474. If the mean and variance of a binomial distribution are 9 and 6 respectively, find the number of trials.

Watch Video Solution

475. If $P(A) = \frac{1}{2}$, P(B) = 0, P(A//B) is :

A. 0

B. $\frac{1}{2}$

C. not defined

D. 1

Answer:

Watch Video Solution

476. If A and B are events such that $P\left(\frac{A}{B}\right) = P\left(\frac{B}{A}\right)$, then

A. $A \subset BbutA \neq B$

B. $A = B$

C. $A \cap B = \phi$

D. $P(A) = P(B)$

Answer:

Watch Video Solution

477. The probability of obtaining an even prime number on each die, when a pair of dice is rolled is:

A. 0

B. $\frac{1}{3}$

C. $\frac{1}{12}$

D. $\frac{1}{36}$

Answer:

Watch Video Solution

478. Two events A and B will be independent, if:

A. A and B are mutually exclusive

B. $P(A'B') - [1 - P(A)][1 - P(B)]$

C. $P(A) = P(B)$

D. $P(A) + P(B) = 1$

Answer:

Watch Video Solution

479. Probability that A speaks truth is $\frac{4}{5}$. A coin is tossed. A reports that a head appears. The probability that actually there was head is

A. $\frac{4}{5}$

B. $\frac{1}{2}$

C. $\frac{1}{5}$

D. $\frac{2}{5}$

Answer:

Watch Video Solution

480. If A and B are two events such that $A \subset B$ and $P(B) \neq 0$, then which of the following is correct?

A. $P\left(\frac{A}{B}\right) = \frac{P(B)}{P(A)}$

B. $P\left(\frac{A}{B}\right) < P(A)$

C. $P\left(\frac{A}{B}\right) \geq P(A)$

D. none of these

Answer:

Watch Video Solution

481. If A and B are two events such that $P(A) \neq 0$ and $P\left(\frac{B}{A}\right) = 1$, then

A. $A \subset B$

B. $B \subset A$

C. $B = \phi$

D. $A = \phi$

Answer:

Watch Video Solution

482. If $P\left(\frac{A}{B}\right) > P(A)$, then which of the following is correct : :

A. $P\left(\frac{B}{A}\right) < P(B)$

B. $P(A \cap B) < P(A) \cdot P(B)$

C. $P\left(\frac{B}{A}\right) > P(B)$

D. $P\left(\frac{B}{A}\right) = P(B)$

Answer:

Watch Video Solution

483. If A and B are any two events such that :

$P(A) + P(B) - P(A \text{ and } B) = P(A)$`, then

A. $P\left(\frac{B}{A}\right) = 1$

B. $P\left(\frac{A}{B}\right) = 1$

C. $P\left(\frac{B}{A}\right) = 0$

D. $P\left(\frac{A}{B}\right) = 0$

Answer:

Watch Video Solution

484. The mean of the numbers obtained on throwing a die having written 1 on three faces, 2 on two faces and 5 on one face is:

A. 1

B. 2

C. 5

D. $\frac{8}{3}$

Answer:

Watch Video Solution

485. Suppose that two cards are drawn at random from a deck of cards. Let X be the number of aces obtained. Then the value of E(X) is:

A. $\frac{37}{221}$

B. $\frac{5}{13}$

C. $\frac{1}{13}$

D. $\frac{2}{13}$

Answer:

Watch Video Solution

486. In a box containing 100 bulbs, 10 are defective. The probability that out of a sample of 5 bulbs none is defective is :

A. 10^{-1}

B. $\left(\frac{1}{2}\right)^5$

C. $\left(\frac{9}{10}\right)^5$

D. $\frac{9}{10}$

Answer:

Watch Video Solution

487. The probability that a student is not a swimmer is $\frac{1}{5}$. Then the probability that out of five students, four are swimmers is:

A. ${}^5C_4\left(\frac{4}{5}\right)^4\frac{1}{5}$

B. $\left(\frac{4}{5}\right)^4\frac{1}{5}$

C. ${}^5C_1\frac{1}{5}\left(\frac{4}{5}\right)^4$

D. none of these

Answer:

Watch Video Solution

488. A die is thrown once, then the probability of getting a number greater than 3 is :

A. $\frac{1}{2}$

B. $\frac{2}{3}$

C. 6

D. 0

Answer:

Watch Video Solution

489. If $P(A) = 0.2, P(B) = 0.4, P(A \cup B) = 0.6$, then $P(A/B)$ is equal to

A. 0.8

B. 0.5

C. 0.3

D. 0

Answer:

Watch Video Solution

490. Let A and B be two events. If $P(A) = 0.6, P(B) = 0.2, P\left(\frac{A}{B}\right) = 0.5$, then $P(A \cap B)$ is equal to :

A. $\frac{1}{10}$

B. $\frac{3}{10}$

C. $\frac{3}{8}$

D. $\frac{6}{7}$

Answer:

Watch Video Solution

491. If A and B are independent events such that $0 < P(A) < 1$ and $0 < P(B) < 1$ then which of the followingis not correct ?

A. A and B are mutually exclusive

B. A and B' are independent

C. A' and B are independent

D. A' and B' are independent

Answer:

Watch Video Solution

492. Let 'X' be a discrete random variable. The probability distribution of X is given below:

X :	30	10	– 10
P(X) :	$\frac{1}{5}$	$\frac{3}{10}$	$\frac{1}{2}$

Then E(X) is equal to :

A. 6

B. 4

C. 3

D. -5

Answer:

Watch Video Solution

493. Let 'X' be a discrete random variable assuming values $x_1, x_2, \ldots\ldots\ldots x_n$ with probabilities $p_1, p_2, \ldots\ldots\ldots, p_n$ respectively. Then variance of 'X' is given by :

A. $E\left(X^2\right)$

B. $E\left(X^2\right) + E(X)$

C. $E(X)^2 - [E(X)]^2$

D. $\sqrt{E\left(X^2\right) - [E(X)]^2}$

Answer:

Watch Video Solution

494. Two events A and B will be independent, if:

A. A and B are mutually exclusive

B. $P(A'B') - [1 - P(A)][1 - P(B)]$

C. $P(A) = P(B)$

D. $P(A) + P(B) = 1$

Answer:

Watch Video Solution

495. If A and B are two events such that $A \cap B \neq \phi, P\left(\frac{A}{B}\right) = P\left(\frac{B}{A}\right)$. Then.

A. $A \subset BbutA \neq B$

B. $A = B$

C. $A \cap B = \phi$

D. $P(A) = P(B)$

Answer:

Watch Video Solution

496. If $P(E) = \frac{11}{36}, P(F) = \frac{5}{36}$ and $P(E \cap F) = \frac{2}{36}$, then the value of $P\left(\frac{E}{F}\right)$ is :

A. $\frac{11}{5}$

B. $\frac{5}{11}$

C. $\frac{2}{5}$

D. $\frac{2}{11}$

Answer:

Watch Video Solution

497. Two cards are drawn at random and without replacement from a pack of 52 playing cards. Find the probability that both the cards are black.

A. $\frac{25}{102}$

B. $\frac{1}{4}$

C. $\frac{1}{2}$

D. none of these

Answer:

Watch Video Solution

498. An urn contains 10 black and 5 white balls. Two balls are drawn from the urn one after the other without replacement. What is the probability that both drawn balls are black?

A. $\frac{3}{7}$

B. $\frac{4}{9}$

C. $\frac{2}{21}$

D. none of these

Answer:

Watch Video Solution

499. Probability distribution of X is given below,

X :	1	2	3	4
P(X) :	1/4	K	2K	K

then the value of K is :

A. $\frac{1}{4}$

B. $\frac{3}{16}$

C. $\frac{1}{8}$

D. none of these

Answer:

Watch Video Solution

500. If A and B are any two events such that :

$P(A) + P(B) - P(A \text{ and } B) = P(A)$`, then

A. $P\left(\frac{B}{A}\right) = 1$

B. $P\left(\frac{A}{B}\right) = 1$

C. $P\left(\frac{B}{A}\right) = 0$

D. $P\left(\frac{A}{B}\right) = 0$

Answer:

Watch Video Solution

501. In a single throw of a pair od die, the probability of getting total of 3 or 4 is:

A. $\frac{3}{36}$

B. $\frac{4}{36}$

C. $\frac{5}{36}$

D. none of these

Answer:

Watch Video Solution

502. A and B are two mutually exclusive events of an experiment. If P (not A) = 0.65, $P(A \cup B) = 0.65$, and P (B)= p, find the value of p.

A. 0.35

B. 0.3

C. 0.65

D. none of these

Answer:

Watch Video Solution

503. $P\left(\frac{E}{F}\right)$ is equal to :

A. $\frac{P(E \cup F)}{P(F)}$

B. $\frac{P(E \cap F)}{P(E)}$

C. $\frac{P(E \cap F)}{P(F)}$

D. $P(E) \cdot P(F)$

Answer:

Watch Video Solution

504. If $P(A) = 0.3, P(B) = 0.4,$ find $P(A \cup B)$. where A and B are independent events.

A. 0.48

B. 0.51

C. 0.52

D. 0.58

Answer:

Watch Video Solution

505. A pair of coins is tossed once. Find the probability of showing at least one head is :

A. $\frac{1}{2}$

B. $\frac{2}{3}$

C. $\frac{3}{4}$

D. $\frac{1}{4}$

Answer:

Watch Video Solution

506. A and B are events such that $2P(A) = P(B) = \frac{5}{13}, P\left(\frac{A}{B}\right) = \frac{2}{5}$, then $P(A \cup B)$ is equal to :

A. $\frac{25}{27}$

B. $\frac{3}{8}$

C. $\frac{11}{26}$

D. $\frac{2}{15}$

Answer:

Watch Video Solution

507. The probability of obtaining an even prime number on each die, when a pair of dice is rolled is :

A. 0

B. $\frac{1}{3}$

C. $\frac{1}{12}$

D. $\frac{1}{36}$

Answer:

Watch Video Solution

508. If $P(A) = \frac{3}{5}$ and $P(B) = \frac{1}{5}$, find $P(A \cap B)$ if A and B are independent events.

A. $\frac{3}{25}$

B. $\frac{1}{3}$

C. $\frac{25}{3}$

D. none of these

Answer:

Watch Video Solution

509. If $P(A) = \frac{7}{13}, P(B) = \frac{9}{13}$ and $P(A \cap B) = \frac{4}{13}$, evaluate $P\left(\frac{A}{B}\right)$.

A. $\frac{4}{9}$

B. $\frac{9}{4}$

C. $\frac{7}{9}$

D. $\frac{4}{7}$

Answer:

Watch Video Solution

510. If A and B are events such that $P(A) = 0.4, P(B) = 0.5$ and $P\left(\frac{B}{A}\right) = 0.6,$ then $P\left(\overline{A \cap B}\right)$ is :

A. 0.76

B. 0.48

C. 0.32

D. 0.24

Answer:

Watch Video Solution

511. If $P(A) = \frac{1}{2}, P(B) = 0$ then $P(A \mid B)$ is

:

A. 0

B. $\frac{1}{2}$

C. not defined

D. 1

Answer:

Watch Video Solution

512. In a box containing 100 bulbs, 10 bulbs are defective. Probability that out of a sample of 5 bulbs, none is defective, is

A. 10^{-1}

B. $\left(\frac{1}{2}\right)^5$

C. $\left(\frac{9}{10}\right)^5$

D. $\frac{9}{10}$

Answer:

Watch Video Solution

513. In rolling of two fair six faced dice, the probability of getting total 7 is :

A. 0

B. $\frac{1}{6}$

C. $\frac{5}{36}$

D. 1

Answer:

Watch Video Solution

514. Three dice are rolled once. The chance of getting a score of 5 is :

A. $\frac{5}{216}$

B. $\frac{1}{6}$

C. $\frac{1}{36}$

D. $\frac{1}{7^2}$

Answer:

Watch Video Solution

515. The probability distribution of 'X' is :

X	:	0	1	2	3
P(X)	:	0-2	k	k	$2k$

find the

value of k:

A. 0.2

B. 0.3

C. 0.4

D. 0.1

Answer:

Watch Video Solution

516. If two dice are thrown simultaneously, then the probability that the sum of the numbers which come up on the dice to be more than 5 is :

A. $\frac{5}{36}$

B. $\frac{1}{6}$

C. $\frac{5}{18}$

D. $\frac{7}{18}$

Answer:

Watch Video Solution

517. A fair six-faced die is rolled 12 times. The probability that each face turns up twice is equal to :

A. $\frac{12!}{6!6!6^{12}}$

B. $\frac{2^{12}}{2^6 6^{12}}$

C. $\frac{12!}{2^6 6^{12}}$

D. $\frac{12!}{6^2 6^{12}}$

Answer:

Watch Video Solution

518. In a box containing 100 bulbs, 10 bulbs are defective. Probability that out of a sample of 5 bulbs, none is defective, is

A. $\frac{9}{10}$

B. $\left(\frac{1}{10}\right)^5$

C. $\left(\frac{9}{10}\right)^5$

D. $\left(\frac{1}{2}\right)^5$

Answer:

Watch Video Solution

519. It is given that the events A and B are such that

$$P(A) = \frac{1}{4}, P\left(\frac{A}{B}\right) = \frac{1}{2} \text{and} p\left(\frac{B}{A}\right) = \frac{2}{3}.$$

Then P(B) is:

A. $\frac{1}{2}$

B. $\frac{1}{6}$

C. $\frac{1}{3}$

D. $\frac{2}{3}$

Answer:

Watch Video Solution

520. A die is thrown. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then $P(A \cup B)$ is

A. $\frac{2}{5}$

B. $\frac{3}{5}$

C. 0

D. 1

Answer:

Watch Video Solution

521. One ticket is selected at random from 50 tickets numbered 00, 01, 02, ... , 49. Then the probability that the sum of the digits on the selected ticket is 8, given that the product of these digits is zero, equals

A. $\frac{1}{7}$

B. $\frac{5}{14}$

C. $\frac{1}{50}$

D. $\frac{1}{14}$

Answer:

Watch Video Solution

522. An urn contains nine balls of which three are red, four are blue and two are green. Three balls are drawn at random without replacement from the urn. The probability that the three balls have different colour, is

A. $\frac{1}{3}$

B. $\frac{2}{7}$

C. $\frac{1}{21}$

D. $\frac{2}{23}$

Answer:

Watch Video Solution

523. A signal which can can be green or red with probability $\frac{4}{5}$ and $\frac{1}{5}$ respectively, is received by station A and then transmitted to station B.

The probability of each station reciving the signal correctly is $\frac{3}{4}$. If the singal received at station B is green, then the probability that original singal was green is

A. $\frac{3}{5}$

B. $\frac{6}{7}$

C. $\frac{20}{23}$

D. $\frac{9}{20}$

Answer:

Watch Video Solution

524. If C and D are two events such that $C \subset D$ and $P(D) \neq 0$, then the correct statement among the following is :

A. $P\left(\frac{C}{D}\right) = P(C)$

B. $P\left(\frac{C}{D}\right) \geq P(C)$

C. $P\left(\frac{C}{D}\right) < P(C)$

D. $P\left(\frac{C}{D}\right) = \frac{P(D)}{P(C)}$

Answer:

Watch Video Solution

525. Consider 5 independent Bernoulli's trials each with probability of success P . If the probability of atleast one failure is greater than or equal to $\frac{31}{32}$, then P lies in the interval.

A. $\left(\frac{1}{2}, \frac{3}{4}\right]$

B. $\left(\frac{3}{4}, \frac{11}{12}\right]$

C. $\left[0, \frac{1}{2}\right]$

D. $\left(\frac{11}{12}, 1\right]$

Answer:

Watch Video Solution

526. Let A, B, C be pariwise independent events with $P(C) > 0$ and $P(A \cap B \cap C) = 0$. Then $P\left(\frac{A^c \cap B^c}{C}\right)$.

A. $P(A) - P(B^c)$

B. $P(A^c) + P(B^c)$

C. $P(A^c) - P(B^c)$

D. $P(A^c) - P(B)$

Answer:

Watch Video Solution

527. Three numbers are chosen at random without replacement from $\{1, 2, 3, \ldots\ldots 8\}$. The probability that their minimum is 3, given that their maximum is 6 , is

A. $\frac{3}{8}$

B. $\frac{1}{5}$

C. $\frac{1}{4}$

D. $\frac{2}{5}$

Answer:

Watch Video Solution

528. Four fair dice , $D_1 D_2, D_3$ and D_4 each having six faces numbered 1,2,3,4,5 and 6 are rolled simultaneously. The probability that D_4 shows a number appearing on one of D_1, D_2 and D_3 is

A. $\frac{91}{216}$

B. $\frac{108}{216}$

C. $\frac{125}{216}$

D. $\frac{127}{216}$

Answer:

Watch Video Solution

529. Four person independently solve a certain problem correctly with probabilities $\frac{1}{2}, \frac{3}{4}, \frac{1}{4}, \frac{1}{8}$. Then the probability that he problem is solve correctly by at least one of them is

A. $\frac{235}{256}$

B. $\frac{21}{256}$

C. $\frac{3}{256}$

D. $\frac{253}{256}$

Answer:

Watch Video Solution

530. Let A and B be two events such that $P(\overline{A \cup B}) = \frac{1}{6}, P(A \cap B) = \frac{1}{4}$ and $P\overline{A} = \frac{1}{4}$,where $\overline{A}$ stands for complement of event A.

then , events A and B are

A. equally likely but not independent

B. independent but not equally likely

C. independent and equally likely

D. mutually exclusive and independent

Answer:

 Watch Video Solution

531. if 12 identical balls are to be placed in 3 identical boxes, then the probability that one of the boxes contains exactly 3 balls , is

A. $\frac{55}{3}\left(\frac{2}{3}\right)^{11}$

B. $\frac{55}{3}\left(\frac{2}{3}\right)^{10}$

C. $220\left(\frac{1}{3}\right)^{12}$

D. $22\left(\frac{11}{3}\right)^{11}$

Answer:

Watch Video Solution

532. Let two fair six-faced dice A and B be thrown simltaneously. If E_1 is the event that die A shows up four, E_2 is the event that die B

shows up two and E_3 is the event that the sum of numbers on both dice isodd, then which of the following statement is NOT True ?

A. E_1 and E_2 are not independent

B. E_1 and E_3 are independent

C. E_1, E_2 and E_3 are independent

D. E_1 and E_2 are independent

Answer:

Watch Video Solution

533. If $P(A) = \frac{7}{13}, P(B) = \frac{9}{13}$ and $P(A \cap B) = \frac{4}{13}$, evaluate $P\left(\frac{A}{B}\right)$.

Watch Video Solution

534. Let E and F be events with $P(E) = \frac{3}{5}, P(F) = \frac{3}{10}$ and $P(E \cap F) = \frac{1}{5}$.

Are E and F independent?

Watch Video Solution

535. An urn contains 10 black and 5 white balls. Two balls are drawn from the urn one after the other without replacement. What is the probability that both drawn balls are black?

536. Probability of solving specific problem independently by A and B are $\frac{1}{2}$ and $\frac{1}{3}$ respectively. If both try to solve the problem independently, find the probability that the problem is solved.

Watch Video Solution

537. Probability of solving specific problem independently by A and B are $\frac{1}{2}$ and $\frac{1}{3}$ respectively. If both try to solve the problem independently, find the probability that exactly one of them solves the problem.

Watch Video Solution

538. From a lot of 30 bulbs which include 6 defectives, a sample of 4 bulbs is drawn at

random with replacement. Find the probability distribution of the number of defective bulbs.

539. Find the probability distribution of number of doublets in three throws of a pair of dice.

540. Ten eggs are drawn successively with replacement from a lot containing 10%

defective eggs. Find the probability that there is at least one defective egg.

Watch Video Solution

541. Assume that the chances of a patient having a heart attack is 40%. It is also assumed that a meditation and yoga course reduce the risk of heart attack by 30% and prescription of certain drug reduces its chances by 25%. At a time a patient can choose any one of the two options with equal probabilities. It is given that after going through one of the two options the

patient selected at random suffers a heart attack. Find the probability that the patient followed a course of meditation and yoga?

Watch Video Solution

542. The random variable X has a probability distribution P(X) of the following form, where k is some number : $P(x) = \{(k, , \text{if}„ x = 0), (2k, , \text{if}„ x = 1), (3k, , \text{if}„ x = 2), (0, , , ,) :\}$ Determine the value of k.

Watch Video Solution

543. The random variable X has a probability distribution P(X) of the following form, where k is some number : $P(x) = \{(k, , \text{if}„ x = 0), (2k, , \text{if}„ x = 1), (3k, , \text{if}„ x = 2), (0, , , ,) :\}$ find $P(X < 2), P(X \leq 2), P(X \geq 2).$

Watch Video Solution