doubtnut
India's Number 1 Education App

MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

PROBABILITY

Others

1. A pair of dice is thrown. Let E be the event that the sum is greater than or equal to 10 and F be the event 5 appears on the first - die. Find $P\left(\frac{E}{E}\right)$. if F is the event 5 appears on at least one die, find $P\left(\frac{E}{F}\right)$.

Watch Video Solution

2. The probability that a student selected at random from class will pass in Mathematics is 4/5, and the probability that he/she passes in

Mathematics and Computer Science is ½. What is the probability that he/she will pass in Computer Science if it is known that he/she has passed in Mathematics?

Watch Video Solution

3. Ten cards numbered 1 through 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

4. Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the constitutional probability that both are girls? Given that i)the youngest is a girl ii)at least one is girl

Watch Video Solution

5. A coin is tossed thrice and all the eight outcomes are assumed equally likely. In which of the following cases are the following events A and B are independent?

A. 1.A = the first thrown results in head, B = the last thrown results in tail

B. 2.A= the number of heads is odd, B = the number of tails is odd

C. 3.A = the number of heads is two, b = the last throw results in head

D. null

Answer: null

Watch Video Solution

6. 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

7. Prove that in throwing a pair of dice, the occurrence of the number 4 on the first die is independent of the occurrence of 5 on the second die.

Watch Video Solution

8. if A and B be 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

9. A bag contains 4 white, 7 black and 5 red balls. Three balls are drawn one after the other without replacement. Find the probability that the balls drawn are white, black and red respectively.

Watch Video Solution

10. A coin is tossed three times. Let the events A, B and C be defined as follows: $A =$ first toss is head, $B =$ second toss is head, and $C =$ exactly two heads are tossed in a row. Check the independence of $A\&B$ $B\&C$ $C\&A$

Watch Video Solution

11. A card is drawn from a well-shuffled deck of 52 cards and then a second card is drawn. Find the probability that the first card is a heart and the second card is a diamond if the first card is not replaced.

Watch Video Solution

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

Watch Video Solution

13. A coin is tossed three times. Find $P\left(\frac{A}{B}\right)$ in each of the following: $A =$ Head on third toss, $B =$ Head on first two tosses $A =$ At least two head, $B =$ At most two heads. $A =$ At most two tails, $B =$ At least one tail.

Watch Video Solution

14. Two coins are tossed once. Find $P\left(\frac{A}{B}\right)$ in each of the following : (i) $A =$ Tail appears on one coin, $B =$ One coin shows head. (ii) $A =$ No tail appears, $B =$ No head appears.

Watch Video Solution

15. If $P(A) = 0.4, P(B) = 0.8, P\left(\frac{B}{A}\right) = 0.6$. Find $P\left(\frac{A}{B}\right)$ and $(A \cup B)$.

Watch Video Solution

Watch Video Solution

16. If A and B are two events such that $2P(A) = P(B) = \frac{5}{13}$ and $P\left(\frac{A}{B}\right) = \frac{2}{5}$, find $P(A \cup B)$.

Watch Video Solution

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

Watch Video Solution

18. If $P(A)\frac{7}{13}, P(B) = \frac{9}{13}$ and $P(A \cap B) = \frac{4}{13}$, find $P\left(\frac{A}{B}\right)$.

Watch Video Solution

19. If A and B are events such that $P(A) = 0.6, P(B) = 0.3$ and $P(A \cap B) = 0.2$, find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{A}\right)$.

Watch Video Solution

20. If A and B are two events such that $P(A \cap B) = 0.32$ and $P(B) = 0.5$, find $P\left(\frac{A}{B}\right)$.

Watch Video Solution

21. A bag contains 20 tickets, numbered from 1 to 20. Two tickets are drawn without replacement. What is the probability that the first ticket has an even number and the second an odd number.

Watch Video Solution

22. Two cards are drawn without replacement from a pack of 52 cards. Find the probability that i)both are kings ii)the first is a king and the second is an ace iii)the first is a heart and second is red.

Watch Video Solution

23. From a deck of cards, three cards are drawn on by one without replacement. Find the probability that each time it is a card of spade.

Watch Video Solution

24. A bag contains 25 tickets, numbered from 1 to 25. A ticket is drawn and then another ticket is drawn without replacement. Find the probability that both tickets will show even numbers.

Watch Video Solution

25. Find the chance of drawing 2 white balls in succession from a bag containing 5 red and 7 white balls, the ball first drawn not being replaced.

Watch Video Solution

26. From a pack of 52 cards, 4 are drawn one by one without replacement. Find the probability that all are aces (or, kings).

Watch Video Solution

27. From a pack of 52 cards, two are drawn one by one without replacement. Find the probability that both of them are kings.

Watch Video Solution

28. A bag contains 5 white, 7 red and 3 black balls. If three balls are drawn one by one without replacement, find the probability that none is red.

Watch Video Solution

29. An urn contains 3 white, 4 red and 5 black balls. Two balls are drawn one by one without replacement. What is the probability that at least one ball is black?

Watch Video Solution

30. Compute $P\left(\frac{A}{B}\right)$, if $P(B) = 0.5$ and $P(A \cap B) = 0.32$

Watch Video Solution

31. If $P(A) = 0.4$, $P(B) = 0.3$ and $P\left(\frac{B}{A}\right) = 0.5$, find $P(A \cap B)$ and $P\left(\frac{A}{B}\right)$.

Watch Video Solution

32. A coin is tossed three times, if head occurs on first two tosses, find the probability of getting head on third toss.

Watch Video Solution

33. A die is thrown three times, find the probability that 4 appears on the third toss if it is given that 6 and 5 appear respectively on first two tosses.

Watch Video Solution

34. 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

35. Ten cards numbered 1 through 10 are placed in 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

36. If A and B are two events such that $P(A) = \frac{1}{3}, P(B) = \frac{1}{5}$ and $P(A \cup B) = \frac{11}{30}$, Find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{A}\right)$.

Watch Video Solution

37. A couple has two children. Find the probability that both the children are (i) males, if it si known that at least one of the children is male. (ii) females, if it is known that the elder child is a female.

Watch Video Solution

38. Two numbers are selected at random from integers 1 through 9. If the sum is even, find the probability that both the numbers are odd.

Watch Video Solution

39. Find the probability that the sum of the numbers showing on two dice is 8, given that at least one die does not show five.

Watch Video Solution

40. A pair of dice is thrown. Find the probability of getting the sum 8 or more, if 4 appears on the first die.

Watch Video Solution

41. A die is rolled. If the outcome is an odd number, what is the probability that it is prime?

Watch Video Solution

42. A pair of dice is thrown. Find the probability of getting 7 as the sum of it is known that hte second die always exhibits a prime number.

Watch Video Solution

43. A pair of dice is thrown. Find the probability of getting 7 as the sum, if it is known that the second die always exhibits an odd number.

Watch Video Solution

44. A dice 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

45. Mother, father and son line up at random for a family picture. If A and B are two events given by $A =$ Son on one end, $B =$ Father in the middle, find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{A}\right)$.

Watch Video Solution

46. A die is thrown three times. Find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{A}\right)$, if $A = 4$ appears on the third toss, $B = 6$ and 5 appear respectively on first two tosses.

Watch Video Solution

47. Two persons A and B throw a die alternately till one of them gets a 'three' and wins the game. Find their respectively probabilities of winning, if a begins.

Watch Video Solution

48. A doctor claims of 60% of the patients he examines are allergic to some type of weed. What is the probability that (i) exactly 3 of his next 4 patients are allergic to weeds? (ii) none of his next 4 patients is allergic to weeds?

Watch Video Solution

49. A clerk was asked to mail three report cards to three students. He addresses three envelopes but unfortunately paid no attention to which report card be put in which envelope. What is the probability that exactly one of the students received his or her own card?

Watch Video Solution

50. There are three urns A, B and C. Urn A contains 4 white balls and 5 blue balls. Urn B contains 4 white balls and 3 blue balls. Urn C contains 2 white balls and 4 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

51. A bag contains 3 White, 3 black and 2 red balls. One by one three balls are drawn without replacement. Find the probability that third ballis red

Watch Video Solution

52. The odds against a husband who is 45 years old, living till he is 70 are 7:5 and the odds against his wife who is now 36, living till she is 61 are 5:3. Find the probability that the couple will be alive 25 years hence, exactly one of them will be alive 25 years hence, none of them will be alive 25 years hence, at least one of them will be alive 25 years hence.

Watch Video Solution

53. A, B and C shot to hit a target. If A hits the target 4 times in 5 trails, B hit it 3 times in 4 trials and C hits 2 time in 3 trials; what is the probability that the target is hit by a least 2 person?

Watch Video Solution

54. Three critics review a book. Odds in favour of the book are $5:2, 4:3$ and $3:4$ respectively for three critics. Find the probability that the majority are in favour of the book.

Watch Video Solution

55. The probabilities of A, B and C solving a problem are 1/3, 2/7 and 3/8 respectively. If all the thee try to solve the problem simultaneously, find the probability that exactly one of them can solve it.

Watch Video Solution

56. Three groups of children contain 3 girls and 1 boy; 2 girls and 2 boys; 1 girl and 3 boys respectively. One child is selected at random from each group. Find the chance that the three selected comprise one girl and 2 boys.

Watch Video Solution

57. In the two dice experiment, if A is the event of getting the sum of the numbers on dice as 11 and B is the event of getting a number other that 5 on the first die, find $P(A \text{and} B)$ Are A and B independent events? OR Two dice are tossed. Find whether the following two events A and B are independent:

$A = \{(x, y) : x + y = 11\}, B = \{(x, y) : x \neq 5\}, where(x, y)$ denote a typical sample point.

Watch Video Solution

58. Events E and F are independent. Find $P(F), \quad \text{if} \quad P(E) = 0.35 and P(E \cup F) = 0.6.$

Watch Video Solution

59. Two dice are thrown together. Let A be the event getting 6 on the first die and B the event getting 2 on the second die. Are the events A and B independent?

Watch Video Solution

60. For a loaded die, the probabilities of outcomes are given as under: $P(1) = P(2) = \frac{2}{10}, P(3) = P(5) = P(6) = \frac{1}{10} and P(4) = \frac{3}{10}$ The die is thrown two times. Let A and B be the events as defined below A=Getting same number each time, B=Getting a total score of 10 or more. Determine whether or not A and B are independent events.

Watch Video Solution

61. 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

62. A bag contains 5 white, 7 red and 4 black balls. If four balls are drawn one by one with replacement, what is the probability that none is white?

Watch Video Solution

63. If $P(A) = 0.4, P(B) = p, P(A \cup B) = 0.6$ and if A and B are given to be independent events, find the value of p.

Watch Video Solution

64. Let A and B be two independent events. The probability of their simultaneous occurrence is 1/8 and the probability that neither occurs is 3/8. Find $P(A) and P(B)$.

Watch Video Solution

65. A class consists of 80 students, 25 of them are girls and 55 are boys. If 10 of them are rich and the remaining are poor and also 20 of them are intelligent, then the probability of selecting an intelligent rich girls is $5/128$ b. $25/128$ c. $5/512$ d. none of these

Watch Video Solution

66. Two dice are thrown. Find the probability of getting an odd number on the first die and a multiple of 3 on the other.

Watch Video Solution

67. A scientist has to make a decision on each of the two independent events I and II. Suppose the probability of error in making decision on event I is 0.02 and that on event II is 0.05. Find the probability that the scientist will make the correct decision on (i) both events (ii) only one event

Watch Video Solution

68. In two successive throws of a pair of dice, determine the probability of getting a total of 8 each time.

Watch Video Solution

69. A, B and C shot to hit a target. If A hits the target 4 times in 5 trails, B hit it 3 times in 4 trials and C hits 2 time in 3 trials; what is the probability that the target is hit by a least 2 person?

Watch Video Solution

70. A company has estimated that the probabilities of success fro there products introduced in the market are $\frac{1}{3}, \frac{2}{5} and \frac{2}{3}$ respectively. Assuming independence, find the probability that the three products are successful. none of the products is successful,

Watch Video Solution

71. A can solve 90% of the problems given in a book and B can solve 70%. What is the probability that at least one of them will solve the problem, selected at random from the book?

Watch Video Solution

72. A bag contains 5 white, 7 red and 8 black balls. Four balls are drawn one by one with replacement, what is the probability that at least one is white?

Watch Video Solution

73. If two switches $S_1 and S_2$ have respectively 90% and 80% chances of working. Find the probabilities that each of eth following circuits will work.

Watch Video Solution

74. The machine operates if all of its three components function. The probability that the first component fails during the year is 0.14, the second component fails is 0.10 and the third component fails is 0.05. What is the probability that the machine will fail during the year?

Watch Video Solution

75. An anti aircraft gun take four shots at an enemy plane moving away from it. The probability of hitting the plane at the first, second, third and fourth shot are 0.4, 0.3, 0.2 and 0.1 respectively. The probability that the gun hit the plane is

A. 0.25

B. 0.21

C. 0.16

D. 0.6976

Answer: null

Watch Video Solution

76. An article manufactured by a company consists of two parts X and Y. In the process of manufacture of the part X, 9 out of 100 parts may be defective. Similarly, 5 out of 100 are likely to be defective in the manufacture of part Y. Calculate the probability that the assembled product will not be defective.

Watch Video Solution

77. To test the quality of electric bulbs produced in as factory, two bulbs are randomly selected from a large sample without replacement. If either bulb is defective, the entire lot is rejected. Suppose a sample of 200 bulbs contains 5 defective bulbs. Find the probability that the sample will be rejected.

Watch Video Solution

78. A bag contains n white and n red balls. Pairs of balls are drawn without replacement until the bag is empty. Show that the probability that each pair consists of one white and one red ball is $\frac{2^n}{\hat{} (2n)C_n}$

Watch Video Solution

79. If $AandB$ are two events such that $P(A) = 0.5, P(B) = 0.6 and P(A \cup B) = 0.8$, find $P(A/B) and P(B/A)$.

Watch Video Solution

80. If P(notA) $= 0.7$, $P(B) = 0.7 and P(B/A) = 0.5$, then find $P(A/B) and P(A \cup B)$.

Watch Video Solution

81. If $P(A) = 0.8$, $P(B) = 0.5$ and $P(B \mid A) = 0.4$, find (i) $P(A \cap B)$ (ii) $P(A \mid B)$ (iii) $P(A \cup B)$

Watch Video Solution

82. A fair dice is rolled. Consider the following events: A={1,2,5},B={2,3} and C={2,3,4,5} Find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{C}\right)$

Watch Video Solution

83. Three events A , B and C have probabilities $\frac{2}{5}, \frac{1}{3} and \frac{1}{2}$ respecively. Given tat $P(A \cap C) = \frac{1}{5} and P(B \cap C) = \frac{1}{4}$, find the values of $P(C/B) and P\left(A^{-} \cap C^{-}\right)$.

Watch Video Solution

84. A die is rolled twice and the sum of the numbers appearing on them is observed to be 7. What is the conditional probability that the number 2 has appeared at least once?

Watch Video Solution

85. A black and a red dice are rolled. (a) Find the conditional probability of obtaining a sum greater than 9. Given that the black die resulted in a 5. (b) Find the conditional probability of obtaining the sum 8? given that the red die resulted in a number less than 4.

Watch Video Solution

86. Two integers are selected at random from integers 1 through 11. If the sum is even, find the probability that both the numbers are odd.

Watch Video Solution

87. A factory has three machines A, B and C, which produce 100, 200 and 300 items of a particular type daily. The machines produce 2%, 3% and 5% defective items respectively. One day when the production was over, an item was picked up randomly and it was found to be defective. Find the probability that it was produced by machine A.

Watch Video Solution

88. A company has two plant to manufacture bicycles. The first plant manufactures 60% of the bicycles and the second plant 40%. Out of that 80% of the bicycles are rated of standard quality at the first plant and 90% of standard quality at the second plant. A bicycle is picked up at

random and found to be standard quality. Find the probability that it comes from the second plant.

Watch Video Solution

89. For A, B and C the chances of being selected as the manager of a firm are in the ratio 4:1:2 respectively. The respective probabilities fro them to introduce a radical change in marketing strategy are 0.3, 0.8, and 0.5. if the change does take place, find the probability that it is due to the appointment of B or C.

Watch Video Solution

90. A bag contains 1 white and 6 red balls, and a second bag contains 4 white and 3 red balls. One of the bags is picked up at random and a ball is randomly drawn from it, and is found to be white in colour. Find the probability that the drawn ball was from the first bag.

Watch Video Solution

91. A man is known to speak truth 3 out of 4 times. He throws a die and report that it is a 6. Find the probability that it is actually 6.

Watch Video Solution

92. By examining the chest X-ray, probability that T.B is detected when a person is actually suffering is 0.99. the probability that the doctor diagnoses incorrectly that a person has T.B. on the basis of X-ray is 0.001. in a certain city 1 in 1000 persons suffers from T.B. A person is selected at random is diagnosed to have T.B. What is the chance that he actually has T.B.?

Watch Video Solution

93. In answering a question on 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 with probability 1/4. what is the probability that the student knows the answer given that he answers correctly.?

Watch Video Solution

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

Watch Video Solution

95. A committee of 4 students is selected at random from a grourp consisting of 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

96. A bag contains 3 red and 4 black balls and another bag has 4 red and 2 black balls. One bag is selected at random and from the selected bag a ball is drawn. Let A be the event that the first bag is selected, B be the event that the second bag is selected and C be the event that the ball drawn is red. Find $P(A)$, $P(C/A)$ and $P(C/B)$.

Watch Video Solution

97. 10% of the bulbs produced in a factory are of red colour and 2% are red and defective. If one bulb is picked at random, determine the probability of its being defective if it red.

Watch Video Solution

98. Three distinguishable balls are distributed in 3 cells. The probability that all three occupy the same cell, given that atleast two of them are in

same cell. (A) $\frac{1}{7}$ (B) $\frac{1}{9}$ (C) $\frac{1}{6}$ (D)None of these

Watch Video Solution

99. An electronic assembly consists of two sub-systems say A and B. From previous testing procedures, the following probabilities are assumed to be known. $P(A \text{ fails}) = 0.2$, $P(B \text{ fails alone}) = 0.15$, $P(A \text{ and } B \text{ Fail}) = 0.15$. Evaluate the following probabilities: (i) $P(A \text{ fails} / B \text{ has failed})$ (ii) $P(A \text{ fails alone})$

Watch Video Solution

100. Three dice are thrown at the same time. Find the probability of getting three two's if it is known that the sum of the numbers on the dice was a six.

Watch Video Solution

101. A die is thrown three times. Events A and B are defined as follows: 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

102. An urn contains four tickets with numbers $112, 121, 211, 222$ and one ticket is drawn. Let $A_i(i = 1, 2, 3)$ be the event that the i^{th} digit of the number on ticket drawn is 1. Discuss the independence of the events A_1, A_2, A_3

Watch Video Solution

103. 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 2.

Watch Video Solution

Watch Video Solution

104. A letter is known to have come either from LONDON or CLIFTON. On the envelope just two consecutive letters ON are visible. What is the probability that the letter has come from (i) LONDON (ii) CLIFTON?

Watch Video Solution

105. An item is manufactured by three machines A, B and C. Out of hte total number of items manufactured during a specified period, 50% are manufacture on machine A, 30% on B and 20% on C. 2% of the items produced on A and 2% of items produced on B are defective and 3% of these produced n C are defective. All the items stored at one godown. One item is drawn at random and is found to be defective. What is the probability that it was manufactured on machine A?

Watch Video Solution

106. A letter is known to come either from TATANAGAR or CALCUTTA. On the envelope, Just to consecutive letters TA are visible. What is the probability that the letter came from (i) TATANAGAR (ii) CALCUTTA

Watch Video Solution

107. Let d_1, d_2, d_3 be thee mutually exclusive diseases. Let $S = \{s_1, s_2, s_{3,}, \ldots . , s_6\}$ be the set of observable symptoms of these diseases. For example s_1 is the shortness of breath, s_2 is loss of weight, s_3 is fatigue etc. Suppose a random sample of 10,000 patients contains 3200 patients with disease d_1, 3500 with disease $d_2 and 3300$ with disease d_3. Also, 3100 patients with disease d_1, 3300 with disease $d_2 and 3000$ with disease d_3 show the symptom S. Knowing that the patient has symptom S, the doctor wishes to determine the patients illness. One the basis of this information, what should the doctor conclude?

Watch Video Solution

108. Urn A contains 2 white, 1 black and 3 red balls, urn B contains 3 white, 2 black and 4 red balls and urn C contains 4 white, 3 black and 2 red balls. One urn is chosen at random and 2 balls are drawn at random from the urn. If the chosen balls happen to be red and black, what is the probability that both balls come from urn B?

Watch Video Solution

109. There are 3 bags, each containing 5 white balls and 3 black balls. Also there are 2 bags, each containing 2 white balls and 4 black balls. A white ball is drawn at random. Find the probability that this white ball is from a bag of the first group.

Watch Video Solution

110. A shopkeeper sells three types of seeds A_1, $A_2 and A_3$ They are sold as a mixture where the proportions are 4:4:2 respectively. The germination rate of three types of seeds are 45%, 60% and 35%. Calculate

the probability (i)that it will germinate given that the seed is of type A_3 . (ii)of a randomly chosen seed to germinate. (iii)That it is of type A_2 given that a randomly chosen seed does not germinate.

Watch Video Solution

111. Suppose you have two coins which appear identical in your pocket. You know that one is fair and one is 2-headed. If you take one out, toss it and get a head, what is the probability that it was fair coin?

Watch Video Solution

112. Three bags contain a number of red and white balls are as follow: Bag I:3 red balls; Bag II: 2 red balls and 1 white ball; Bag III: 3 white balls if a white ball is selected, what is the probability that it came from (i) Bag II (ii) Bag III

Watch Video Solution

113. For any two events A and B associated to a random experiment, prove that: $P(A) = P(A \cap B) + P\left(A \cap \overline{B}\right)$,

$P(B) = P(A \cap B) + P\left(\overline{A} \cap B\right)$,

$P(A \cup B) = P(A \cap B) + \left(A \cap \overline{B}\right) + P\left(\overline{A} \cap B\right)$

Watch Video Solution

114. The probability of simultaneous occurrence of at least one of two events A and B is p. If the probability that exactly one of A, B occurs is q then prove that $P\left(\overline{A}\right) + P\left(\overline{B}\right) = 2 - 2p + q$

Watch Video Solution

115. A die is rolled thrice, find the probability of getting a larger number each time than the previous number.

Watch Video Solution

116. If the letters of the word ATTRACTION are written down at random, find the probability that (i) all the T's occur together, (ii) no two T's occur together.

Watch Video Solution

117. If each element of a second order determinant is either zero or one, what is the probability that the value the determinant is non-negative?

Watch Video Solution

118. Each coefficient in the equation $ax^2 + bx + c = 0$ is determined by throwing an ordinary six faced die. Find the probability that the equation will have real roots.

Watch Video Solution

119. Find the number of ways in which the birthday of six different persons will fall in exactly two calendar months.

Watch Video Solution

120. A fair dice is rolled. Consider the following events: A={1,2,5},B={2,3} and C={2,3,4,5} Find (i) $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{C}\right)$

Watch Video Solution

121. A coin is tossed three times. Find $P(E/F)$ in each of the following: (i)$E =$ Head on the third toss, $F =$ Heads on first two tosses (ii)$E =$ At least two heads, $F =$ At most two heads (iii)$E =$ At most two tails, $F =$ At least one tail

Watch Video Solution

122. A bag contains 6 red and 5 blue balls and another bag contains 5 red and 8 blue balls. A ball is drawn from the first bag and without noticing its colour is put in the second bag. A ball is then drawn from the second bag. Find the probability that the ball drawn is blue in colour.

Watch Video Solution

123. Find the mean and variance of Binomial Distribution if p=1/2 ,n=1

Watch Video Solution

124. One bag contains 4 white and 5 black balls. Another bag contains 6 white and 7 black balls. A ball is transferred from first bag to the second bag and then a ball is drawn from the second bag. Find the probability that the ball dawn is white.

Watch Video Solution

125. There are two bags. The first bag contains 5 white and 3 black balls and the second bag contains 3 white and 5 black balls. Two balls are drawn at random from the first bag and are put into the second bag without noticing their colours. Then two balls are drawn from the second bag. Find the probability that the balls are white and black.

Watch Video Solution

126. There are 3 red and 5 black balls in bag A; and red and 3 black balls in bag B. One ball is drawn from bag A; and two from bag B. Find the probability that out of the 3 balls drawn one is red and 2 are black.

Watch Video Solution

127. Find the probability of drawing a one-rupee coin from a purse with two compartments one of which contains 3 fifty-paise coins and 2 one-rupee coins and other contains 2 fifty-paise coins and 3 one-rupee coins.

Watch Video Solution

128. A probability of student A passing an examination is 2/9 and of student B passing is 5/9. Assuming the two events: A passes, B passes as independent, find the probability of : (i) only A passing the examination (ii) only one of them passing the examination.

Watch Video Solution

129. X is taking up subjects Mathematics, Physics and Chemistry in the examination. His probabilities of getting grade A in these subjects are 0.2, 0.3, and 0.5 respectively. Find the probability; that he gets (i) Grade A in all subjects (ii) Grade A in no subject (iii) Grade A in two subjects

Watch Video Solution

130. A and B throw alternately a pair of dice. A wins if he throws 6 before B throws 7 and B wins if he throws 7 before A throws 6. Find their respective chance of winning, if A begins.

Watch Video Solution

131. Three persons A, B, C throw a die in succession till one gets a six and wins the game. Find their respective probabilities of wining , if A begins.

Watch Video Solution

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

Watch Video Solution

133. Two thirds of the students in a class are boys and the rest girls. It is known that the probability of a girl getting a first class is 0.25 and that of a boy getting a first class is 0.28. find the probability that a student chosen at random will get first class marks in the subject.

Watch Video Solution

134. An urn contains m white and n black balls. A ball is drawn at random and is put back into the urn along with k balls of the same colour as that of the ball drawn. a ball is again drawn at random. Show that the probability of drawing a white ball now does not depend on k.

Watch Video Solution

135. A box has 5 blue and 4 red balls. One balls is drawn at random and not replaced. Its colour is also not noted. Then another ball is drawn at random. What is the probability of second ball being blue?

Watch Video Solution

136. A bag contains 3 white and 2 black balls and another bag contains 2 white and 4 black balls. One bag is chosen at random. From the selected bag, one ball is drawn. find the probability that the ball drawn is white.

Watch Video Solution

137. A bag contains $(2n+1)$ coins. It is known that n of these coins have a head on both sides whereas the rest of the coins are fair. A coin is picked up at random from the bag and is tossed. If the probability that the toss results in a head is $\frac{31}{42}$, determine the value of n.

Watch Video Solution

138. One bag contains 4 white and 5 black balls. Another bag contains 6 white and 7 black balls. A ball is transferred from first bag to the second bag and then a ball is drawn from the second bag. Find the probability that the ball dawn is white.

Watch Video Solution

139. A factory has two machines A and B. Past records show that the 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 were defective and 1% produced by machine B were defective. If an item is drawn at random, what is the probability that it is defective?

Watch Video Solution

140. A company has two plants to manufacture scooters. Plant I manufactures 70% of the scooters and Plant II manufactures 30%. At Plant I, 80% of the scooters are rated as of standard quality and at Plant II, 90% of the scooters are rated as of standard quality. A scooter is chosen at random and is found to be of standard quality. What is the probability that it has come from Plant II?

Watch Video Solution

141. A bag contains 6 red and 8 black balls and another bag contains 8 red and 6 black balls. A ball is drawn from the first bag and without noticing its colour is put in the second bag. A ball is drawn from the second bag. Find the probability that the ball drawn is red in colour.

Watch Video Solution

142. Two balls drawn from an urn containing 2 white, 3 red and 4 black balls. What is the probability that the ball is red?

Watch Video Solution

143. An urn contains 5 white and 8 black balls. Two successive drawings of three balls at a time are made such that the balls are not replaced before the second draw. Find the probability that the first draw gives 3 white balls and second draw gives 3 black balls.

Watch Video Solution

144. A pair of dice thrown. If the two numbers appearing on them are different, find the probability (i) the sum of the numbers is 6 (ii) the sum of the numbers is 4 or less (iii) the sum of the number is 4.

Watch Video Solution

Watch Video Solution

145. A and B are two events such that $P(A) \neq 0$. Find $P(B \mid A)$, if (i) A is a subset of B (ii) $A \cap B = \varphi$

Watch Video Solution

146. A die is thrown three times, if the first throw is a four, find the chance of getting 15 as the sum.

Watch Video Solution

147. Two integers are selected at random from integers 1 through 11. If the sum is even, find the probability that both the numbers are odd.

Watch Video Solution

148. Find the probability of drawing a diamond card in each of the two consecutive draws from a well shuffled pack of cards, if the card drawn is not replaced after the first draw.

Watch Video Solution

149. A bag contains 10 white and 15 black balls. Two balls are drawn in succession without replacement. What is the probability that first is white and second is black?

Watch Video Solution

150. A bag contains 19 tickets, numbered from 1 to19. A ticket is drawn and then another ticket is drawn without replacement. Find the probability that both tickets will show even numbers.

Watch Video Solution

151. A bag contains 5 white, 7 red and 8 black balls. If four balls are drawn one by one without replacement, find the probability of getting all white balls.

Watch Video Solution

152. Bag A contains 4 red and 5 black balls and bag B contains 3 red and 7 black balls. One ball is drawn from bag A and two from bag B. Find the probability that out of 3 balls drawn, two are black and one is red.

Watch Video Solution

153. 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 the three marbles drawn be black, if the first marble is red?

Watch Video Solution

154. Two cards are drawn from a well shuffled pack of 52 cards without replacement. What is the probability that one is a red queen and the other is a king of black colour?

Watch Video Solution

155. Two cards are drawn without replacement from a well shuffled pack of 52 cards. Find the probability that one is a spade and other is a queen of red colour.

Watch Video Solution

156. 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

157. Cards are numbered 1 to 25. Two cards are drawn one after the other. Find the probability that the number on one card is multiple of 7 and on the other it is a multiple of 11.

Watch Video Solution

158. Two dice are thrown together and the total score is noted. The event E, F and G are a total 4, a total of 9 or more, and a total divisible by 5, respectively. Calculate $P(E)$,$P(F)$and $P(G)$ and decide which pairs of events, if any, are independent.

Watch Video Solution

159. Find the minimum value of f(x)=$\frac{\pi^2}{16\cot^{-1}(-x)} - \cot^{-1} x$

Watch Video Solution

160. A bag contains 4 white and 2 black balls. Another contains 3 white and 5 black balls. If the ball is drawn from each bag, find the probability that (i) both are white; (ii) both are black (iii) one is white and on is black.

Watch Video Solution

161. A box contains 3 red and 5 blue balls. Two balls are drawn one by one at as time at random without replacement. Find the probability of getting 1 red and 1 blue ball.

Watch Video Solution

162. Twelve balls are distributed among three boxes, find the probability that the first box will contains three balls.

Watch Video Solution

163. Two numbers $b\,and\,c$ are chosen at random with replacement from the numbers 1, 2, 3, 4, 5, 6, 7, 8 and 9. Find the probability that $x^2+bx+c>0\,f\,\text{or}\quad all\,x\in R.$

Watch Video Solution

164. In how many ways three girls and nine boys can be seated in two vans, each having numbered seats, 3 in the front and 4 at the back? How many seating arrangements are possible if 3 girls sit together in a back row on adjacent seats?Now, if all the seating arrangements are equally likely, what is the probability of 3 girls sitting together in a back row on adjacent seats?

Watch Video Solution

165. What is the probability that four 'S' comes consecutively in the word 'MISSISSIPPI` when rearranged?

Watch Video Solution

166. A basket contains 20 apples and 10 oranges out of which 5 apples and 3 oranges are defective. If a person takes out 2 at random what is the probability that either both are apples or both are good?

Watch Video Solution

167. The probability that a person will get an electric contact is $\frac{2}{5}$ and the probability that he will not get plumbing contract is $\frac{4}{7}$. If the probability of getting at least one contract is $\frac{2}{3}$, what is the probability that he will get both.

Watch Video Solution

168. Let A ,B ,C be three events. If the probability of occurring exactly one event out of A and B is $1-x$, out of B and C is $1-2x$, out of C and A is $1-x$ and that of occurring three events simultaneously is x^2 ,

then prove that the probability that at least one out of A, B, C will occur is greater than 1/2 .

Watch Video Solution

169. For the three events

$\mathrm{A, B, and C, P(exactly one of the events A or B occurs)} = \mathrm{P(exact}$
$= \mathrm{p}$

and

$\mathrm{P(all the three event so ccurs imultaneously)} = \mathrm{p}^2, \mathrm{where 0}$

Then, find the probability of occurrence of at least one of the three events $A, B, and C$.

Watch Video Solution

170. The probabilities that a student passes in Mathematics,Physics and Chemistry are m, p and c, respectively. Of these subjects, the student has a 75% chance of passing in at least one, a 50% chance of passing in at least two and a 40% chance of passing in exactly two. Which of the following relations are true?

Watch Video Solution

171. Let there be a bag containing 5 white and 4 red balls. Two are drawn from the bag one after the other without replacement. Consider the following events: Find the probability that both balls are white.

Watch Video Solution

172. 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

173. Determine $P(E \mid F)$in :Two coins are tossed once, where(i) E: tail appears on one coin, F : one coin shows head(ii) E : no tail appears, F : no head appears

Watch Video Solution

Watch Video Solution

174. A couple has two children. Find the probability that Both the children are boys, if it is known that the older child is a boy. Both the children are girls, if it is known that he older child is a girl. Both the children are boys, if it is known that at least one of the children is a boy.

Watch Video Solution

175. 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

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

Watch Video Solution

177. A black and a red dice are rolled. (a) Find the conditional probability of obtaining a sum greater than 9. Given that the black die resulted in a 5. (b) Find the conditional probability of obtaining the sum 8? given that the red die resulted in a number less than 4.

Watch Video Solution

178. Consider the experiment of throwing a die. if a multiple of 3 comes tip. 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

179. 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

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

Watch Video Solution

181. Given that $A \text{ and } B$ are two events such that $P:(A)=0.6,\ P(B)=0.3 \text{ and } P(A\cap B)=0.2,$ find $P\left(\frac{A}{B}\right) \text{and } P(B/A).$

Watch Video Solution

182. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$, find(i) $P(A \cap B)$ (ii) $P(A \mid B)$ (iii) $P(B \mid A)$

Watch Video Solution

183. Ten cards numbered1 through 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

184. Assume that each child born 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 i. the youngest is a girl, ii. at least one is a girl?

Watch Video Solution

185. Given that the two number 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

186. A die is thrown three times, find the probability that 4 appears on the third toss if it is given that 6 and 5 appear respectively on first two tosses.

Watch Video Solution

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

Watch Video Solution

188. If $P(A) = 0.4$, $P(B) = 0.3$ and $P(B/A) = 0.5$, find $P(A \cap B)$ and $P(A/B)$.

Watch Video Solution

189. If A and B are two events such that $P(A) = \frac{1}{3}$, $f \in d\, P(B) = \frac{1}{5} and\, P(A \cup B) = \frac{11}{30}$, find $P(A/B)$ and $P(B/A)$.

Watch Video Solution

190. A couple has two children. Find the probability that both the children are (i) males, if it is known that at least one of the children is male. (ii) females, if it is known that the elder child is a female.

Watch Video Solution

191. From a pack of 52 cards, two are drawn one by one without replacement. Find the probability that both of them are kings.

Watch Video Solution

192. From a pack of 52 cards, 4 are drawn one by one without replacement. Find the probability that all are aces (or, kings).

Watch Video Solution

193. Find the chance of drawing 2 white balls in succession from a bag containing 5 red and 7 white balls, the ball first drawn not being replaced.

Watch Video Solution

194. A bag contains 25 tickets, numbered from 1 to 25. A ticket is drawn and then another ticket is drawn without replacement. Find the probability that both tickets will show even numbers.

Watch Video Solution

195. From a deck of cards, three cards are drawn on by one without replacement. Find the probability that each time it is a card of spade.

Watch Video Solution

196. From a pack of 52 cards, two cards are drawn at random one after the other with replacement. What is the probability that both cards are kings.

Watch Video Solution

197. A bag contains 20 tickets, numbered from 1 to 20. Two tickets are drawn without replacement. What is the probability that the first ticket has an even number and the second an odd number.

Watch Video Solution

198. An urn contains 3 white, 4 red and 5 black balls. Two balls re drawn one by one without replacement. What is the probability that at least one ball is black?

Watch Video Solution

199. A bag contains 5 white, 7 red and 3 black balls. If three balls are drawn one by one without replacement, find the probability that none is red.

Watch Video Solution

200. A card is drawn from a well-shuffled deck of 52 cards and then a second card is drawn. Find the probability that the first card is a heart and the second card is a diamond if the first card is not replaced.

Watch Video Solution

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

Watch Video Solution

202. 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

203. A box of oranges is inspected by examining three randomly selected oranges drawn without replacement. If all the three oranges are good, die 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

204. A bag contains 4 white, 7 black and 5 red balls. Three balls are drawn one after the other without replacement. Find the probability that the balls drawn are white, black and red respectively.

Watch Video Solution

205. If A and B are two events such that $P(A) = 0.3,\ P(B) = 0.6\ and\ P(B/A) = 0.5$ find $P(A/B)\ and\ P(A \cup B)$.

Watch Video Solution

206. If $P(A) = \frac{3}{8},\ P(B) = \frac{1}{2} and\ P(A \cap B) = \frac{1}{4},\ f \in d\ P(A/B) and\ P(B/A$

Watch Video Solution

207. A couple has 2 children. find the probability that the both are boys if it is given that (i) one of the child is boy (ii) the older child is boy.

Watch Video Solution

208. Consider a random experiment in which a coin is tossed and if the coin shows head it is tossed again but if it shows a tail then a die is tossed. If 8 possible outcomes are equally likely. Find the probability that the die shows a number greater than 4 if it is known that the first throw of the coin results in a tail.

Watch Video Solution

209. A coin is tossed twice and the four possible outcomes are assumed to be equally likely. If A is the event, both head and tail have appeared, and B be the event, at most one tail is observed, find $P(A),\ P(B),\ P(A/B)\ and\ P(B/A)$.

Watch Video Solution

210. A coin is tossed, then a die is thrown. Find the probability of obtaining a 6 given that head came up.

Watch Video Solution

211. Two coins are tossed. What is the probability of coming up two heads if it is known that at least on head comes up.

Watch Video Solution

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

Watch Video Solution

213. 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

214. If $P(A)=\frac{7}{13},\ P(B)=\frac{9}{13} and\ P(A\cap B)=\frac{4}{13}, f\in d\ P(A/B)$.

Watch Video Solution

215. if A and B are events such that $P(A)=0.6,\ P(B)=0.3\ and\ P(A\cap B)=0.2,\ f\in d\ P(A/B) and\ P(B$

Watch Video Solution

216. If A and B are two events such that $P(A \cap B) = 0.32 \, and \, P(B) = .5, then P(A/B)$

Watch Video Solution

217. If $P(A) = 0.4, \; P(B) = 0.8, \; P(B/A) = 0.6$. Find $P(A/B)$ and $P(A \cup B)$

Watch Video Solution

218. If A and B are two events such that: $P(A) = 1/3$, $P(B) = 1/4$ and $P(A \cup B) = 5/12$, find $P(A/B)$ and $P(B/A)$.

Watch Video Solution

219. If $P(A) = \frac{6}{11}$, $P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$, find(i) $P(A \cap B)$ (ii) $P(A \mid B)$ (iii) $P(B \mid A)$

Watch Video Solution

220. If $P(A)\frac{7}{13}, P(B)=\frac{9}{13}$ and $P(A\cap B)=\frac{4}{13}$, find $P\left(\frac{A}{B}\right)$.

Watch Video Solution

221. If A and B are two events such that: $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{3}$ and $P(A\cap B)=\frac{1}{4}$, find (i) $P(A/B)$, (ii) $P(B/A)$, (iii)$P(A\cup B)$.

Watch Video Solution

222. If A and B are two events such that 2 $P(A)=P(B)=\frac{5}{13} f\in dP(A\cap B)$.

Watch Video Solution

223. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$, find(i) $P(A \cap B)$ (ii) $P(A \mid B)$ (iii) $P(B \mid A)$

Watch Video Solution

224. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$, find(i) $P(A \cap B)$ (ii) $P(A \mid B)$ (iii) $P(B \mid A)$

Watch Video Solution

225. If $P(A) = \frac{6}{11}, P(B) = \frac{5}{11}$ and $P(A \cup B) = \frac{7}{11}$, find(i) $P(A \cap B)$ (ii) $P(A \mid B)$ (iii) $P(B \mid A)$

Watch Video Solution

226. Determine $P(E \mid F)$in :A coin is tossed three times, where (i) E : Head on third toss, F : heads on first two tosses(ii) E : at least two heads,

F : at most two heads(iii) E : at most two tails, F : at least one tail

Watch Video Solution

227. Two coins are tossed once. Find $P\left(\frac{A}{B}\right)$ in each of the following : $A =$ Tail appears on one coin, $B =$ One coin shows head. $A =$ No tail appears, $B =$ No head appears.

Watch Video Solution

228. A die is thrown three times. Find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{A}\right)$, if $A = 4$ appears on the third toss, $B = 6$ and 5 appear respectively on first two tosses.

Watch Video Solution

229. Mother, father and son line up at random for a family picture. If A and B are two events given by $A =$ Son on one end, $B =$ Father in the

middle, find $P\left(\frac{A}{B}\right)$ and $P\left(\frac{B}{A}\right)$.

Watch Video Solution

230. A dice 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

231. Two dice are thrown. Find the probability that the numbers appeared has the sum 8, if it is known that the second die always exhibits 4.

Watch Video Solution

232. A pear of dice is thrown. Find the probability of getting 7 as the sum, if it is known that the second die always exhibits an odd number.

Watch Video Solution

233. A pair of dice is thrown. Find the probability of getting 7 as the sum of it is known that hte second die always exhibits a prime number.

Watch Video Solution

234. A die is rolled. If the outcome is an odd number, what is the probability that it is prime?

Watch Video Solution

235. A pair of dice is thrown. Find the probability of getting the sum 8 or more, if 4 appears on the first die.

Watch Video Solution

236. Find the probability that the sum of the numbers showing on two dice is 8, given that at least one die does not show five.

Watch Video Solution

237. Two integer are selected at random from integers 1 to 11. If the sum i seven, find the probability that both the numbers are odd.

Watch Video Solution

238. A dice 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

239. Two dice are thrown and it is known that the first die shows a 6. Find the probability that the sum of the numbers showing on two dice is 7.

Watch Video Solution

240. A pair of dice is thrown. Let E be the event that the sum is greater than or equal to 10 and F be the event 5 appears on the first - die. Find $P\left(\frac{E}{E}\right)$. if F is the event 5 appears on at least one die, find $P\left(\frac{E}{F}\right)$.

Watch Video Solution

241. The probability that a student selected at random from class will pass in Mathematics is 4/5, and the probability that he/she passes in Mathematics and Computer Science is 1/2 . What is the probability that he/she will pass in Computer Science if it is known that he/she has passed in Mathematics?

Watch Video Solution

242. The probability that a certain person will buy a shirt is 0.2, the probability that he will buy a trouser is 0.3, and the probability that he will buy a shirt given that he buys a trouser is 0.4. Find the probability that he will buy both a shirt and a trouser. Find also the probability that he will but a trouser given that he buys a shirt.

Watch Video Solution

243. 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

244. Ten cards numbered 1 through 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

245. Assume that each child born 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 i. the youngest is a girl, ii. at least one is a girl?

Watch Video Solution

246. A coin is tossed thrice. Let the event E be the first throw results in a head and the event F be the last throw results in a tail. Find whether the events E and F are independent.

Watch Video Solution

247. 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

248. 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 (EE), (E, G) and (F,G), which are independent? Which are dependent?

Watch Video Solution

249. 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

250. 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

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

Watch Video Solution

252. A die is thrown once. F A is the event the number appearing is a multiple of 3 and B is the event the number appearing is even: Are the events A and B independent?

Watch Video Solution

253. Refer to question 1 above. If the die were fair, determine whether or not the events A and B are independent.

Watch Video Solution

254. If A and B are two events such that $P(A) = \frac{1}{2}, P(A \cup B) = \frac{3}{5}$ and $P(B) = p$, then find the value of p when:

(i) A and B are mutually exclusive

(ii) A and B are independent events.

Watch Video Solution

255. 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

256. If A and B are two independent events such that $P(A \cup B) = 2/15$ and $P(A \cup B) = 1/6$, then find $P(B)$.

Watch Video Solution

257. A bag contains 3 red and 5 black balls and second bag contains 6 red and 4 black balls. A ball is drawn from each bag. Find the probability that one is red and the other is black.

Watch Video Solution

258. A police man fires four bullets on a dacoit. The probability that the dacoit will be killed by one bullet is 0.6. What is the probability that the dacoit is still alive?

Watch Video Solution

259. A problem in mathematics is given to 3 students whose chances of solving it are $\frac{1}{2}; \frac{1}{3}; \frac{1}{4}$. What is the probability that the problem is solved?

Watch Video Solution

260. The odds against A solving the problem are 4 to 3 and the odds in favour of B solving the .problem are 7 to 5. Find the probability that the problem will be solved.

Watch Video Solution

261. The probability that a teacher will give an unannounced test during any class meeting is 1/5. If a student is absent twice, find the probability that the student will miss at least one test.

Watch Video Solution

262. What is the probability that series circuit with three switches $S_1,\ S_2 and\ S_3$ with probabilities $\frac{1}{3}, \frac{1}{2} and \frac{3}{4}$ respectively of functioning will work?

Watch Video Solution

263. A coin is tossed and a die is thrown. Find the probability that the outcome will be a head or a number greater than 4, or both.

Watch Video Solution

264. Probabilities of solving a specific problem in dependently 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 Exactly one of them solves the problem.

Watch Video Solution

265. Town has two fire extinguishing engines functioning independently. The probability of availability of each engine, when needed, is 0.95. what is the probability that (i)Neither of them is available when needed? (ii)An engine is available when needed? (iii)Exactly one engine is available when needed?

Watch Video Solution

266. A combination lock on a suitcase has 3 wheels, each labelled with nine digits from 1 to 9. If an opening combination is a particular sequence of three digits with no repeats, what is the probability of a person guessing the right combination ?

Watch Video Solution

267. A coin is tossed thrice and all the eight outcomes are assumed equally likely. In which of the following cases are the following events A and B are independent? (a)$A =$ the first thrown results in head, $B =$

the last thrown results in tail (b)$A =$ the number of heads is odd, $B =$ the number of tails is odd (c)$A =$ the number of heads is two, $b =$ the last throw results in head

Watch Video Solution

268. Prove that in throwing a pair of dice, the occurrence of the number 4 on the first die is independent of the occurrence of 5 on the second die.

Watch Video Solution

269. 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? (i) E : the card drawn is a spade F : the card drawn is an ace (ii) E : the card drawn is black F : the card drawn in a king

Watch Video Solution

270. A coin is tossed three times. Let the events A B, and C be defined as follows; A= first toss is head, B= second toss is head, and C= exactly two heads are tossed in a row. Check the independence of i. A and B ii. B and C and iii. C and A

Watch Video Solution

271. If A and B be two events such that $P(A) = 1/4,\ P(B) = 1/3$ and $P(A \cup B) = 1/2$ show that A and B are independent events.

Watch Video Solution

272. Given two independent events A and B such that $P(A) = 0.3\ and\ P(B) = 0.6$. Find: $P(A \cap B)$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

279. If $P(\neg B) = 0.65, \; P(A \cup B) = 0.85,$ and A and B are independent events then find $P(A)$.

Watch Video Solution

280. If A and B are tow independent events such that $P(A \cap B) = \frac{2}{15} and\ P(A \cap B) = \frac{1}{6}$, then find $P(A) and\ P(B)$.

Watch Video Solution

281. A and B are two independent events.The probability that both A and B occur is 1/6 and the probability that neither of them occurs is 1/3.Then the probability of the two events are respectively:

Watch Video Solution

282. If A and B are two independent events such that $P(A \cup B) = 0.60\ and\ P(A) = 0.2$, find $P(B)$.

Watch Video Solution

283. A die is tossed twice. Find the probability of getting a number greater than 3 on each toss.

Watch Video Solution

284. Given the probability that A can solve a problem is 2/3 and the probability that B can solve the same problem is 3/5. Find the probability that none of the two will be able to solve the problem.

Watch Video Solution

285. An unbiased die is tossed twice. Find the probability of getting 4, 5, 6 on the first toss and 1, 2, 3 or 4 on the second toss.

Watch Video Solution

286. A bag contains 3 red and 2 black balls. On ball is drawn from it at random. Its colour is noted and then it is put back in the bag. A second draw is made and the same procedure is repeated. Fid the probability of drawing i.tow red balls, ii. Two black balls, iii first red and second black ball.

Watch Video Solution

287. Three cards are drawn with replacement from a well shuffled pack of cards. Find the probability that the cards drawn are king, queen and jack.

Watch Video Solution

288. The probability that A hits a target is 1/3 and the probability that B hits it is 2/5 . What is the probability that the target will be , if each one of A and B shoots at the target?

Watch Video Solution

289. about to only mathematics

Watch Video Solution

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

Watch Video Solution

291. Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that i. both balls are red, ii. first ball is black and second is red, iii. One of them is black and other is red.

Watch Video Solution

292. An urn contains 4 red and 7 black balls. Two balls are drawn at random with replacement. Find the probability of getting i. 2 red balls, ii. 2 black balls, iii. One red and one black ball.

Watch Video Solution

293. The probabilities of two students A and B coming to the school in time are $\frac{3}{7}\backslash$ 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

294. A speaks truth n 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to i. contradict each other in stating the same fact? ii. agree in stating the same fact?

Watch Video Solution

Watch Video Solution

295. The probability of student A passing an examination is 3/7 and of student b passing is 5/7. Assuming the two events Apasses, B passes, as independent, find the probability of: Only A passing the examination Only one of them passing the examination

Watch Video Solution

296. A certain team wins with probability 0.7, loses with probability 0.2and ties with probability .1 the team plays three games. Find the probability that the team wins at least two of the games, but not lose.

Watch Video Solution

297. X is taking up subjects Mathematics, Physics and Chemistry in the examination. His probabilities of getting grade A in these subjects are 0.2,

0.3, and 0.5 respectively. Find the probability; that he gets (i) Grade A in all subjects (ii) Grade A in no subject (iii) Grade A in two subjects

Watch Video Solution

298. 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

Watch Video Solution

299. An electrical system has open-closed switches S_1, $S_2 and S_3$ as shown in fig. The switches operate independently of one another and the current will flow from $A \to B$ either if S_1 is closed or if both $S_2 and S_3$ are closed. If $P(S_1) = P(S_2) = P(S_3) = 1/2,$ then find the probability that the circuit will work. fig

Watch Video Solution

300. A bag contains 6 black and 3 white balls. Another bag contains 5 black and 4 white balls. If one ball is drawn from each bag, find the probability that these tow balls are of the same colour.

Watch Video Solution

301. A bag contains 3 red and 5 black balls and second bag contains 6 red and 4 black balls. A ball is drawn from each bag. Find the probability that one is red and the other is black.

Watch Video Solution

302. Two balls are drawn at a random with replacement from a box containing 10 black and 8 red balls. Find the probability that i. both the balls are red. Ii. first ball is black and second is red. iii. One of them is black and other is red.

Watch Video Solution

303. Two cards are drawn successively without replacement from a well shuffled pack of 52cards. Find the probability distribution of het number of aces.

Watch Video Solution

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

Watch Video Solution

305. Kamal and Monica appeared for n interview for two vacancies. The probability of Kamal's selection is 1/3 and that of Monika's selection is 1/5. Find the probability that Both of them will be selected None of them will be selected At least one of them will be selected Only one of them will be selected.

Watch Video Solution

306. A bag contains 3 white, 4 red and 5 black balls. Two balls are drawn one after the other, without replacement. What is the probability that one is white and the other is black?

Watch Video Solution

307. A bag contains 8 red and 3 green balls. Three balls are drawn one after another without replacement. Find the probability that at least two balls drawn are green.

Watch Video Solution

308. A and B toss a coin alternately till one of them gets a head and wins the game. If A starts the game, find the probability that B will win the game.

Watch Video Solution

309. Two cards are drawn from a well shuffled pack of 52 cards one after another without replacement. Find the probability that one of these red card and the other a black card?

Watch Video Solution

310. Tickets are numbered from 1 to 10. Two tickets are drawn one after the other art random. Find the probability that the number on one of the tickets is a multiple of 5 and on the other a multiple of 4.

Watch Video Solution

311. In a family the husband tells a lie in 30% cases and the wife in 35% cases. Find the probability that both contradict each other on the same fact.

Watch Video Solution

312. A husband and wife appear in an interview for two vacancies for the same post. The probability of husband's selection is 1/7 and that of wife's selection is 1/5. What is the probability that Both of them will be selected? Only one of them will be selected? None of them will selected?

Watch Video Solution

313. A bag contains 7 white, 5 black and 4 red balls. Four balls are drawn without replacement find the probability that t least three balls are black.

Watch Video Solution

314. A, B, and C are independent witness of an event which is known to have occurred. A speaks the truth three times out of four B four times out of five and C five times out of six. What is the probability that the occurrence will be reported truthfully be majority of three witnesses?

Watch Video Solution

Watch Video Solution

315. A bag contains 4 white and 2 black balls. Another contains 3 white and 5 black balls. If the ball is drawn from each bag, find the probability that (i) both are white; (ii) both are black (iii) one is white and on is black.

Watch Video Solution

316. A bag contains 4 white , 7black and 5 red balls. 4 balls are drawn with replacement. What is probability that at least two are white?

Watch Video Solution

317. A bag contains 4 red and 5 black balls, a second bag contain 3 red and 7 black balls. One ball is drawn at random from each bag, find the probability that the ball are of the same colour.

Watch Video Solution

318. There are three urns. A, B, and C . Urn A contains 4 red balls and 3 black balls. Urn B contains 5 red balls and 4 black balls urn c contains 4 red and 4 black balls. New balls is drawn from each of these urns. What is the probability that 3 balls drawn consist of 2 red balls and a black ball?

Watch Video Solution

319. A and B take turns in throwing two dice, the first to throw 9 being awarded the prize. Show that their chance of winning are in the ratio 9:8.

Watch Video Solution

320. A, B, and C in order toss a coin. The one to throw a head wins. What are their respective chances of winning assuming that the game may continue indefinitely?

Watch Video Solution

321. Three persons A, B, C throw a die in succession till one gets a six and wins the game. Find their respectively probabilities of winning.

Watch Video Solution

322. A and B take turns in throwing two dice, the first to throw 10 being awarded the prove, show that if A has the first throw, their chance of winning are in the ratio 12:11.

Watch Video Solution

323. Fatima and John appear in an interview for two vacancies for the same post. The probability of Fatimas selection is $\frac{1}{7}$ and that of Jonhs selection us $\frac{1}{5}$. what is the probability that Both of them will be selected? Only one of them will be selected? None of them will be selected?

Watch Video Solution

324. A bag contains 8 marbles of which 3 are blue and 5 are red. One marble is drawn at random, its colour is noted and the marble is replaced in the bag. A marble is again drawn from the bag and its colour is noted. Find the probability that he marble will be (i)blue followed by red, (ii)blue and red in any order (iiI)of the same colour

Watch Video Solution

325. An urn contains 7 red and 4 blue balls. Two balls redrawn at random with replacement. Find the probability of getting 2 red balls 2 blue balls one red and one blue ball.

Watch Video Solution

326. Out of 100 students, two sections of 40 and 60 are formed. If you and your friend are among the 100 students, what is the probability that (a) you both enter the same section? (b) you both enter the different sections?

Watch Video Solution

327. In a hockey match, both teams A and B scored same number of goals upto the end of the game, so to decide the winner, the referee asked both the captains to throw a die alternatively and decide that the team, whose captain gets a first six, 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 refree was fair or not.

Watch Video Solution

328. A bag contains 3 white and 2 black balls and another bag contains 2 white and 4 black balls. One bag is chosen at random. From teh selected bag, one ball is drawn. find the probability that the ball drawn is white.

Watch Video Solution

329. A bag A contains 4 black and 6 red balls and bag B contains 7 black and 3 red balls. A die is thrown. If 1 or 2 appears on it, then bag a is chosen, otherwise bag B. If two balls are drawn (without replacement) from the selected bag, find the probability of one of them being red and another black.

Watch Video Solution

330. A person has undertaken a construction job. The probabilities are 0.65 that there will be strike. 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 ther

Watch Video Solution

331. A bag A contains 5 white and 6 black balls. Another bag B contains 4 white and 3 black balls. A ball is transferred from bag A to the bag B and

then a ball is taken out of the second bag. Find the probability of this ball being black.

Watch Video Solution

332. A purse contains 2 silver and 4 copper coins. A second purse contains 4 silver and 3 copper cons. If a coin is pulled at random from one of the two purses, what is the probability that it is a silver coin?

Watch Video Solution

333. One bag contains 4 yellow and 5 red balls. Another bag contains 6 yellow and 3 red balls. A ball is transferred from the first bag to the second bag and then a ball is drawn from the second bag. Find the probability that ball drawn is yellow.

Watch Video Solution

334. The contents of three bags, I, II and III are s follows: Bag I:1 white, 2 back and 3 red balls Bag II: 2 white, 1 black and 1 red ball; Bag III: 4 white, 5 black and 3 red balls, A bag is chosen at random and two balls are drawn. what is the probability that the balls are white and red?

Watch Video Solution

335. A unbiased coin is tossed. If the result is a head a pair of unbiased dice is rolled and the sum of the numbers obtained is noted. If the result is a tail, card from a well shuffled pack of eleven cards numbered 2, 3, 4, ...12 is picked and the number on the card is noted. What is the probability that the noted number is either 7 or 8?

Watch Video Solution

336. The bag A contains 8 white and 7 black balls while the 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 bag B. Then a ball is randomly drawn out from it. Find the probability that ball drawn is white.

Watch Video Solution

337. A bag contains 4 white and 5 black balls and another bag contains 3 white and 4 black balls. A ball is taken out from the first bag and without seeing its colour is put in the second bag.A ball is taken out from the latter. Find the probability that the ball drawn is white.

Watch Video Solution

338. An urn contains 10 white and 3 black balls.Another urn contains 3 white and 5 black balls.Two balls are drawn from the first urn and put into the second urn and then a ball is drawn from the second urn.Find the probability that ball drawn from 2nd urn is white.

Watch Video Solution

339. Three machinesE1, E2 and E3 in a certain factory producing electric bulbs, produce 50%, 25% and 25% respectively, of the total daily output of electric bulbs. It is known that 4% of the bulbs produced by each of machines E1 and E2 are defective and that 5% of those produced by machine E3are defective. If one bulb is picked up at random from a days production, calculate the probability that it is defective.

Watch Video Solution

340. In a factory which manufactures bolts, machines A. B and C manufacture respectively 25%, 35% and 40% of the bolts. Of their outputs, 5, 4 and 2 percent are respectively defective bolts. A bolt is drawn at random from the product and is found to b

Watch Video Solution

341. Three urns contain 6 red, 4 black 4 red, 6 black and 5 red, 5 black balls respectively.

One of the urns is selected at random and a ball is drawn from it.

If the ball drawn is red, find the probability that it is drawn from the first urn.

Watch Video Solution

342. 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 i

Watch Video Solution

343. 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 diamond. Find the probability of the missing card to be a diamond.

Watch Video Solution

344. Suppose a girl throws a die. If she gets a 5 or 6, she tosses a coin three times and notes the number of heads. If she gets 1, 2, 3 or 4, she tosses a coin once and notes whether a head or tail is obtained. If she obtained exactly one head, what is the probability that she threw 1,2,3 or 4 with the die?

Watch Video Solution

345. Given three identical boxes I, II and III, each containing two coins. In ox 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

346. 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 t

Watch Video Solution

347. 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 these person being male?

Assume that there are equal number of males and females.

Watch Video Solution

348. 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

349. A bag contains 3 red and 7black balls. Two balls are selected at random one by one without replacement. If the second ball happens to be red, what is the probability that the first selected ball is also red?

Watch Video Solution

350. Suppose that 6% of the people with blood group O are left handed and 10% of those with other blood groups are left handed, 30 % of the people have blood groups O. If a left handed person os selected at random, what is the probability that he/she will have blood group O?

Watch Video Solution

351. As man is known to speak 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

352. In a competitive examination, an examinee either guesses or copies or knows the answer to amultiple choice question with four choices. The probability that he makes a guess is $\frac{1}{3}$ and the probability that he copies the answer is 1/6. The probability that the answer is correct, given that he copiedit, is $\frac{1}{8}$. Find the probability that he knows the answer to the question, given that he correctly answered

Watch Video Solution

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

Watch Video Solution

354. 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

355. The contents of urn, I, II, III are as follows Urn I: 1 White, 2 black and 3 red balls Urn II: 2 white, 1 black and 1 red balls. Urn III: 4 white, 5 black and 3 red balls One run is chosen at random and two balls are drawn. They happen to be white and red what is the probability that they come from Urns, I, II, III?

Watch Video Solution

356. A bag A contains 2 white and 3 red balls and a bag B contains 4 white and 5 red and 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 as red.

Watch Video Solution

357. The contents of three urns are as follows: Urn 1-7 white, 3 black balls.Urn 2 - 4 white, 6 black balls Urn 3 - 2 white and 8 black balls.One of these urns is chosen at random with probabilities 0.20, 0.60 and 0.20 respectively. From the chosen urn two balls are drawn at random without replacement. If both these balls are white, what is the probability that these came from urn 3 ?

Watch Video Solution

358. Suppose a girl throws a die. If she gets a 5 or 6, she tosses a coin 3 times and notes the number of heads. If she gets 1,2,3 or 4 she tosses a coin once and notes whether a head or tail is obtained. If she obtained

exactly one head, what is the probability that she threw 1,2,3, or 4 with the die?

Watch Video Solution

359. Two groups are competing for the positions of the board of Directors of a Corporation. The probabilities that the first and the second groups will win are 0.6 and 0.4 respectively. Further if the first group wins the probability of introducing a new product is 0.7 and the corresponding probability is 0.3 if the second group wins. Find the probability that the new product introduced was by the second group.

Watch Video Solution

360. Suppose 5 men out of 100 and 25 women out of 1000 are god orators. An orator is chosen at random. Find the probability that a male person is selected. Assume that there are equal number of men and women.

Watch Video Solution

361. In a class, 5% of the boys and 10% of the girls have an IQ of more than 150. In this class 60% of the students are boys. If a student is selected at random and found to have an IQ of more than 150, find the probability that the student is a boy.

Watch Video Solution

362. A factory has three machines X, Y, and Z producing 1000, 2000 and 3000 bolts per day respectively. the machine X produces 1% defective bolts, Y produces 1.5% and Z produces 2% defective bolts. At the end of a day, a bolt is drawn at random and is found to be defective. What is the probability that this defective bolt has been produced by machine X?

Watch Video Solution

363. An insurance company insured 3000 scooters, 4000 cars and 5000 trucks. The probabilities of the accident involving a scooter, a card and a truck are 0.02, 0.03 and 0.04 respectively. One of the insured vehicles meet with an accident. Find the probability that it is a i. scooter ii. car iii. truck.

Watch Video Solution

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

Watch Video Solution

365. 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 produce 5% and 7% defective items respectively. A is on the job for 50% of the tune, B is on the job

Watch Video Solution

366. There are three coins. One is two headed coin (having head on both faces),another is biased coin that comes up heads 75% of the times and third is also a biased coin that comes up tail 40% of the times. One of the three coins is chosen at random and tossed, and it shows heads. What is the probability that it was the two headed coin?

Watch Video Solution

367. In a factory machine A produces 30% of the total output, machine B produces 25% and the machine C produces the remaining output. If defective items produced by machines A, B and C are 1% , 1.2% 2% respectively. Three machines working together produce 10000 items in a day. An item is drawn at random from a day's output and found to be defective. Find the probability that it was produced by machine B?

Watch Video Solution

368. Three urns, A, B, and C contain 6 red and 4 white ; 2 red and 6 white; and 1 red and 5 white balls respectively. An urn is chosen at random and a bal is drawn. If the ball drawn is found to be red, find the probability that the ball was drawn from urn A.

Watch Video Solution

369. In a group of 400 people, 160 are smokers and non-vegetarian, 100 are smokers and vegetarian and the remaining are non-smokers and vegetarian. The probabilities of getting a special chest disease are 35%,,20% and 10% respectively. A person is chosen from the group at random and is found to be suffering from the disease. What is the probability that the selected person is a smoker and non-vegetarian?

Watch Video Solution

370. In a certain 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 a girl.

Watch Video Solution

371. An insurance company insured 2000 scooters and 3000 motorcycles. The probability of an accident involving a scooter is 0.01 and that of a motorcycle of 0.02. an insured vehicle met with an accident. Find the probability that the accidental vehicle was as motorcycle.

Watch Video Solution

372. Of the students in a college, it is known that 60% reside in a hostel and 40% do not reside in hostel. Previous year results report that 30% of students residing in hostel attain A grade and 20% of one's not residing in hostel attain A grade in their annual examination. At the end of the

year, one students is chosen at random from the college and he has an A grade. What is the probability that the selected student is a hosteller?

Watch Video Solution

373. There are three coins. One is two -heated coin (having head on both faces), another is a biased coin that comes up heads 75% of the times and third is also a biased coin that comes up tails 40% of the times. One of the three coins is chosen at random and tossed, and it shows heads. What is the probability that it was two-headed coin?

Watch Video Solution

374. Assume that the chances of a patient having a heart attack is 40%. Assuming that a meditation and yoga course reduces the risk of heart attack by 30% and prescription of certain drug reduces its chance 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. Interpret the result and state which of the above stated methods is more beneficial for the patient.

Watch Video Solution

375. Coloured balls are distributed in four boxes as shown in the following table: Box Colour Black White Red Blue I II III IV 3 2 1 4 4 2 2 3 5 2 3 1 6 2 1 3 A box is selected at random and then a ball is randomly drawn from the selected box. The colour of the ball is black, what is the probability that ball drawn is from the box III.

Watch Video Solution

376. Find $\frac{dy}{dx}$ if $5x - 9y = \sin x$

Watch Video Solution

377. A test for detection of a particular disease is not fool proof. The test will correctly detect the disease 90% of the time, but will incorrectly detect the disease 1% of the time. For a large population of which an estimated 0.2% have the disease, a person is selected at random, given the test, and tod that he has the disease. What are the chances that the person actually have the disease?

Watch Video Solution

378. Let d1, d2, d3 be three mutually exclusive diseases. Let S be the set of observable symptoms of these diseases. A doctor has the following information from a random sample of 5000 patients: 1800 had disease d1, 2100 has disease d2 and the others had disease d3. 1500 patients with disease d1, 1200 patients with disease d2 and 900 patients with disease d3 showed the symptom. Which of the diseases is the patient most likely to have?

Watch Video Solution

379. 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 proba

Watch Video Solution

380. A four digit number is formed using the digits 1, 2, 3, 5 with no repetitions. Write the probability that the number is divisible by 5.

Watch Video Solution

381. When three dice are thrown, write the probability of getting 4 or 5 on each of the dice simultaneously.

Watch Video Solution

382. Three digit numbers are formed with the digits 0,2,4,6 and 8. Write the probability of forming a three digit number with the same digits.

Watch Video Solution

383. A ordinary cube has four plane faces, one face marked 2 and another face marked 3, find the probability of getting a total of 7 in 5 throws.

Watch Video Solution

384. Three numbers are chosen from 1 to 20. Find the probability that they are consecutive.

Watch Video Solution

385. 6 boys and 6 girls sit in a row at random. Find the probability that all the girls sit together.

Watch Video Solution

386. If A and B are two independent events such tat $P(A) = 0.3 \, and \, P(A \cup B) = 0.8$ Find $P(B)$.

Watch Video Solution

387. An unbiased die with faced marked 1, 2, 3, 4, 5, and 6 is rolled four times. Out of four face value obtained, the probability that the minimum face value is not less than 2 and the maximum face value is not greater than five is then $16/81$ b. $1/81$ c. $80/81$ d. $65/81$

Watch Video Solution

388. If A and B are two events write the expression for the probability of occurrence of exactly one of two events.

Watch Video Solution

389. Write the probability that a number selected at random from the set of first 100 natural numbers is a cube.

Watch Video Solution

390. In a competition A, B and C are participating. The probability that A wins is twice that of B, the probability that B wins is twice that of C. find the probability that A losses.

Watch Video Solution

391. If A, B, C are mutually exclusive and exhaustive events associated to a random experiment, then write the value of $P(A) + P(B) + P(C)$.

Watch Video Solution

392. If two events A and B are such tat $P(A)0.3,\ P(B)=0.4\ and\ P(A\cap B)$ =0.5, find $P(B/A\cap B)$.

Watch Video Solution

393. If A and B are two independent events the write $P(A\cup B)$ in terms of $P(A)$ and $P(B)$.

Watch Video Solution

394. If $P(A)=0.3,\ P(B)=0.6,\ P(B/A)=0.5,$ find $P(A\cup B)$.

Watch Video Solution

395. If A, B, and C are independent events such that $P(A)=P(B)=P(C)=p$, then find the probability of occurrence of at least two of A, B, and C.

Watch Video Solution

396. For three events A, B and C, P (Exactly one of A or B occurs) $= P$ (Exactly one of B or C occurs) $= P$ (Exactly one of C or A occurs) $= \frac{1}{4}$ and P (All the three events occur simultaneously) $= \frac{1}{16}$. Then the probability that at least one of the events occurs, is : $\frac{7}{64}$ (2) $\frac{3}{16}$ (3) $\frac{7}{32}$ (4) $\frac{7}{16}$

Watch Video Solution

397. If A and B are independent events such that $P(A) = p,\ P(B) = 2p\ and\ P$ (Exactly one of A and B occurs) $= \frac{5}{9}$, find the value of p.

Watch Video Solution

398. If from each of the three boxes containing 3 white and 1 black, 2 white and 2 black, 1 white and 3 black balls, one ball is drawn at random,

then the probability that 2 white and 1 black balls will be drawn, is

Watch Video Solution

399. Four cards are drawn at a time from a pack of 52 playing cards. Find the probability of getting all the four cards of the same suit.

Watch Video Solution

400. A and B are two events such that $P(A) = 0.25\ and\ P(B) = 0.50$. The probability of both happening together is 0.14. The probability of both A and B not happening is a. 0.39 b. 0.25 c. 0.11 d. none of these

Watch Video Solution

401. The probabilities of a student getting I, II and III division in an examination are $\frac{1}{10}, \frac{3}{5} and \frac{1}{4}$ respectively. The probability that the student fails in the examination is $\frac{197}{200}$ b. $\frac{27}{100}$ c. $\frac{83}{100}$ d. none of these

Watch Video Solution

402. India plays two matches each with West Indies and Australia. In any match the probabilities of India getting points $0, 1 \text{ and } 2$ are $0.45, 0.05 \text{ and } 0.50$ respectively. Assuming that the outcomes are independent, the probability of India getting at least 7 points is (a) 0.8750 (b) 0.0875 (c) 0.0625 (d) 0.0250

Watch Video Solution

403. The probability that a leap year will have 53 Fridays or 3 Saturday is a. 2/7 b. 3/7 c. 4/7 d. 1/7

Watch Video Solution

404. A person write 4 letters and addresses 4 envelopes. If the letters are placed in the envelopes at random, then the probability that all letters are not placed in the right envelopes, is a. 1/4 b. 11/24 c. 15/24 d. 23/24

Watch Video Solution

405. A speaks truth in 75% cases and B speaks truth in 80% cases. Probability that they contradict each other in statement, is $\frac{7}{20}$ b. $\frac{13}{20}$ c. $\frac{3}{5}$ d. $\frac{2}{5}$

Watch Video Solution

406. Three integers are chosen at random from the first 20 integers. The probability that their product is even is $\frac{2}{19}$ b. $\frac{3}{29}$ c. $\frac{17}{19}$ d. $\frac{4}{19}$

Watch Video Solution

407. Out of 30 consecutive integers 2 are chosen at random. The probability that their sum is odd, is $\frac{14}{29}$ b. $\frac{16}{29}$ c. $\frac{15}{29}$ d. $\frac{10}{29}$

Watch Video Solution

408. A bag contains 5 black balls, 4 white balls and 3 red balls. If a ball is selected random wise, the probability that if is black or red balls is $\frac{1}{3}$ b. $\frac{1}{4}$ c. $\frac{5}{12}$ d. $\frac{2}{3}$

Watch Video Solution

409. Two dice are thrown simultaneously. the probability of getting a pair of aces is a. 1/36 b. 1/3 c. 1/6 d. none of these

Watch Video Solution

410. An urn contains 9 balls two of which are red, three blue and four black. Three balls are drawn at random. The probability that they are of the same colour is $\frac{5}{84}$ b. $\frac{3}{9}$ c. $\frac{3}{7}$ d. $\frac{7}{17}$

Watch Video Solution

411. A coin is tossed three times. Event A: two heads appear Event B: last should be head Then identify whether events $AandB$ are independent or dependent.

Watch Video Solution

412. Five persons entered the lift cabin on the ground floor of an 8 floor house. Suppose that each of them independently and with equal probability can leave the cabin at any floor beginning with the first, then the probability of al 5 persons leaving at different floor is a. $\frac{{}^7P_5}{7^5}$ b. $\frac{7^5}{{}^7P_5}$ c. $\frac{6}{{}^6P_5}$ d. $\frac{{}^5P_5}{5^5}$

Watch Video Solution

413. A box contains 10 good articles and 6 defective articles. One item is drawn at random. the probability that it is either good or has a defect, is a. 64/64 b. 49/64 c. 40/64 d. 24/64

Watch Video Solution

414. A box contains 6 nails and 10 nuts. Half of the nails and half of the nuts are rusted. If one item is chosen at random, then find the probability that it is rusted or is a nail.

Watch Video Solution

415. A bag contains 5 brown and 4 white socks. A man pulls out two socks. The probability that these are of the same colour is $\frac{5}{108}$ b. $\frac{18}{108}$ c. $\frac{31}{108}$ d. $\frac{48}{108}$

Watch Video Solution

416. If S is the sample space and $P(A) = \frac{1}{3}P(B) and\ S = A \cup B,\ where\ A\ and\ B$ are two mutually exclusive events then $P(A) = 1/4$ b. $1/2$ c. $3/4$ d. $3/8$

Watch Video Solution

417. If A and B are two events, then $P(A \cap B) = ??$ a.) $P(A)P(B)$ b.) $1 - P(A) - P(B)$ c.) $P(A) + P(B) - P(A \cup B)$ d.) $P(B) - P(A \cap B)$

Watch Video Solution

418. If $P(A \cup B) = 0.8 \, and \, P(A \cap B) = 0.3, \, then \, P(A) + P(B) =$ a. 0.3 b. 0.5 c. 0.7 d. 0.9

Watch Video Solution

419. A bag X contains 2 white and 3 black balls and another bag Y contains 4 white and 2 black balls. One bag is selected at random and a ball is drawn from it. The, the probability chosen to be white is a. $2/15$ b. $7/15$ c. $8/15$ d. $14/15$

Watch Video Solution

420. Two persons A and B take turns in throwing a pair of dice. The first person to throw 9 from both dice will be awarded the prize. If A throws first, then the probability that B wins the game is $9/17$ b. $8/17$ c. $8/9$ d. $1/9$

Watch Video Solution

421. The probability that in a year of $22nd$ centurychosen at random, there will be 53 Sundays is

Watch Video Solution

422. From a set of 100 cards numbered 1 to 100, one card is drawn at random the probability that the number obtained on the card is divisible by 6 or 8 but not by 24 is a. $6/25$ b. $1/4$ c. $1/6$ d. $2/5$

Watch Video Solution

423. If A and B are two events such that $P(A)=\frac{4}{5}, and\ P(A\cap B)=\frac{7}{10}, then\ P(B/A)=$ $1/10$ b. $1/8$ c. $7/8$ d. $17/20$

Watch Video Solution

424. If A and B are two events associated to a random experiment such that $P(A\cap B)=\frac{7}{10} amd\ P(B)=17/20$, then $P(A/B)=$ $14/17$ b. $17/20$ c. $7/8$ d. $1/8$

Watch Video Solution

425. If $P(A)=3/10$, $P(B=2/5)$ and $P(A\cup B)=3/5$ then $P(A/B)+P(B/A)$ equals $1/4$ b. $7/2$ c. $5/12$ d. $1/3$

Watch Video Solution

426. Let $P(A)=\frac{7}{13}, \quad P(B)=\frac{9}{13}$ and $P(A \cap B)=\frac{4}{13}$. Then $P(A / B)=$ $5 / 9$ b. $4 / 9$ c. $4 / 13$ d. $6 / 13$

Watch Video Solution

427. If $P(A)=\frac{2}{5}, P(B)=\frac{3}{10}$ and $P(A \cap B)=\frac{1}{5}$ then P(A'/B') · P(B'/A') is equal to

Watch Video Solution

428. If A and B are two events such that $P(A)=\frac{1}{2}, P(B)=\frac{1}{3}, \quad P(A / B)=\frac{1}{4}$, then $P(A \cap B)$ equals $\frac{1}{12}$ b. $\frac{3}{4}$ c. $\frac{1}{4}$ d. $\frac{3}{16}$

Watch Video Solution

429. Let A and B be two events such tat $P(A) = \frac{3}{8},\ P(B) = \frac{5}{8} and\ P(A \cup B) = \frac{3}{4}\cdot$ Then $P(A/B)\ P(A/B)$ is equal to $\frac{2}{5}$ b. $\frac{3}{8}$ c. $\frac{3}{20}$ d. $\frac{6}{25}$

Watch Video Solution

430. If $P(B) = \frac{3}{5}, p(A/B) = \frac{1}{2}$ and $P(A \cup B) = \frac{4}{5}, then\ P(B/A) = \frac{1}{5}$ b. $\frac{3}{10}$ c. $\frac{1}{2}$ d. $\frac{3}{5}$

Watch Video Solution

431. If A and B are two events such that $P(A) = 0.4,\ P(B) = 03\ and\ P(A \cup B) = 0.5,\ then\ P(B \cap A)$ equals 23 b. $\frac{1}{2}$ c. $\frac{3}{10}$ d. $\frac{1}{5}$

Watch Video Solution

432. If A and B are two events such that $A \neq \varphi,\ B = \varphi,$ then a. $P(A/B) = \dfrac{P(A \cap B)}{P(B)}$ b. $P(A/B) = P(A)P(B)$ c. $P(A/B) = P(B/A) = 1$ d. $P(A/B) = \dfrac{P(A)}{P(b)}$

Watch Video Solution

433. If the events A and B are independent then $P(A \cap B)$ is equal to :: a. $P(A) + P(B)$ b. $P(A) - P(B)$ c. $P(A)P(B)$ d. $\dfrac{P(A)}{P(B)}$

Watch Video Solution

434. If A and B are two independent events with $P(A) = \dfrac{3}{5} and\ P(B) = \dfrac{4}{9}, then\ P(A \cap B)$ equals $\dfrac{4}{15}$ b. $\dfrac{8}{45}$ c. $\dfrac{1}{3}$ d. $\dfrac{2}{9}$

Watch Video Solution

435. If A and B are two independent events such that $P(A) = 0.3,\ P(A \cup B) = 0.5$, then $P(A/B) - P(B/A) =$ $\frac{2}{7}$ b. $\frac{3}{25}$ c. $\frac{1}{70}$ d. $\frac{1}{7}$

Watch Video Solution

436. A flash light has 8 batteries out of which 3 are dead. If two batteries are selected without replacement and tested, the probability that both are dead is $\frac{3}{28}$ b. $\frac{1}{14}$ c. $\frac{9}{64}$ d. $\frac{33}{56}$

Watch Video Solution

437. A bag contains 5 red and 3 blue balls. If 3 balls are drawn at random without replacement, then the probability of getting exactly one red ball is $\frac{15}{29}$ b. $\frac{15}{56}$ c. $\frac{45}{196}$ d. $\frac{15}{392}$

Watch Video Solution

438. A bag containing 5 red and 3 blue balls. If 3 balls are drawn at random without replacement the probability that exactly two of the three balls were red, the first being red is

Watch Video Solution

439. In a college 30% students fail in Physics, 25% fail in Mathematics and 10% fail in both. One student is chosen at random. The probability that she fails in Physics if she has failed in Mathematics is a.$1/10$ b. $\frac{1}{3}$ c. $\frac{2}{5}$ d. $\frac{9}{20}$

Watch Video Solution

440. Three persons A,B and C fire a target in turn . Their probabilities of hitting the target are $0.4, 0.3$ and 0.2 respectively . The probability of two hits is

Watch Video Solution

441. A and B are two students. Their chances of solving a problem correctly are $\frac{1}{3}$ and $\frac{1}{4}$, respectively If the probability of their making a common error is, 1/20 and the obtain the same answer, then the probability of their answer to be correct is

Watch Video Solution

442. Two cards are drawn from a well shuffled deck of 52 playing cards with replacement. The probability that both cards are queen is a. $\frac{1}{13} \times \frac{1}{13}$ b. $\frac{1}{13} + \frac{1}{13}$ c. $\frac{1}{13} \times \frac{1}{17}$ d. $\frac{1}{13} \times \frac{4}{5}$

Watch Video Solution

443. A box contains 3 orange balls, 3 green balls and 2 blue balls. Three balls are drawn at random from the box without replacement. The probability of drawing 2 green balls and one blue ball is a. $\frac{167}{168}$ b. $\frac{1}{28}$ c. $\frac{2}{21}$ d. $\frac{3}{28}$

Watch Video Solution

444. If two events are independents, then A. They must be mutually exclusive. B. The sum of their probabilities must be equal to 1. i) A and B both are correct ii) None of the above is correct

Watch Video Solution

445. Two dice are thrown. If it is known that the sum of the numbers on the dice was less than6, the probability of getting a sum 3 is a. $\frac{1}{18}$ b. $\frac{5}{18}$ c. $\frac{1}{5}$ d. $\frac{2}{5}$

Watch Video Solution

446. If A and B are two events such that $P(A/B) = p, \quad P(A) = p,$ $P(B) = \frac{1}{3} and\ P(A \cup B) = \frac{5}{9}$ then $p =$ $\frac{2}{3}$ b. $\frac{3}{5}$ c. $\frac{1}{3}$ d. $\frac{3}{4}$

Watch Video Solution

447. A die is thrown and a card is selected at random from a deck of 52 playing cares. The probability of getting an even number of the die and a spade card is $\frac{1}{2}$ b. $\frac{1}{4}$ c. $\frac{1}{8}$ d. $\frac{3}{4}$

Watch Video Solution

448. Assume that in a family, each child is equally likely to be a boy or girls .A family with three children is is choosen at random. The probability that the eldest child is a girls given that the family has at least one girls is

Watch Video Solution

449. Let A and B be two events. If $P(A) = 0.2,\ P(B) = 0.4,\ P(A \cup B) = 0.6\, then\ (A/B)$ is equal to 0.8 b. 0.5 c. 0.3 d. 0

Watch Video Solution