MATHS

BOOKS - MODERN PUBLICATION

PROBABILITY

Example

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1. In the following experiment, specify the appropriate sample space :

A person is noting down the number of accidents along a busy highway during a year.

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2. In the following experiment, specify the appropriate sample space :

A boy has a 1 rupee coin, a 2 rupee coin and a 5 rupee coin in his pocket. He takes two coins out of his pocket, one after the other.

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3. Three coins are tossed simultaneously. Find the sample space.

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4. A coin is tossed and then a die is rolled only in case head is shown on the coin , describe the sample space for the experiment.

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5. An experiment consists of recording boy-girl composition of families with 2 children.

What is the sample space if we are interested in knowing whether it is a boy or a girl in the order of their births ?

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6. An experiment consists of recording boy-girl composition of families with 2 children.

What is the sample space if we are interested in the number of girls in a family ?

7. A bag contains 4 identical red balls and 3 identical black balls. The experiment consists of drawing one ball, then putting it into the bag and again drawing a ball. What are the possible outcomes of the experiment ?

8. The numbers 1,2,3 and 4 are written separatley on four slips of paper. The slips are put in a box and mixed throughly. A person draws two slips from the box, one after the other without replacement. Describe the sample space for the experiment.

9. A die is thrown repeatedly until a six comes up. What is the sample space for the this experiment?

10. Write the sample space of the following Random experiment :

A coin is tossed two times.

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11. The number of elements in a sample space when a coin is tossed and a die is thrown are

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12. Describe the sample space for the indicated experiment,

A coin is tossed three times.

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13. Write the sample space of the following Random experiment :

A coin is tossed once.

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14. Write the sample space of the following Random experiment :

A die is thrown once.

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15. An experiment involves rolling a pair of dice and recording the numbers that come up. Describe the following events : A: the sum is greater than 8, B: 2 occurs on either die C: the sum is the least 7 and a multiple of 3. Also find $A \cap B$, $B \cap C$ and $A \cap C$.

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16. An experiment involves rolling a pair of dice and recording the numbers that come up. Describe the following events : A: the sum is greater than 8, B: 2 occurs on either die C: the sum is the least 7 and a

multiple of 3. Which pairs of three events are mutually exclusive?

17. Two dice are rolled. Let A, B and C be the events of getting a sum 2, a sum 3 and a sum 4 respectively.

Is event A simple ?

18. Two dice are rolled. Let A, B and C be the events of getting a sum 2, a sum 3 and a sum 4 respectively.

Is event B simple ?

19. Two dice are rolled. Let A, B and C be the events of getting a sum 2, a sum 3 and a sum 4 respectively.

Is event C compound ?

20. Two dice are rolled. Let A, B and C be the events of getting a sum 2, a sum 3 and a sum 4 respectively.

Are events A and B mutually exclusive ?

21. A coin is tossed three times. Consider the following events : A : No head appears B : Exactly one head appears C : At least two heads appear. Do they form a set of mutually exclusive and exhaustive events ?

22. Let a sample space be : $S = \{w_1, w_2, \ldots\ldots, w_n\}$. Which of the following assignments of probabilities to each outcome are valid ?

A. $P(w_1) = \dfrac{1}{2}, P(w_2) = \dfrac{1}{3}, P(w_3) = \dfrac{2}{3}$

B. $P(w_1) = \dfrac{1}{3}, P(w_2) = \dfrac{1}{3}, P(w_3) = \dfrac{1}{4}$

C. $P(w_1) = \dfrac{1}{2}, P(w_2) = \dfrac{1}{3}, P(w_3) = -\dfrac{1}{6}$

D. $P(\omega_1) = \dfrac{1}{2}, P(\omega_2) = \dfrac{1}{3}, P(\omega_3) = \dfrac{1}{6}$

Answer:

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23. A die is thrown, find the probability of following events:

A prime number will appear.

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24. A die is thrown, find the probability of following events:

A number greater than or equal to 3 will appear.

25. A die is thrown, find the probability of following events:

A number less than or equal to one will appear.

26. A die is thrown, find the probability of following events:

A number more than 6 will appear.

27. A die is thrown, find the probability of following events:

A number less than 6 will appear.

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28. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: a diamond.

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29. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: not an ace.

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30. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: a black card (i.e. a club or a spade)

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31. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: not a black card.

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32. A bag contains 5 black and 3 white balls. Two balls are drawn at random. Find the probability of drawing two black balls.

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33. A bag contains 5 black and 3 white balls. Two balls are drawn at random. Find the probability of drawing two white balls.

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34. The letters of the word 'SOCIETY' are placed at random in a row. What is the probability that the three vowels come together ?

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35. What is the chance that a non-leap year selected at random will contain 53 Sundays ?

36. In a toss of two coins, find the probability of getting both heads or both tails.

37. Four coins are tossed simultaneously. Write the sample space and then complete the following table :

No. of heads :	0	1	2	3	4
Probability :					

38. A card is drawn at random from a well shuffled deck of 52 cards. If A is the event of getting a red card and the event B that a card is bearing a number greater than 2 but less than 9, find P (A) and P (B).

39. Two dice are thrown simultaneously. Find the probability of getting eight as the sum.

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

41. In a single throw of three dice, find the probability of not showing the same number on all the dice.

42. A class consists of 10 boys and 8 girls. Three students are selected at random. Find the probability that the selected group has : all Boys.

43. A class consists of 10 boys and 8 girls. Three students are selected at random. Find the probability that the selected group has : all girls.

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44. A class consists of 10 boys and 8 girls. Three students are selected at random. Find the probability that the selected group has : 2 boys and 1 girl.

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45. A certain team wins with probability 0.7, loses with probability 0.2 and ties with probability 0.1. The team plays three games. Find the probability that the team wins at least two of the games, but not lose.

46. A bag contains 20 tickets numbered 1 to 20. Two tickets are drawn at random . Find the probability that both the numbers on the ticket are prime.

47. A bag contains 8 red, 3 white and 9 blue balls. Three balls are drawn at random from the bag. Determine the probability that none of the balls is white .

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

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

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

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

d. None of these

49. Find the probability of 4 turning for at least once in

two tosses of a fair die.

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50. A card is selected from a pack of 52 cards. How many

points are there in the sample space ?

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51. A card is selected from a pack of 52 cards. Calculate the probability that the card is an ace of spades.

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52. One card is drawn from a well shuffled deck of 52 cards. Calculate the probability that the card will be an ace.

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53. A card is selected from a pack of 52 cards. Calculate the probability that the card is : black card.

54. A five digit number is formed by the digit 1,2,3,4 and 5 without repetition. Find the probability that the number formed is divisible by 4.

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55. A committee of two persons is selected from two men and two women. What is the probability that the committee will have

no man?

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56. A committee of two persons is selected from two men and two women. What is the probability that the committee will have

one man?

57. A committee of two is selected from two men and two women. What is the probability that the committee will have : two men ?

58. If the odds in favour of an event are 4 : 5, find the probability that'it will occur.

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59. There are three events E_1, E_2 and E_3 one of which must, and only one can happen. The odds are 7 to 4 against E_1 and 5 to 3 against E_2. Find odds against E_3.

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60. Fill in the blanks in the following table :

	P(A)	P(B)	P(A ∩ B)	P(A ∪ B)
(i)	$\dfrac{1}{3}$	$\dfrac{1}{5}$	$\dfrac{1}{15}$	...
(ii)	0·35	...	0·25	0·6
(iii)	0·5	0·35	...	0·7

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61. A and B are two mutually exclusive events, for which P (A) = 0.3, P (B) = p and $P(A \cup B)$ = 0.5. Find the value of p.

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62. In a class of 25 students with roll numbers 1 to 25, a student is picked up at random to answer a question. Find the probability that the roll number of the Selected student is either a multiple of 5 or of 7.

63. Tickets are numbered from 1 to 100. One ticket is picked up at random. Find the probability that the ticket picked up has a number, which is divisible by 5 or 8.

64. Two dice are toosed once. Find the probability of getting 'an even number on the first dice or a total of 8'

65. In a single throw of two dice, find the probability that neither a doublet nor a total of 10 will appear.

66. In class XI of a school 40% of the students study Mathematics and 30% study Biology 10% of the class study both Mathematics and Biology. If a student is

selected at random from the class, find the probability that he will be studying Mathematics or Biology.

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67. A box contains 100 bolts and 50 nuts. It is given that 50% bolts and 50% nuts are rusted. Two objects are selected from the box at random. Find the probability that both are bolts or both are rusted.

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68. Two students Anil and Ashima appeared in an examination. The probabilities that Anil will qualify the

examination is 0.05 and that Ashima will qualify the examination is 0.10. The probabilities that both will qualify the examination is 0.02. Find the probability that

a) Both Anil and Ashima will not qualify the examination.

b) Atleast one of them will not qualify the examination.

69. Two students Anil and Ashima appeared in an examination. The probability that Anil will qualify the examination is 0.05 and that Ashima will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02. Find the probability that : at least one of them will not qualify the examination.

70. Two students Anil and Ashima appeared in an examination. The probability that Anil will qualify the examination is 0.05 and that Ashima will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02. Find the probability that : only one of them will qualify the examination.

71. In a given race, the odds in favour of horses A, B, C, D are 1:3, 1:4, 1:5 and 1:6 respectively. Find the probability that one of the them wins the race.

Exercise

1. Write the sample space of the following Random experiment :

A coin is tossed two times.

2. Describe the sample space for the indicated experiment,

A coin is tossed three times.

3. Describe the sample space for the indicated experiment in the following :

A coin is tossed : four times.

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4. Describe the sample space for the indicated experiment in the following :

Consider the experiment in which a coin is tossed repeatedly until a head comes up .

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5. Describe the sample space for the indicated experiment in the following :

A die is thrown twice.

6. Describe the sample space for the indicated experiment in the following :

Two coins (a one rupee and a two rupee coin) are tossed once.

7. Describe the sample space for the indicated experiment in the following :

A coin is tossed and a die is thrown.

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8. Describe the sample space for the indicated experiment in the following :

Select two persons from a group of 3 boys and 2 girls.

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9. Describe the sample space for the indicated experiment in the following :

A die is thrown once.

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10. 2 boys and 2 girls are in room X, and 1 boy and 3 girls in room Y. Specify the sample space for the experiment in which a room is selected and then a person.

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11. A box contains 1 red and 3 identical white balls. Two balls are drawn at random in succession (one after the other) without replacement. Write the sample space for this experiment.

12. An experiment consists of tossing a coin and then throwing it second time if a head occurs. If a tail occurs on the first toss, then a die is rolled once. Find the sample space.

13. A coin is tossed. If it shows a head, we draw a ball from a bag consisting of 3 blue and 4 white balls, if it shows tail we throw a die. Describe the sample space of this experiment .

14. One die of red colour, one white and one of blue are placed in a bag. One die is selected at random and rolled, its colour and the number on its uppermost face is noted. Describe the sample space .

15. An experiment consists of rolling a die and then tossing a coin once, if the number on the die is even. If the number on the die is odd the coin is tossed twice. Write the sample space for this experiment.

16. Suppose 3 bulbs are selected at random from a lot. Each bulb is tested and classified as defective (D) or non-defective (N). Write the sample space of this experiment.

17. A coin is tossed. If the outcome is a head, a die is thrown. If the die shows up an even number, the die is thrown again. What is the sample space for the experiment?

18. A coin is tossed. If it shows tail, we draw a ball from a box which contains 2 red and 3 black balls If it shows head we throw a die Find the sample space for this experiment ?

19. Find the sample space associated with the experiment of rolling a pair of dice (plural of die) once. Also find the number of elements of the sample space.

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20. A coin is tossed once. Write its sample space. Find the total number of events.

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21. A die is rolled. Let E be the event "die shows 4" and F be the event "die shows even number". Are E and F mutually exclusive ?

22. Consider the experiment of rolling a die. Let A be the event "getting a prime number, B be the event "getting an odd number." Write the sets representing the event : A or B.

23. Consider the experiment of rolling a die. Let A be the event "getting a prime number, B be the event "getting an odd number." Write the sets representing the event : A and B.

24. Consider the experiment of rolling a die. Let A be the event "getting a prime number, B be the event "getting an odd number." Write the sets representing the event :

A but not B.

25. Consider the experiment of rolling a die. Let A be the event "getting a prime number, B be the event "getting an odd number." Write the sets representing the event :

not A.

26. A die is thrown. Describe the following event :

A: a number less than 7.

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27. A die is thrown. Describe the following events :

(i) A : a number less than 7.

(ii) B : a number greater than 7.

(iii) C : a multiple of 3.

(iv) D : a number, less than 4.

(v) E : an even number greater than 4.

(vi) F : a number not less than 3.

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28. A die is thrown. Describe the following event :

C : a multiple of 3.

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29. A die is thrown. Describe the following event :

D: a number less than 4.

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30. A die is thrown. Describe the following event :

E: an even number greater than 4.

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31. A die is thrown. Describe the following event :

F: a number not less than 3.

32. A die is thrown. Following are events :

(i) A:a number less than 7 (ii) B: a number greater than 7

(iii) C : a multiple of 3 (iv) D: a number less than 4 (v) E:

an even number greater than 4 (vi) F: a number not less

than   3.   Find

$A \cup B, A \cap B, E \cup F, D \cap E, A - C, D - E, F', E \cap F'$

.

33. A die is thrown twice. Each time the number appearing on it is recorded. Describe the events : A : both numbers are odd B : both numbers are even C : sum of numbers is less than 6. Describe $A \cup B, A \cap B, A \cup C, A \cap C$.

34. A die is thrown twice. Each time the number appearing on it is recorded. Describe the events : A : both numbers are odd B : both numbers are even C : sum of numbers is less than 6. Which pairs of events are mutually exclusive ?

35. Two dice are thrown and the sum of the numbers which come up on the dice is noted. Let us consider the following events associated with this experiment : A : the sum is even B : the sum is a multiple of 3 C : the sum is less than 4 D : the sum is greater than 11. Which of these events are mutually exclusive ?

36. A coin is tossed once. Then, if it turns up a head a die is thrown once : if it turns up a tail it is tossed twice more. Describe : the sample space S of the experiment.

37. A coin is tossed once. Then, if it turns up a head a die is thrown once : if it turns up a tail it is tossed twice more. Describe : the event A "that exactly one head occurs"

38. A coin is tossed once. Then, if it turns up a head a die is thrown once : if it turns up a tail it is tossed twice more. Describe : the event B "that at least two tails occur or a number greater than 4 occurs."

39. A die is thrown. Describe the following event :

A: a number less than 7.

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40. A die is thrown. Describe the following event :

C : a multiple of 3.

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41. A die is thrown. Describe the following event :

C : a number not less than 4.

42. A die is thrown. Describe the following event :

D : an odd number greater than 2.

43. A die is thrown. Describe the following event :

E: an even number greater than 2.

44. A pair of dice is thrown. Find the following event :

Same numbers on both the dice.

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45. A pair of dice is thrown. Find the following event :

The sum is greater than 10.

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46. A pair of dice is thrown. Find the following event :

Even numbers on both the dice.

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47. A pair of dice is thrown. Find the following event :

Odd numbers on both the dice.

48. A pair of dice is thrown. Find the following event :

The sum is 7.

49. From a group of 2 boys and 3 girls, two children are selected at random. Describe the event :

A: both selected children are girls

50. From a group of 2 boys and 3 girls, two children are selected at random. Describe the event :

B: the selected group consists of one boy and one girl.

51. From a group of 2 boys and 3 girls, two children are selected at random. Describe the event :

C: at least one boy is selected.

52. Three coins are tossed once. Let A denote the event "three heads show", B denote the event "two heads and one tail show", C denote the event "three tails show and D denote the event "a head shows on the first coin".

Which events are

(i) mutually exclusive ? (ii) in simple ? (iii) compound ?

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53. Three coins are tossed once. Let A denote the event "Three heads snow", B denote the event "two heads and one tail show", C denote the event" three tails show and D denote the event 'a head shows on the first coin".

Which events are simple?

54. Three coins are tossed once. Let A denote the event "Three heads snow", B denote the event "two heads and one tail show", C denote the event" three tails show and D denote the event 'a head shows on the first coin". Which events are Compound?

55. Three coins are tossed. Describe : two events, which are mutually exclusive.

56. Three coins are tossed. Describe : three events, which are mutually exclusive and exhaustive.

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57. Three coins are tossed. Describe : two events, which are not mutually exclusive.

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58. Three coins are tossed. Describe : two events, which are mutually exclusive but not exhaustive.

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59. Three coins are tossed. Describe : three events, which are mutually exclusive but not exhaustive.

60. Two dice are thrown. The events A, B, C are as follows:

A: getting an even number on the first die.

B : getting an odd number on the first die.

C : getting the sum of the number on the dice $\leq$ 5.

Describe the events

(i) A' (ii) not B (iii) A or B (iv) A and B (v) A but not C (vi) $A \cap B' \cap C' = \phi$.

61. Two dice are thrown. The events A, B, C, are as A: getting an even number on the first die B : getting an odd number on the first die C : getting the sum of the numbers on the dice ≤ 5 Describe the event : not B.

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62. Two dice are thrown. The events A, B, C, are as A: getting an even number on the first die B : getting an odd number on the first die C : getting the sum of the numbers on the dice ≤ 5 Describe the event : A or B.

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63. Two dice are thrown. The events A, B, C, are as A: getting an even number on the first die B : getting an odd number on the first die C : getting the sum of the numbers on the dice ≤ 5 Describe the event : A and B.

64. Two dice are thrown. The events A, B, C are as follows:

A: getting an even number on the first die.

B : getting an odd number on the first die.

C : getting the sum of the number on the dice ≤ 5.

Describe the events

(i) A' (ii) not B (iii) A or B (iv) A and B (v) A but not C (vi) $A \cap B' \cap C' = \phi$.

65. Two dice are thrown. The events A, B, C, are as A: getting an even number on the first die B : getting an odd number on the first die C : getting the sum of the numbers on the dice ≤ 5 Describe the event : B or C.

66. Two dice are thrown. The events A, B, C, are as A: getting an even number on the first die B : getting an

odd number on the first die C : getting the sum of the numbers on the dice ≤ 5 Describe the event : B and C

67. Two dice are thrown. The events A, B, C, are as A: getting an even number on the first die B : getting an odd number on the first die C : getting the sum of the numbers on the dice ≤ 5 Describe the event : $A \cap B' \cap C'$.

68. Two dice are thrown. The events A, B and C are as follows : A : getting an even number on the first die B: getting an odd number on the first die C : getting the sum of numbers on the dice ≤ 5. State true or false (give reason for your answer): A and B are mutually exclusive.

69. Two dice are thrown. The events A, B and C are as follows : A : getting an even number on the first die B: getting an odd number on the first die C : getting the sum of numbers on the dice ≤ 5. State true or false

(give reason for your answer): A and B are mutually exclusive and exhaustive.

70. Two dice are thrown. The events A, B and C are as follows : A : getting an even number on the first die B: getting an odd number on the first die C : getting the sum of numbers on the dice ≤ 5. State true or false (give reason for your answer): A and B are mutually exclusive.

71. Two dice are thrown. The events A, B and C are as follows : A : getting an even number on the first die B: getting an odd number on the first die C : getting the sum of numbers on the dice ≤ 5. State true or false (give reason for your answer): A and B are mutually exclusive and exhaustive.

72. Two dice are thrown. The events A, B and C are as follows : A : getting an even number on the first die B: getting an odd number on the first die C : getting the sum of numbers on the dice ≤ 5. State true or false

(give reason for your answer): A and B are mutually exclusive and exhaustive.

73. Two dice are thrown. The events A, B and C are as follows : A : getting an even number on the first die B: getting an odd number on the first die C : getting the sum of numbers on the dice ≤ 5. State true or false (give reason for your answer): A and B are mutually exclusive and exhaustive.

74. Which of the following can not valid assignments for outcomes of sample space,

$$S = \{w_1, w_2, w_3, w_4, w_5, w_6, w_7\}$$

Assignment	ω_1	ω_2	ω_3	ω_4	ω_5	ω_6	ω_7
(a)	0.1	0.01	0.05	0.03	0.01	0.2	0.6
(b)	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$
(c)	0.1	0.2	0.3	0.4	0.5	0.6	0.7
(d)	−0.1	0.2	0.3	0.4	−0.2	0.1	0.3

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75. Whether the following cannot be the probability of occurrence of an event : $\dfrac{2}{3}$.

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76. Which of the following is not a probability of the occurrence of an event?

0

77. Whether the following cannot be the probability of occurrence of an event : $\dfrac{-2}{3}$.

78. Whether the following cannot be the probability of occurrence of an event : $\dfrac{3}{2}$.

79. If $\dfrac{3}{5}$ is the probability of an event A what is the probability of the event not A.

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80. A die is tossed once. The probability of getting an even number is :

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81. A die is tossed once. What is the probability of :

getting the number 8.

82. A die is tossed once. What is the probability of :

getting the number less than 8.

83. A coin is tossed twice, what is the probability that atleast one tail occurs ?

84. If a letter is Chosen at random from the English alphabet, find the probability that the letter is : a vowel.

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85. If a letter is Chosen at random from the English alphabet, find the probability that the letter is : a Consonant.

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86. A coin is tossed twice. What are all possible outcomes? What is the probability of the coin coming

up "heads" ?

87. The odds in favour of occurrence of an event are 5: 13. Find the probability that it will occur.

88. If $\dfrac{3}{11}$ is the probability that a certain event will occur, find the odds in favour of its occuring.

89. A card is drawn from a well shuffled deck of cards. What are the odds in favour of getting a face card.

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90. What are the odds in favour of getting a spade if the card is drawn from a well shuffled deck of cards ? What are the odds in favour of getting a king ?

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91. Two cards are drawn without replacement from a well shuffled pack of 52 cards. Find the probability that

one is a spade and the other is a queen of red colour.

92. Two cards are drawn from a well shuffled pack of 52 cards one after the other without replacement. Find the probability that one of these is a queen and the other is a king of opposite colour.

93. 3 cards are drawn at random from a pack of well shuffled 52 cards. Find the probability that : all the three cards are of the same suit .

94. 3 cards are drawn at random from a pack of well shuffled 52 cards. Find the probability that : one is a king, the other is a queen and the third is a jack.

95. 4 cards are drawn from a well shuffled deck of 52 cards. What is the probability of obtaining 3 diamonds and one spade ?

96. A bag contains 6 red, 5 white and 4 black balls. Two balls are drawn. Find the probability that none of them is red.

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97. A bag contains 6 red, 4 white and 8 blue balls. If three balls are drawn at random, find the probability that one is red, one is white and one is blue.

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98. What is the chance that a non-leap year selected at random will contain 53 Sundays ?

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99. There are four men and six women in the city council. If one council member is selected for a committee at random, has likely is it that it is a woman ?

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100. A fair coin marked 1 on one face and 6 on the other and a fair die are both tossed. Find the probability that

sum of numbers that turns up is

(i) 3 (ii) 12.

101. A fair coin marked 1 on one face and 6 on the other and a fair die are both tossed. Find the probability that sum of numbers that turns up is

(i) 3 (ii) 12.

102. Three coins are tossed once. Find the probability of getting :

3 heads .

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103. Three coins are tossed once. Find the probability of

getting

two heads.

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104. Three coins are tossed once. Find the probability of

getting

at least two heads.

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

(i) 2 heads

(ii) at least 2 heads

(iii) atmost 2 heads

(iv) no head

(v) no tail

(vi) at most 2 tails.

(vii) exactly two tails

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106. Three coins are tossed. Find the probability of : no heads

107. Three coins are tossed. Find the probability of getting : all tails

108. Three coins are tossed. Find the probability of : exactly 2 tails

109. Three coins are tossed once. Find the probability of getting :

no tail.

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

at most two tails.

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111. In a simultaneoulsy toss of two coins, find the probability of :

exactly 2 tails .

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112. In a simultaneoulsy toss of two coins, find the probability of :

exactly 1 tail .

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113. In a simultaneoulsy toss of two coins, find the probability of :

no tails.

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

two heads.

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115. Three unbiased coins are tossed once. Find the probability of getting :

one head or two heads.

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

at least two heads.

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117. Three unbiased coins are tossed once. Find the probability of getting :

at most 2 heads.

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118. Two unbiassed coins are tossed. Find the probability of getting at most one head.

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119. A die is thrown once. Find the probability of getting : an even number

120. A die is thrown once. If probability of an event X is denoted by P (X), find : P (a number ≥ 3).

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121. A die is thrown once. If probability of an event X is denoted by P (X), find : P (a number between 2 and 5).

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122. A die is thrown once. If probability of an event X is denoted by P (X), find : P (a number ≤ 4).

123. A die is thrown once. If probability of an event X is denoted by P (X), find : P (a number < 7).

124. A die is thrown once. If probability of an event X is denoted by P (X), find : P (a number > 6).

125. Two dice are thrown simultaneously. Find the probability of getting a sum of : 9.

126. Two dice are thrown simultaneously. Find the probability of getting a sum of : 7.

127. In a single throw of two dice, find the probability of a total of :

an odd number greater than 5.

128. In a single throw of two dice, find the probability of

a total of :

at least 10.

129. In a single throw of two dice, what is the probability

of getting : an odd number on the first dice and 6 on

the second dice.

130. In a single throw of two dice, find:

P (a number > 4 on each die).

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131. In a single throw of two dice, what is the probability of getting : a total of 11

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132. In a single throw of two dice, find the probability of total of 9 or 11

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133. In a single throw of two dice, find:

P (a total of 11 or 12) .

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134. In a single throw of two dice, find:

P (a total of 10 or 12).

> ▶ **Watch Video Solution**

135. In a single throw of two dice, find the probability of

total of 9 or I 0.

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136. In a single throw of two dice, find:

P (a total of 10 or 11).

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137. In a single throw of two dice, find:

P (a total of 8 or 9).

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138. In a single throw of two dice, find:

P (a total > 8).

139. A pair of dice is thrown. Find the probability of getting a doublet.

140. A pair of fair dice is thrown. Find the probability that the sum is 10 or greater if 5 appears on the first dice .

141. In a single throw of three dice, find the probability of getting a total of 5

142. In a single throw of three dice, find the probability of getting a total of at most 5

143. In a single throw of three dice, determine the probability of getting

(i) a total of 5

(ii) a total of at most 5

(iii) a total of at least 5 .

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144. In a single throw of three dice, find the probability of getting : the same number on all the dice.

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145. Find the probability of getting a sum as 6 when two dice are thrown simultaneously.

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146. In a single throw of two dice, determine the probability of a obtaining a total of 2 or 4.

147. In a single throw of two dice, find the probability of total of 9 or 11

148. In a single throw of two dice, find the probability of getting a total of 10 or 11.

149. Find the probability of getting the sum as a prime number when two dice are thrown together.

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150. Find the probability of getting the product of a perfect square (square of a natural number), when two dice are thrown together.

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151. Find the probability of getting the sum an odd number, when two dice are thrown together.

152. Two dice are thrown together. What is the probability that the sum of the numbers on the two faces is neither 9 nor 11 ?

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153. A die is rolled twice. Find the probability that the sum of the numbers on the dice is divisible by 3 or 4.

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154. Two dice are thrown together. What is the probability that the sum of the numbers on the two faces is greater than 8 ?

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155. A die is rolled twice. Find the probability that the sum of the numbers on the dice is divisible by 3 or 4.

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156. Two dice are thrown together. What is the probability that the sum of the numbers on the two

faces is neither divisible by 3 nor by 5 ?

157. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: a diamond.

158. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: not an ace.

159. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: not a king.

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160. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: a black card (i.e. a club or a spade)

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161. One card is drawn from a pack of 52 cards, each of 52 cards being equally likely to be drawn. Find the probability of : the card drawn is red

162. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: not a diamond.

163. One card is drawn from a well shuffled deck of 52 cards. If each outcome is equally likely, calculate the probability that the card will be: not a black card.

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164. A letter is chosen at random, from the word 'ASSASSINATION'. Find the probability that letter is a vowel

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165. A letter is chosen at random from the word ASSASSINATION. Find the probability that a letter is

(i) vowel.

(ii) a consonant.

166. Find the probability that in a random arrangement of the letters of the word "UNIVERSITY", the two I's do not come together.

167. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: red .

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168. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: white.

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169. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: black .

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170. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: red or black.

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171. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: white or black.

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172. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: not red.

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173. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: not black.

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174. An urn contains 7 white, 5 black and 3 red balls. Two balls are drawn at random, Find the probability that :

both the balls are red.

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175. An urn contains 7 white, 5 black and 3 red balls. Two balls are drawn at random, Find the probability that :

both the balls are red.

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176. An urn contains 7 white, 5 black and 3 red balls. Two balls are drawn at random, Find the probability that :

one ball is white.

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177. An urn contains 9 red, 8 white and 4 black balls. A ball is drawn at random. What is the probability that ball drawn is white or black ?

178. A bag contains 9 discs of which 4 are red, 3 are blue and 2 are yelow. The discs are similar in shape and size. A disc is drawn at random from the bag. Calculate the probability that it will be

(i) red (ii) yellow (iii) blue (iv) not blue (v) either red or yellow.

179. A bag contains 9 discs of which 4 are red, 3 are blue and 2 are yelow. The discs are similar in shape and size. A disc is drawn at random from the bag. Calculate the probability that it will be

(i) red (ii) yellow (iii) blue (iv) not blue (v) either red or yellow.

180. A bag contains 9 discs of which 4 are red, 3 are blue and 2 are yelow. The discs are similar in shape and size. A disc is drawn at random from the bag. Calculate the probability that it will be

(i) red (ii) yellow (iii) blue (iv) not blue (v) either red or yellow.

181. A bag contains 9 discs of which 4 are red, 3 are blue and 2 are yellow. The discs are similar in shape and size. A disc is drawn at random from the bag. Calculate the probability that it will be: not blue.

182. A bag contains 9 discs of which 4 are red, 3 are blue and 2 are yellow. The discs are similar in shape and size.

A disc is drawn at random from the bag. Calculate the probability that it will be: not yellow .

183. A bag contains 9 discs of which 4 are red, 3 are blue and 2 are yelow. The discs are similar in shape and size.

A disc is drawn at random from the bag. Calculate the probability that it will be

(i) red (ii) yellow (iii) blue (iv) not blue (v) either red or yellow.

184. Two coins are tossed simultaneously. Complete the following table :

Number of Heads :	0	1	2
Probability :	(i)	(ii)	(iii)

42. Two dice are tossed simul...

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185. Two dice are tossed simultaneously. Complete the following table :

Total number of points :	2	3	4	5	6	7	8	9	10	11	12
Probability :											

43. Three coins ...

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186. Three coins are tossed simultaneously. Write the sample space and complete the following table :

Number of Heads :	0	1	2	3
Probability :	(i)	(ii)	(iii)	(iv)

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187. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: red .

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188. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: white.

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189. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: red or black.

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190. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: white or black.

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191. A urn contains 9 red, 7 white and 4 black balls. A ball is drawn at random. What is the probability that the ball drawn will be: not red.

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192. Six boys and six girls sit in a row randomly. The probability that the six girls sit together or the the boys and girls sit alternatly, is

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193. Six boys and six girls sit in a row at random. Find the probability that : the boys and girls sit alternately.

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194. A coin is tossed thrice. If event E denotes the 'number of heads is odd' and event F denotes the

'number of tails is odd', then find the cases favourable

to the event $E \cap F$.

195. From a group of 2 men and 3 women, two persons

are selected. Describe the sample space of the

experiment. If E is the event in which one man and one

woman are selected, then which are the cases

favourable to E ?

196. What is the probability that the numbers selected from the numbers 1, 2, 3, ... , 30 is a prime number ? You may assume that each of the 30 numbers is equally likely to be selected.

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197. What is the probability that a number selected from the numbers 1, 2, 3......27 is a prime number ? You may assume that each of 27 numbers is equally likely to be selected.

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198. A bag contains 3 red balls bearing one of the numbers 1, 2 or 3 (one number on one ball) , and 2 black balls bearing the numbers 4 or 6. A ball is drawn, its number is noted and the ball is replaced in the bag. Then another ball is drawn and its number is noted. Find the probability of drawing: 2 on the first draw and 6 on the second draw.

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199. A bag contains 3 red balls bearing one of the numbers 1, 2 or 3 (one number on one ball) , and 2 black balls bearing the numbers 4 or 6. A ball is drawn, its number is noted and the ball is replaced in the bag. Then another ball is drawn and its number is noted.

Find the probability of drawing: a number ≤ 2 on the first draw and 4 on the second draw.

200. A bag contains 3 red balls bearing one of the numbers 1, 2 or 3 (one number on one ball) , and 2 black balls bearing the numbers 4 or 6. A ball is drawn, its number is noted and the ball is replaced in the bag. Then another ball is drawn and its number is noted. Find the probability of drawing: a total of 5.

201. In a lottery, a person chosen six different natural numbers at random from 1 to 20, and if these six numbers match with the six numbers already fixed by the lottery committee he wins prize. What is the probability of winning the prize in the game ?

[Provided that the order of the number is not important].

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202. 20 cards are numbered from 1 to 20. One card is then drawn at random. What is the probability that the number on the card will be : a multiple of 4 ?

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203. 20 cards are numbered from 1 to 20. One card is then drawn at random. What is the probability that the number on the card will be : not a multiple of 4 ?

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204. 20 cards are numbered from 1 to 20. One card is then drawn at random. What is the probability that the number on the card will be : odd?

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205. 20 cards are numbered from 1 to 20. One card is then drawn at random. What is the probability that the number on the card will be : greater than 12?

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206. 20 cards are numbered from 1 to 20. One card is then drawn at random. What is the probability that the number on the card will be : divisible by 5?

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207. 20 cards are numbered from 1 to 20. One card is then drawn at random. What is the probability that the number on the card will be : not a multiple of 6?

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208. Two dice are thrown. Find the odds in favour of getting the sum : 4. What are the odds against getting the sum 6 ?

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209. Two dice are thrown. Find the odds in favour of getting the sum : 5. What are the odds against getting the sum 6 ?

210. A fair coin is tossed four times, and a person wins Re. 1 for each head and loses Rs 1.50 for each tail that turns up. From the sample space. calculate how many different amounts of money you can have after four tosses and the probability of having each of the these amounts.

211. Check whether the following Probabilities P (A) and P (B) are Consistently defined :

P(A) =0.5, P (B)=0.7, $P(A \cap B) = 0.06$.

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212. Check whether the following Probabilities P (A) and P (B) are Consistently defined :

P(A) =0.5. P (B)=0.4, $P(A \cup B) = 0.8$.

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213. Events E and F are such that P (not E or not F) = 0.25. State whether E and F are mutually exclusive.

214. Given $P(A) = \dfrac{3}{5}$ and $P(B) = \dfrac{1}{5}$, find P(A or B) and A & B are mutually exclusive events.

215. If E and F are two events such that P (E) $= \dfrac{1}{4}$, P (F)= $\dfrac{1}{2}$ and P(E and F) = $\dfrac{1}{8}$, find : P (E or F).

216. If E and F are events such that $P(E) = \dfrac{1}{4}$, $P(F) = \dfrac{1}{2}$ and P(E and F) $= \dfrac{1}{8}$. Find (i) P(E or F) (ii) P(not E and not F).

217. A and B are events such that P(A)=0.42, P(B)=0.48 and P(A or B)=0.16.

Determine

P(not B)

218. A and B are events such that P(A)=0.42, P(B)=0.48

and P(A or B)=0.16.

Determine

P(not B)

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219. If A and B are events such that P(A) = 0.42, P(B) =

0.48 and P(A ∩ B) = 0.16, then P(A or B) is equal to

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220. A and B are two mutually exclusive events. If P (A) = 0.5, P (B) = 0.6, find P (A or B).

221. In a single throw of two dice, find the probability of total of 9 or 11

222. In a single throw of two dice, find the probability of a total of :

8 or 12.

223. In a single throw of two dice, find the probability of a total of :

a total of :

a total > 8.

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224. In a single throw of 2 dices, determine the probability of not getting the same number on the two dices.

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225. What is the probability that a number selected from the numbers 1, 2, 3......27 is a prime number ? You may assume that each of 27 numbers is equally likely to be selected.

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226. A card is drawn from a well shuffled deck of 52 cards. Find the probability of drawing :

a black king.

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227. A card is drawn from a well shuffled deck of 52 cards. Find the probability of drawing :

a jack, queen, king or an ace.

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228. A card is drawn from a well shuffled deck of 52 cards. Find the probability of drawing :

a card, which is neither a heart nor a king .

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229. A card is drawn from a well shuffled deck of 52 cards. Find the probability of drawing :

a spade or club.

230. From a set of 17 cards, numbered 1, 2, 3, 4, ... ,16, 17, one is drawn at random. Show that the chance that its number is divisible by 3 or 7 is $\dfrac{7}{17}$.

231. A bag contains 24 balls numbered from 1 to 24. One ball is drawn at random. Find the probability that the ball drawn has a number which is a multiple of 3 or 4.

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232. A pair of dice is rolled. Find the probability of getting a doublet or sum of numbers to be at least 10.

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233. Two dice are tossed together. Find the probability of getting a doublet or (a) total of 10 (b) total of 6.

234. Find the probability that a card drawn from a deck

of 52 cards is:

either a king or a club.

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235. Find the probability that a card drawn from a deck

of 52 cards is:

either a heart or a king.

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236. Find the probability of getting 2 or 3 tails when a coin is tossed four times.

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237. An integer is chosen from the first 200 integers. Find the probability that it is divisible by 6 or 8.

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238. Find the probability of getting a doublet or sum of numbers to be at least 10, when a pair of dice is rolled.

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239. In an entrance test that is graded on the basis of two examinations, the probability of a randomly chosen student passing the first-examination is 0.8 and the probability of passing the second examination is 0.7. The probability of passing at least one of them is 0.95. What is the probability of passing both ?

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240. The probability that a student will pass the final examination in both English and Hindi is 0.5 and the probability of passing neither is 0.1. if the probability of

passing the English examination is 0.75, what is the probability of passing the Hindi examination?

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241. In a class of 60 students, 30 opted for NCC, 32 opted for NSS and 24 opted for both NCC and NSS. If one of these students is selected at random, find the probability that :

the student opted for NCC or NSS.

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242. In a class of 60 students, 30 opted for NCC, 32 opted for NSS and 24 opted for both NCC and NSS. If one of these students is selected at random, find the probability that :

the student has opted neither NCC nor NSS.

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243. In a class of 60 students, 30 opted for NCC, 32 opted for NSS and 24 opted for both NCC and NSS. If one of these students is selected at random, find the probability that :

the student has opted neither NCC nor NSS.

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244. One card is drawn from a pack of 52 cards, each of 52 cards being equally likely to be drawn. Find the probability of : the card drawn is red

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245. One card is drawn from a pack of 52 cards, each of 52 cards being equally likely to be drawn. Find the probability of : the card drawn is a king

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246. One card is drawn from a pack of 52 cards, each of 52 cards being equally likely to be drawn. Find the probability of : the card drawn is red and a king

247. One card is drawn from a pack of 52 cards, each of 52 cards being equally likely to be drawn. Find the probability of : the card drawn is either red or a king

248. The probability that a student will receive an A, B, C or D grade is 0.40, 0.35, 0.15 and 0.10 respectively. Find the probability that a student will receive :

not an A grade.

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249. The probability that a student will receive an A, B, C or D grade is 0.40, 0.35, 0.15 and 0.10 respectively. Find the probability that a student will receive :

at most a C grade.

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250. The probability that a student will receive an A, B, C or D grade is 0.40, 0.35, 0.15 and 0.10 respectively. Find the probability that a student will receive :

B or C grade.

251. Neelam is taking up subjects - Mathematics, Physics and Chemistry. She estimates that her probabilities of receiving a grade A in these courses. are 0.2, 0.3 and 0.9 respectively. If the grades can be regarded as independent events, find the probabilities that Neelam receives :

All A's .

252. Probabilities of A, B and C of solving a problem are $\dfrac{1}{2}, \dfrac{1}{3}$ and $\dfrac{1}{4}$ respectively. If they all try to solve the problem then find the probability that exactly one of them will solve the problem.

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253. Neelam is taking up subjects - Mathematics, Physics and Chemistry. She estimates that her probabilities of receiving a grade A in these courses. are 0.2, 0.3 and 0.9 respectively. If the grades can be regarded as independent events, find the probabilities that Neelam

receives :

Exactly two A's .

254. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on the token is :

an even number.

255. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on the token is :

an odd number.

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256. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on the token is :

a multiple of 3 ?

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257. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on the token is :

a multiple of 5 ?

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258. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on the token is :

a multiple of 3 and 5 ?

259. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on the token is :

a multiple of 3 or 5?

260. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on

the token is :

less than 20?

261. A bag contains 100 identical tokens on which numbers 1 to 100 are marked. A token is drawn randomly. What is the probability that the number on the token is :

greater than 70 ?

262. In a simultaneous throw of two dice if A denotes the event 'a total of 11' and B denotes the event 'an odd number on each die', then find :

P(A) .

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263. In a simultaneous throw of two dice if A denotes the event 'a total of 11' and B denotes the event 'an odd number on each die', then find :

P(B).

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264. In a simultaneous throw of two dice if A denotes the event 'a total of 11' and B denotes the event 'an odd number on each die', then find :

P(A or B).

265. Say True or False giving reason :

$P(A) = \dfrac{1}{3}, P(B) = \dfrac{2}{3}$, A and B aremutually exclusive and exhaustive.

266. Say True or False giving reason :

P(A) = 0.4, P (B) = 0.25, P (A or B) = 0.65 . A and B are mutually exclusive events.

267. Say True or False giving reason :

P (A) = 0.35, P (B) = 0.65 , A and B are complementary events.

268. Say True or False giving reason :

P(A) = 0.3, P (B) = 0.45, P (A and B) = 0.2 . A and B are mutually exclusive events.

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269. A and B are two mutually exclusive events of an experiment. If P (not A) = 0.65, $P(A \cup B) = 0.65$, and P (B)= p, find the value of p.

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270. A,B and C are three mutually exclusive and exhaustive events associated with a random experiment . Find P(A) given that $P(B) = \dfrac{3}{2}P(A)$ and $P(C) = \dfrac{1}{2}P(B).$

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271. Find the probability that when a hand of 7 cards is drawn from a well shuffled deck of 52 cards it contains :

(i) all Kings (ii) exactly three Kings (iii) at least three Kings.

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272. Find the probability that when a hand of 7 cards is drawn from a well shuffled deck of 52 cards it contains :

(i) all Kings (ii) exactly three Kings (iii) at least three Kings.

▶ **Watch Video Solution**

273. Find the probability that when a hand of 7 cards is drawn from a well Shuffled deck of 52 cards, it contains:

atleast 3 kings.

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274. 4 cards are drawn from a well shuffled deck of 52 cards. What is the probability of obtaining 3 diamonds and one spade ?

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275. A die has two faces each with number '1', three faces each with number '2' and one face with number '3'. If die is rolled once, determine : P(2).

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276. A die has two faces each with number '1', three faces each with number '2' and one face with number '3'. If die is rolled once, determine : P(1 or 3) .

277. A die has two faces each with number '1', three faces each with number '2' and one face with number '3'. If die is rolled once, determine : P (not 3).

278. A box contains 10 red marbles, 20 blue marbles and 30 green marbles. 5 marbles are drawn from the box, what is the probability that

all will be blue

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279. A box contains 10 red marbles, 20 blue marbles and 30 green marbles. 5 marbles are drawn from the box, what is the probability that

at least one will be green

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280. Three letters are dictated to three persons and an envelope is addressed to each of them the letters are inserted into the envelopes at random so that each envelope contains exactly one letter. Find the probability that at least one letter is in its proper envelope.

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281. Out of 100 students, two sections of 40 and 60 are formed. If you and your friend are among 100 students, what is the probability that

a) you both enter the same section.

b) you both enter the different sections.

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282. Out of 100 students, two sections of 40 and 60 are formed. If you and your friend are among 100 students, what is the probability that

a) you both enter the same section.

b) you both enter the different sections.

283. In a certain lottery 10,000 tickets are sold and ten equal prizes are awarded. What is the probability of not getting a prize if you buy :

one ticket .

284. In a certain lottery 10,000 tickets are sold and ten equal prizes are awarded. What is the probability of not getting a prize if you buy :

two tickets.

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285. In a certain lottery 10,000 tickets are sold and ten equal prizes are awarded. What is the probability of not getting a prize if you buy :

10 tickets.

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286. A and B are two events such that P(A)=0.54, P(B)=0.69

and $P(A \cap B)$=0.35

Find:

$P(A \cup B)$

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287. A and B are two events such that P(A)=0.54, P(B)=0.69

and $P(A \cap B)$=0.35

Find:

$P(A' \cap B')$

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288. A and B are two events such that P(A)=0.54, P(B)=0.69

and $P(A \cap B)$=0.35

Find:

$P(A \cap B')$

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289. A and B are two events such that P(A)=0.54, P(B)=0.69

and $P(A \cap B)$=0.35

Find:

$P(B \cap A')$

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290. The number lock of a suitcase has 4 wheels, each labelled with ten digits i.e., from 0 to 9. The lock opens with a sequence of four digits with no repeats. What is the probability of a person getting the right sequence to open the suitcase ?

291. If 4-digit numbers greater than 5000 are randomly formed from the digits 0, 1, 3, 5 and 7 what is the probability of forming a number divisible by 5 when,

i) the digits are repeated ?

ii) the repetition of digits is not allowed ?

292. If 4-digit numbers greater than 5000 are randomly formed from the digits 0, 1, 3, 5 and 7 what is the probability of forming a number divisible by 5 when,

i) the digits are repeated ?

ii) the repetition of digits is not allowed ?

293. From the employees of a company, 5 persons are selected to represent them in the managing committee of the company. Particulars of five persons are as follows:

S. No.	Name	Sex	Age in years
1.	Harish	M	30
2.	Rohan	M	33
3.	Sheetal	F	46
4.	Alis	F	28
5.	Salim	M	41

A person is selected at random from this group to act as a spokesperson. What is the probability that the spokesperson will be either male or over 35 years ?

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294. On her vacations Veena visits four Cities (A, B,C and D) in a random order. What is the probability that she visits :

A before B ?

295. On her vacations Veena visits four Cities (A, B,C and D) in a random order. What is the probability that she visits :

A before B and B before C ?

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296. On her vacations Veena visits four Cities (A, B,C and D) in a random order. What is the probability that she visits :

A first and B last ?

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297. On her vacations Veena visits four Cities (A, B,C and D) in a random order. What is the probability that she visits :

A either first or second ?

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298. On her vacations Veena visits four Cities (A, B,C and D) in a random order. What is the probability that she visits :

A just before B ?

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299. In a relay race, there are five teams, A, B, C, D and E.

What is the probability that A,B, C finish first, second

and third respectively?

300. In a relay race, there are five teams, A, B, C, D and E.

What is the probability that A,B and C are first three to

finish (in any order)?

301. $\lim\limits_{x \to -1} \left[1 + x + x^2 + \ldots . + x^{10}\right]$ is :

A. 1

B. 10

C. 0

D. None of these.

Answer:

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302. $\lim_{x \to 3} [x(x + 1)]$ is :

A. 3

B. 12

C. 21

D. 0

Answer:

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303. $\lim\limits_{x \to 1} \left[x^3 - x^2 + 1\right]$ is :

A. 1

B. 0

C. -1

D. 3

Answer:

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304. When a coin is tossed three times, the number of possible outcomes is :

A. 3

B. 6

C. 8

D. None of these.

Answer:

305. When a coin is tossed two times, the number of possible outcomes is :

A. 2

B. 4

C. 6

D. 8

Answer:

306. $\lim\limits_{x \to 0} \dfrac{(x + 1)^5 - 1}{x}$ is :

A. 5/2

B. 5

C. $\dfrac{5}{3}$

D. 4

Answer:

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307. $\displaystyle\lim_{x \to 2} \dfrac{3x^2 - x - 10}{x^2 - 4}$ is :

A. $\dfrac{13}{4}$

B. $\dfrac{7}{4}$

C. $\dfrac{11}{4}$

D. $\dfrac{9}{4}$.

Answer:

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308. $\displaystyle\lim_{x \to 1} \dfrac{ax^2 + bx + c}{cx^2 + bx + a}, \ a + b + c \neq 0$ is :

A. a+b+c

B. 1

C. abc

D. 2

Answer:

309. Evaluate : $\lim\limits_{x \to 0} \dfrac{\sin ax}{\sin bx}$, $a, b \neq 0$.

A. $\dfrac{a}{b}$

B. $\dfrac{b}{a}$

C. ab

D. None of these.

Answer:

310. $\lim\limits_{x \to 0} \dfrac{\sin ax}{bx}$ is :

A. ab

B. $\dfrac{b}{a}$

C. $\dfrac{a}{b}$

D. None of these.

Answer:

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311. $\displaystyle\lim_{x \to 0} \dfrac{\tan x}{x}$ is :

A. 1

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

C. 2

D. None of these.

Answer:

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312. The value of $\lim\limits_{x \to 1} \dfrac{x^{15} - 1}{x^{12} - 1} =$

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

B. $\dfrac{5}{4}$

C. $\dfrac{2}{3}$

D. None of these.

Answer:

313. The value of $\lim\limits_{x \to 0} \dfrac{\sqrt{1+x} - 1}{x} =$

A. 0

B. ∞

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

D. 2

Answer:

314. The derivative of x^n is equal to :

A. nx^{n-1}

B. x^{n-1}

C. $\dfrac{x^{n-1}}{n}$

D. $\dfrac{x^{n+1}}{n+1}$.

Answer:

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315. The derivative of $100x^{99}$ at x =1 is:

A. 9900

B. 100

C. 990

D. None of these.

Answer:

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316. The derivative of sin 2x is equal to :

A. cos 2x

B. $- \cos 2x$

C. 2 cos 2x

D. $\dfrac{\cos 2x}{2}$.

Answer:

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317. The derivative of tan x is :

A. $\sec^2 x$

B. sec x tan x

C. $-\cos ec^2 x$

D. -cosec x cot x.

Answer:

318. $\lim_{x \to -1} \left(x^3 - x^2 + 1\right)$ is equal to :

A. 0

B. -1

C. 1

D. None of these.

Answer:

319. $\lim\limits_{x \to 3} \ [x(x+1)]$ is :

A. 3

B. 12

C. 2

D. 5

Answer:

320. $\lim\limits_{x \to 4} \dfrac{4x + 3}{x - 2}$ is :

A. $\dfrac{19}{2}$

B. O

C. $\dfrac{17}{2}$

D. $-\dfrac{1}{2}$.

Answer:

321. Derivative of $1 - 4t^2$ at 1 is :

A. Zero

B. -8

C. -5

D. -4.

Answer:

322. The derivative of $x^2 - 1$ at x = 10 is :

A. 1

B. 20

C. 10

D. Zero.

Answer:

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323. Derivative of 99x at x = 100 is:

A. 99

B. 100

C. zero

D. None of these.

Answer:

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324. $\lim\limits_{x \to 3} [x]$ is :

A. 2

B. 3

C. Does not exist

D. 4

Answer:

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325. $\lim\limits_{x \to 0} \dfrac{|x|}{x}$ is :

A. 1

B. -1

C. 0

D. Does not exist .

Answer:

326. $\lim\limits_{\theta \to 0} \dfrac{\sin \theta}{\theta} =$

A. 5

B. $\dfrac{1}{5}$

C. 1

D. None of these.

Answer:

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327. The derivative of sin x cos x w.r.t. x is

A. sin 2x

B. cos 2x

C. 2 sin 2x

D. 2 cos 2x.

Answer:

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328. If $f(x) = x^2$, then find f'(2) .

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329. $\lim\limits_{x \to \frac{\pi}{2}} [\sin x]$ is :

A. 1

B. 0

C. -1

D. None of these.

Answer:

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330. The value of $\lim\limits_{x \to 0} \dfrac{\sin bx}{\sin ax}$ is equal to:

A. 1

B. 0

C. $\dfrac{b}{a}$

D. $\dfrac{a}{b}$.

Answer:

331. $\lim\limits_{x \to \frac{\pi}{2}} \dfrac{\cot x - \cos x}{(\pi - 2x)^3}$ equals :

A. $\dfrac{1}{16}$

B. $\dfrac{1}{8}$

C. $\dfrac{1}{4}$

D. $\dfrac{\pi}{2}$.

Answer:

332. Let $f(x) = \dfrac{\sqrt{x+3}}{x+1}$, then the value of

$\displaystyle\lim_{x \to -3^-} f(x)$ is :

A. 0

B. does not exist

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

D. $-\dfrac{1}{2}$.

Answer:

333. Let α and β be the roots of $ax^2 + bx + c = 0$, then

$$\lim_{x \to \alpha} \frac{1 - \cos(ax^2 + bx + c)}{(x - \alpha)^2} \text{ is equal to :}$$

A. 0

B. $\dfrac{1}{2}(\alpha - \beta)^2$

C. $\dfrac{a^2}{2}(\alpha - \beta)^2$

D. $\alpha - \beta$.

Answer:

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334. If f (9) = 9, f '(9) = 1, then $\lim\limits_{x \to 9} \dfrac{8 - \sqrt{f(x)}}{3 - \sqrt{x}} =$

A. 3

B. 1

C. 0

D. 2

Answer:

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335. $\lim\limits_{n \to \infty} \dfrac{3.2^{n+1} - 4.5^{n+1}}{5.2^n + 7.5^n} =$

A. $-\dfrac{20}{7}$

B. 0

C. $\dfrac{3}{5}$

D. $-\dfrac{4}{7}$.

Answer:

336. Discuss the continuity of the function

$$f(x) = \lim_{n \to \infty} \frac{\log(2 + x) - x^{2n} \sin x}{1 + x^{2n}} \text{ at x} = 1$$

A. $\lim\limits_{x \to 1^-}$ f(x) does not exist

B. $\lim\limits_{x \to 1^+}$ f(x) does not exist

C. Both limits exist and $\lim\limits_{x \to 1^-} f(x) = \lim\limits_{x \to 1^+} f(x)$

D. Both limits exist and $\lim\limits_{x \to 1^-} f(x) = \lim\limits_{x \to 1^+} f(x)$.

Answer:

337. $\displaystyle\lim_{x \to 0} \frac{e^{x^2} - \cos x}{x^2} =$

A. 0

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

C. 1

D. $\dfrac{3}{2}$.

Answer:

338. The value of $\lim\limits_{n \to \infty} \dfrac{a^n + b^n}{a^n - b^n}$, (where $a > b$) is

A. 0

B. -1

C. 1

D. does not exist .

Answer:

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339. Events A, B, C are mutually exclusive events such that $P(A) = \dfrac{3x + 1}{3}, P(B) = \dfrac{1 - x}{4}$ and

$$P(C) = \frac{1 - 2x}{2}.$$ The set of possible values of x are in

the interval :

A. $\left[\dfrac{1}{3}, \dfrac{2}{3}\right]$

B. $\left[\dfrac{1}{3}, \dfrac{13}{3}\right]$

C. [0,1]

D. $\left[\dfrac{1}{3}, \dfrac{1}{2}\right]$.

Answer:

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340. Two numbers are selected randomly from the set

$S = \{1, 2, 3, 4, 5, 6\}$ without replacement one by one.

The probability that minimum of the two numbers is less than 4 is a.1/15 b. 14/15 c. 1/5 d. 4/5

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

B. $\dfrac{1}{15}$

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

D. $\dfrac{14}{15}$.

Answer:

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341. If three distinct number are chosen randomly from the first 100 natural numbers, then the probability that

all three of them are divisible by both 2 and 3 is a. $4/25$
b. $4/35$ c. $4/33$ d. $4/1155$

A. $\dfrac{4}{25}$

B. $\dfrac{4}{35}$

C. $\dfrac{4}{33}$

D. $\dfrac{4}{1155}$.

Answer:

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342. Three houses are available in a locality. Three persons apply for the houses. Each applies for one

house without consulting others. The probability that all the three apply for the same house , is

A. $\dfrac{1}{9}$

B. $\dfrac{2}{9}$

C. $\dfrac{7}{9}$

D. $\dfrac{8}{9}$.

Answer:

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343. Two aeroplanes I and II bomb a target in successions. The probabilities of I and II scoring a hit correctly are 0.3 and 0.2, respectively.. The second plane

will bomb only if the first misses the target. The probability that the target is hit by the second plane, is

A. 0.14

B. 0.2

C. 0.7

D. 0.06 .

Answer:

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344. The mean of the numbers a, b, 8, 5, 10 is 6 and the variance is 6.80. Then which one of the following gives possible values of a and b ?

A. a=3,b=4

B. a=0,b=7

C. a=5,b=2

D. a=1,b=6 .

Answer:

345. Let $L = \lim\limits_{x \to 0} \dfrac{a - \sqrt{a^2 - x^2} - \frac{x^2}{4}}{x^4}$, $a > 0$. If L is finite then

A. a=2

B. a=1

C. $L = \dfrac{1}{64}$

D. $L = \dfrac{1}{32}$.

Answer:

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346. If the mean deviation about the median of the numbers: a, 2a,........, 50a is 50, then | a | equals :

A. 2

B. 3

C. 4

D. 5

Answer:

347. Let $f: R \to [10, \infty)$ be such that $\lim\limits_{x \to 5} f(x)$ exists and $\lim\limits_{x \to 5} \dfrac{(f(x))^2 - 9}{\sqrt{|x - 5|}} = 0.$ Then $\lim\limits_{x \to 5} f(x)$ equals :

A. 10

B. 1

C. 2

D. 3

Answer:

348. A scientist is weighting each of 30 fishes. Their mean weight worked out as 30 gm and standard derivation of 2gm. Later, it ways found that the measuring scale was misaligned and always under reported every fish by 2gm. The correct mean and standard deviation (in gm) of fishes are respectively :

    A. 1) 32,2

    B. 2) 32,4

    C. 3) 38, 2

    D. 4) 28, 4.

Answer:

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