08. Counting and Probability

1. How many 3-digit numbers are odd and do not contain the digit ?

Answer:

* Total number of possibilities for hundreds place
* Total number of possibilities for tens place
* Total number of possibilities for unit’s place
* Total number of possibilities

1. How many menu options of soups, appetizers, main courses, a dessert and tea or coffee are possible from soups, appetizers, main courses and desserts?

Answer:

* Total possibilities

1. Jim and Tom are among members of a club. Of at least one of the two is to be selected for a 4-member team, how many teams are possible?

Answer:

* Number of possibilities if only one is selected
* Number of possibilities if both are selected
* Total Possibilities
* Alternate method: -
* Total number of distinct teams
* Number of possibilities if both are excluded
* Total Possibilities

1. The letters of the word *LOGARITHM* are arranged at random. Find the probability that the arrangements start and end with vowels.

Answer:

* Total letters Vowels Consonants
* Total number of arrangements
* Number of ways of choosing 1st vowel
* Number of ways of choosing 2nd vowel
* Number of ways of arranging remaining letters
* Favorable Outcomes
* Probability

1. Seven papers are to be set for an examination of which three papers are of languages. Find the probability that in the timetable the three language papers are not consecutive.

Answer:

* Required probability
* Total number of arrangements
* Total number of arrangements with all language papers together
* Required probability

1. Indians and Americans are to stand in a row at random. Find the probability that no two Americans are together.

Answer:

* Number of ways in which Indians can stand in row
* 9 spaces to place the Americans 🡪
* Choose 3 places for Americans and arrange them
* Total number of arrangements
* Required probability

1. In a game A throws a total of 16 with three dice. If B throws next the same three dice simultaneously, what are B’s chances of winning the game?

Answer:

* Sample space
* For B to win he should either score or
* Number of ways B can score 18
* Number of ways B can score 17
* Total Number of ways B can win
* Probability

1. An unbiased die with faces marked and is rolled four times. Out of four face values obtained, the probability that the minimum face value is not less than and the maximum face value is not greater than is

Answer:

* Number favorable possible face values of 1 die
* Favorable probability for rolls

1. The class has men and women. Suppose students are selected at random from the class, what is the probability that they all are men?

Answer:

* Sample space
* Favorable possibilities
* Probability

1. A and B play a game where each is asked to select a number from to . If the two numbers match, both of them win a prize. What is the probability that they will not win a prize in the single trial?

Answer:

* Let A pick any number
* The probability that B picks the same number
* Alternate method: -
* Total outcomes
* Favorable outcomes

1. Find the chances of throwing more than in one throw of dice.

Answer:

* Sample space
* Ways of getting
* Ways of getting
* Ways of getting
* Total ways of getting more than
* Probability

1. A bag contains white, black and red balls. Find the probability that three balls drawn at random are all white?

Answer:

* Sample space
* Favorable possibilities
* Probability

1. What are the chances of throwing equal faces greater than one in successive throws of an ordinary die?

Answer:

* Sample space
* Favorable possibilities
* Required probability

1. Out of all the integers to , a number is selected at random. What is the probability that the selected number is not divisible by ?

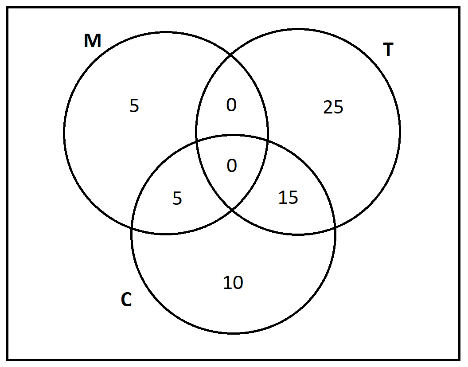
Answer:

* Sample Space
* Numbers from to that are divisible by
* Required probability

1. Four letters are written to different persons and they had to be put in the four addressed envelopes without being the addresses looked at. What is the probability that the letters would go into the right envelopes?

Answer:

* Sample space
* Favorable outcomes
* Required probability

1. In a hostel having 100 students, 40 drink tea, 30 drink coffee and 10 drink milk. Of these, 15 take tea and coffee both, 5 take coffee and milk both and none takes tea and milk both. If two students are picked up at random from the hostel, find the probability that they drink only coffee.

Answer:

* Draw Venn Diagram.
* Note:
* Fill in all the numbers in the Venn Diagram
* Sample space
* Favorable outcomes
* Required probability

1. A room has three electric lamps. From a collection of electric bulbs of which are good, bulbs are selected at random and put in the lamps. Find the probability that room is lighted by at least one of the bulbs.

Answer:

* Sample space
* Ways of choosing faulty bulbs

1. A five-digit number is made by using digits without repetition. What is the probability that the number is divisible by ?

Answer:

* No matter what the arrangement, the number will always be divisible by 9 since … {using divisibility test for 9}
* Required probability

1. A bag contains red and black balls and another bag contains red and black balls. What is the probability of choosing a black ball from a randomly chosen bag?

Answer:

* Required probability

1. Out of all the integers from to , a number is selected at random. What is the probability that the number is divisible by ?

Answer:

* Sample Space
* Numbers from to that are divisible by
* Required probability

1. From a pack of cards, cards are picked up at random. What is the probability that one is a king and the other is a queen?

Answer:

* Sample space
* Favorable outcomes
* Required probability

1. An organization consists of members including doctors. A committee of is to be formed at random. Find the probability that the committee contains exactly doctors.

Answer:

* Sample space
* Favorable outcomes
* Required probability

1. The letters of the word *EQUATION* are arranged at random. Find the probability that the arrangement starts with a vowel and ends with a consonant.

Answer:

* Total letters Vowels Consonants
* Total number of arrangements
* Number of ways of choosing (first) vowel
* Number of ways of choosing (last) consonant
* Number of ways of arranging remaining letters
* Favorable Outcomes
* Probability

1. A ticket is drawn from a set of tickets numbered to and kept aside. Then another ticket is drawn. Find the probability that both show an even number.

Answer:

* Probability of choosing even number ticket on 1st draw
* Probability of choosing even number ticket on 2nd draw
* Required probability
* Alternate method: -
* Sample space
* Favorable outcomes
* Required probability

1. The probability that a student A can solve a problem is , that B can solve it is and that C can solve it is . If all of them try it independently, what is the probability that the problem is solved?

Answer:

* Probability that A cannot solve problem
* Probability that B cannot solve problem
* Probability that C cannot solve problem