Important Questions for Class 11 Maths Chapter 7: Here are some important questions for Class 11 Maths Chapter 7 Permutations and Combinations which are important for mastering the concepts. Practicing these questions helps students master concepts such as the factorial function, arrangement of objects, and the difference between permutations and combinations. These questions not only prepare students for exams but also improve their problem-solving skills, making it easier to tackle complex scenarios in competitive exams.

Important Questions for Class 11 Maths Chapter 7 Overview

Important Questions for Class 11 Maths Chapter 7 are prepared by subject experts at Physics Wallah and provide a detailed overview of the key concepts and problem-solving techniques in the chapter. These questions cover a range of topics, helping students strengthen their understanding of concepts like Permutations and Combinations. The expert-created questions are designed to enhance students problem-solving skills, ensuring they are well-prepared for exams. By practicing these questions, students can grasp the core ideas and apply them effectively in various mathematical scenarios.

Important Questions for Class 11 Maths Chapter 7 PDF

The PDF for Important Questions for Class 11 Maths Chapter 7 is available for download below. This PDF are prepared by subject experts at Physics Wallah includes a important questions that cover essential topics from the chapter. Students can use this resource to practice and improve their problem-solving skills in areas like Permutations and Combinations. By referring to this PDF, learners can ensure a strong understanding of the chapter's concepts and enhance their exam preparation.

Important Questions for Class 11 Maths Chapter 7 PDF

Important Questions For Class 11 Maths Chapter 7 Permutations and Combinations

Here is the Important Questions For Class 11 Maths Chapter 7 Permutations and Combinations-

Question 1:

Find the 3-digit numbers that can be formed from the given digits: 1, 2, 3, 4 and 5 assuming that

a) digits can be repeated.

b) digits are not allowed to be repeated.

Solution:

a) By the multiplication principle, the number of ways in which three-digit numbers can be formed from the given digits is 5 × 5 × 5 = 125

b) By the multiplication principle, the number of ways in which three-digit numbers can be formed without repeating the given digits is 5 × 4 × 3 = 60

Question 2:

A coin is tossed 6 times, and the outcomes are noted. How many possible outcomes can be there?

Solution:

When we toss a coin once, the number of outcomes we get is 2 (Either Head or tail)

So, in each throw, the no. of ways to get a different face will be 2.

Therefore, by the multiplication principle, the required no. of possible outcomes is

2 x 2 x 2 x 2 × 2 × 2 = 64

Question 3:

Evaluate the following

(i) 6 ! (ii) 5 ! – 2 !

Solution:

(i) 6! = 1 × 2 × 3 × 4 × 5 × 6 = 720

(ii) 5! = 1 × 2 × 3 × 4 x 5 = 120

As 2! = 1 × 2 = 2

Therefore, 5 ! – 2 ! = 120-2 = 118.

Question 4:

From a team of 6 students, in how many ways can we choose a captain and vice-captain assuming one person can not hold more than one position?

Solution:

From a team of 6 students, two students are to be chosen in such a way that one student will hold only one position.

Here, the no. of ways of choosing a captain and vice-captain is the permutation of 6 different things taken 2 at a time.

So, ${}^{6}P_{2}$ = 6! / (6 -2)! = 6! / 4! = 30

Question 5:

How many words, with or without meaning, can be formed using all the letters of the word EQUATION, using each letter exactly once?

Solution:

Number of letters in word EQUATION` = 8

n = 8

If all letters of the word used at a time

r = 8

Different numbers formed = nPr

= ${}^{8}P_{8}$

= 8!/(8 8)!

= 8!/0!

= 8!/1

= 8!

= 8 * 7 * 6 * 5 * 4 * 3 * 2 * 1

= 40320

Question 6:

How many words can be formed each of 2 vowels and 3 consonants from the letters of the given word – DAUGHTER?

Solution:

No. of Vowels in the word – DAUGHTER is 3.

No. of Consonants in the word Daughter is 5.

No of ways to select a vowel = ${}^{3}c_{2}$ = 3!/2!(3 – 2)! = 3

No. of ways to select a consonant = ${}^5c_3 = 5!/3!(5 – 3)! = 10$

Now you know that the number of combinations of 3 consonants and 2 vowels = 10x 3 = 30

Total number of words = 30 x 5! = 3600 ways.

Question 7:

It is needed to seat 5 boys and 4 girls in a row so that the girl gets the even places. How many are such arrangements possible?

Solution:

5 boys and 4 girls are to be seated in a row so that the girl gets the even places.

The 5 boys can be seated in 5! Ways.

For each of the arrangements, 4 girls can be seated only at the places which are cross marked to make girls occupy the even places).

B x B x B x B x B

So, the girls can be seated in 4! Ways.

Hence, the possible number of arrangements = 4! × 5! = 24 × 120 = 2880

Question 8:

Find the number of 5-card combinations out of a deck of 52 cards if each selection of 5 cards has exactly one king.

Solution:

Take a deck of 52 cards,

To get exactly one king, 5-card combinations have to be made. It should be made in such a way that in each selection of 5 cards, or in a deck of 52 cards, there will be 4 kings.

To select 1 king out of 4 kings = ${}^4c_1$

To select 4 cards out of the remaining 48 cards = ${}^{48}c_4$

To get the needed number of 5 card combination = ${}^4c_1$ x ${}^{48}c_4$

= 4x2x 47x 46×45

= 778320 ways.

Question 9:

Find the number of 6 digit numbers that can be formed by using the digits 0, 1, 3, 5, 7, and 9. These digits shall be divisible by 10, and no digit shall be repeated?

Solution:

The number which has a 0 in its units place is divisible by 10.

If we put 0 in the unit place, _ _ _ _ 0, there will be as many ways to fill 5 vacant places. (1, 3, 5, 7, 9)

The five vacant places can be filled in 5! ways = 120.

Question 10:

Evaluate: 10! – 6!

Solution:

10! = 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2 x1 = 3628800

6! = 6 X 5 x 4 x 3 x 2 x 1 = 720

10! – 6! = 3628800 – 720 = 3628080

Benefits of Solving Important Questions For Class 11 Maths Chapter 7 Permutations and Combinations

Solving important questions for Class 11 Maths Chapter 7 on Permutations and Combinations provide several key benefits:

Improves Conceptual Understanding: By practicing these questions students can strengthen their grasp of fundamental concepts such as the basic principle of counting, factorials and the various types of permutations and combinations, which are critical for tackling complex problems.

Enhances Problem-Solving Skills: Regular practice helps in developing a methodical approach to solving problems, improving accuracy and efficiency in exams.

Boosts Confidence: Familiarity with the variety of questions increases self-confidence, making students more prepared for the exam and reducing anxiety.

Increases Speed: With consistent practice students can develop faster problem-solving techniques, improving their time management during exams.

Better Exam Performance: Solving important questions ensures a thorough preparation helping students to score higher marks in both school assessments and competitive exams.

Clarifies Application of Formulas: These questions often require the application of various permutation and combination formulas, reinforcing the correct usage of these formulas in different scenarios.