

RAM Maths Circle – Nashik

Bhas Bhamre Academy

Session–2

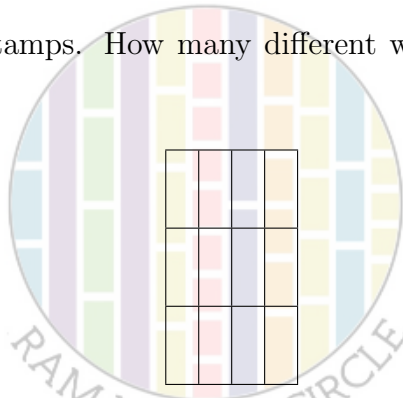
Date: 08th Aug 2026
Faculty: Omkar P Sambare

Introduction

This session focused on the topic of Combinations and Counting. Students explored different counting techniques, patterns and logical reasoning. The session encouraged discussion, creativity and mathematical thinking. Students particularly enjoyed solving these problems and discovering multiple approaches to the same question.

Problem Sheet

- 1) Here is a 3×4 grid of stamps. How many different ways are there to tear off four stamps?



- 1) Can tear off four stamps in any way.
 - 2) Four stamps still joined together along their sides.
 - 3) Four torn-off stamps and the remaining eight stamps are both still joined together along their sides.
- 2) Chessboard Problems
- 1) How many non-attacking knights can be placed on a chessboard?
 - 2) What if the chessboard is 9×9 ?
 - 3) What if the piece is a bishop?
 - 4) What if bishops are placed on a 9×9 board?
 - 5) Try generalising for an $m \times n$ board for both knights and bishops.
- 3) Diagonal and Unit Squares
- 1) How many unit squares does the diagonal of an 8×8 rectangle pass through?
 - 2) How many unit squares does the diagonal of an 8×15 rectangle pass through?

- 3) How many unit squares does the diagonal of a 15×27 rectangle pass through?
- 4) How many unit squares does the diagonal of an $m \times n$ rectangle pass through?

4) Sum of Digits

- 1) What is the sum of all the digits of the numbers from 1 to 100?
- 2) What is the sum of all the digits of the numbers from 1 to 1000?
- 3) What is the sum of all the digits of the numbers from 1 to 10000?
- 4) What is the sum of all the digits of the numbers from 1 to 10^n ?

