Nashik Maths Circle

January 3, 2026

Delhi Public School, Nashik

Session Overview

The first Nashik Math Circle session of the new year was conducted on January 3rd by Mr. Aakash Dhanokar. The session focused on counting problems and combinatorics, providing a mathematically rigorous start to 2026.

Pedagogical Approach

The session emphasized the transition from intuitive logic to formal algebraic representation. Students were encouraged to:

- Convert logical constraints into algebraic equations.
- Generalize specific solutions to broader mathematical principles.
- Develop critical thinking to avoid the common combinatorial pitfalls of overcounting or undercounting.

Problems Covered

The following problems were discussed and explored during the session:

1. **Row Arrangement:** Is it possible to write the numbers 1 through 100 in a row such that the positive difference between any two neighboring numbers is not less than 50?
2. **Chocolate Bar Game:** Two children take turns breaking a rectangular chocolate bar (6×8 squares). They may only break along divisions. If the bar breaks into pieces, they keep breaking until only individual squares remain. The player who cannot make a break loses. Who will win?
3. **Linear Arrangements:** In how many ways can you place the following chess pieces in a line: Knight, Bishop, Rook, Pawn, and Queen?
4. **Chessboard Geometry:**
    - How many squares are there on an 8×8 chess board?
    - Further, solve for the total number of rectangles.
5. **The Blindfold Coin Challenge:** You are blindfolded with 10 coins (5 heads, 5 tails) or 100 coins (90 heads, 10 tails) in front of you. Can you make two piles with the same number of heads up by flipping any number of coins?

6. **Counterfeit Coin Detection:** There are 8 coins (one is lighter). In how many weighings can you find the counterfeit using a balance? Solve the same for 80 coins.

7. **Cryptarithmetic:** Fill in the blanks for $ABCD \times 9 = DCBA$ and other similar arithmetic puzzles.

Conclusion

Questions 5 and 6 proved to be particularly challenging, sparking intense debate and logical deduction among the students. Overall, the session was a wonderful and "math-filled" way to welcome the new year.