



Cheenta Math Olympiad Program

Level 4



cheenta.com

since 2010

Passion for Mathematics

This program is useful for Math Kangaroo, MOEMS, AMC 8, Australian Math Competition, Mathcounts

Success Stories since 2010



Aryan Kalia

Top 1% globally in American Math Competition,

Attended Math Olympiad Program and School Research Program at cheenta

Attended Student internship program at cheenta

Going to Harvard University in 2022



Sambuddha Majumdar

Scotland Math Olympiad Awardee

Attended Math Olympiad Program at cheenta

Attended Student internship program at cheenta

University of Edinburgh



Anushka Aggarwal

Youngest Indian National Math Olympiad awardee, European Girls Math Olympiad awardee

Attended Math Olympiad Program at cheenta

Attended Student internship program at cheenta

Going to MIT (Massachusetts Institute of Technology) in 2022



Akshaj Kadaveru

American Math Competition, AIME and USAJMO awardee

Attended Math Olympiad Program at cheenta

MIT (Massachusetts Institute of Technology)

Curriculum driven by problem solving



48 weeks program, 8 modules



Number Theory MK - θ

6 weeks

- Digits of numbers in various bases (especially binary and decimal)
- Checking divisibility by powers of 2 and 5
- Checking divisibility by 3, 9, 7 and 11 (teach multiple methods with proofs)
- Prime numbers: the sieve of Eratosthenes
- The division algorithm (precise statement and explanation)
- GCD and LCM



Number Theory MK - δ

6 weeks

- Unit digit, Number of digits, Odd and Even
- Decimal Representation and Divisibility tests
- Greatest Integer Function, De Polignac's formula
- Modular Arithmetic Introduction
- Modular Arithmetic, Calendar Problems
- Harder problems on Integers



Combinatorics MK - θ

6 weeks

- Basic counting principles
- The concept of a Permutation and Combination
- Counting Paths in a Grid
- Permutations with repetitions
- Elementary Set Theory and Principle of Inclusion and Exclusion
- Elementary Probability Theory



Combinatorics MK - δ

6 weeks

- Pseudo Games and Symmetry
- Winning Position and algorithms
- Balls and Sticks Method
- Constructions and weighings
- Elementary Graph Theory
- Basic Pigeon Hole Principle

Curriculum continues



Geometry MK - θ

6 weeks

- Ratio of area and bases, Carpet Strategy
- Similarity of Triangles, Pythagoras Theorem
- Concurrency
- Geometry of circles
- Special results - 1
- Special results - 2



Geometry MK - δ

6 weeks

- Meaning of volume, volumes of parallelopipeds and polyhedra
- Volumes of right circular cones and cylinders - practice problems
- Surface areas of solids - right circular cones, cylinders and polyhedra
- Finding volume and surface area of a sphere - Sketch of proof and practice problems
- Basic coordinate Geometry - lines, circles, distance and section formulæ
- Rigid transformations and symmetries



Algebra MK - θ

6 weeks

- Tools in Algebra with Geometric Intuition
- Algebraic Identities and Binomial Theorem
- System of Linear Equations and Graphical Solutions
- Problems with Ratio Percentages, Time and Distances, Profit and Loss - Week 1
- Problems with Ratio Percentages, Time and Distances, Profit and Loss - Week 2
- Measures of Central Tendency



Algebra MK - δ

6 weeks

- Linear equations (to be explained visually with the help of graphs and problems)
- Systems of linear equations
- Quadratic equations : graphs and solvability
- Quadratic equations: explicit solution
- Quadratic equations: explanation of solvability in terms of real/complex roots, Vieta's formulæ
- Telescoping sums and products

Taught by Olympians and Researchers from leading universities

Since 2010 Cheenta has evolved into a Gurukul. Our students have attended leading universities in India such as Indian Statistical Institute, Chennai Mathematical Institute, TIFR, IITs and universities abroad such as Harvard, MIT, Oxford, Edinburgh to name a few. Some of them returned as teachers for the next generation of learners. And the pursuit of excellence continues.



**Cheenta Team has 40+ members.
Here are some of the leaders.**



Srijit Mukherjee
BStat and MStat from Indian
Statistical Institute (India)
Director at Cheenta



Dr. Ashani Dasgupta
PhD from University of
Wisconsin-Milwaukee (USA)
Founder - Director at Cheenta



Dr. Sankhadip Chakraborty
PhD from IMPA, BSc. Math
from Chennai Mathematical
Institute (India),
Director at Cheenta



Dr. Anirban Majumdar
PhD from ENS Paris-Saclay,
France on Theoretical
Computer Science, B.Sc.-
M.Sc. from Chennai
Mathematical Institute



Swarnabja Bhowmick
B.Tech from Calcutta University
on Computer Science with
multiple IEEE publications on
Artificial Intelligence and Machine
Learning



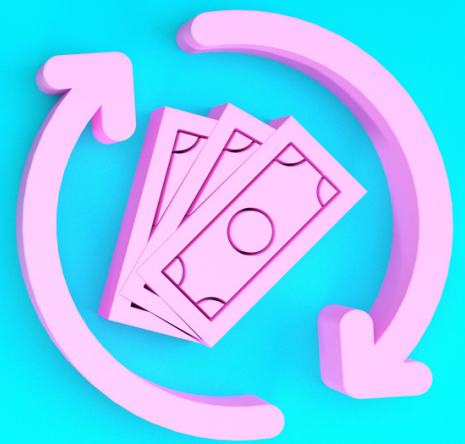
AR Sricharan
BSc. Math, M.Sc. Computer
Science from Chennai
Mathematical Institute (India).
Pursuing PhD in University of
Vienna

Refund policy

since trust is the cornerstoner of education

Within 1 week of admission, if you wish to withdraw from the course due to dissatisfaction with our offerings, we will start your **[full refund - service fee of ₹1000 (India) or US\$20 (Rest of the World) - Transaction fee if any]** process provided **all four of these activities** are done on your part:

- Attended live full length lecture session for full time (not video recording)
- Attempted the assignments during that period
- Attended at least one 1-on-1 session
- Used the Cheenta Support forum for doubts
- The Refund reason should be associated with the coursework, any personal reason won't be counted & hence the refund request will be nullified.



The refund process is usually completed within 8 weeks of the refund request. We will refund the [full refund - service fee of ₹1000 (India) or US\$20 (Rest of the World) - Transaction fee if any], if you begin the refund process within 1 week (see the first point).

If a refund request is not placed within the first week, or if such a request is placed without completing steps a, b, c d, or e or if the refund request is made due to personal reasons, then we won't be able to process any refund.

Contest Calendar for beautiful problem solving

Cheenta students think of Math Olympiads as **milestones**. The end goal of the program is to fall in love with mathematics and develop great problem solving skills. Milestones help us to stay in track.

Not all math contests are equal. Here is a list of contests that are suitable and most effective at this level of learning.

Our success centre will keep you updated about registration deadlines of these contests and other opportunities



**American Math
Competition 8**



Math Kangaroo



**Australian Math
Competition**



**Mathcounts and
MOEMS (USA)**

Thank You

Passion for Mathematical Science

Let us know if you need more information.



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