



Cheenta Advanced Math Program

Level 6



cheenta.com

since 2010

Passion for Mathematics

This program is useful for AMC 10, 12, **IOQM**, ISI-CMI Entrances University of Waterloo Contests, UKMT, SMO

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 IOA - θ

7 weeks

- Basic Principles in Number Theory - Well ordering Principle, Mathematical Induction, Divisibility - Division Algorithm
- GCD, LCM, Bezout's Lemma, Euclidean Algorithm
- Prime Numbers - FTA and Number Bases
- Congruences - Day 1 - Basic properties
- Congruences - Day 2 - Linear Congruences and CRT
- Diophantine Equations
- Review and Evaluation



Number Theory IOA - δ

3 weeks

- Problems on Parity and Power of Integers
- Greatest Integer Function and Digits of Numbers
- Arithmetic Functions - Number and Sum of Divisors, Euler's Totient Function



Combinatorics IOA θ

7 weeks

- Linear and Circular Permutations
- Combinations and Bijection Principle
- Arrangements and Selections with Repetition - Stars and Bars
- Binomial Theorem and its Coefficients, Pascal Triangle
- Hockey Stick identity, Multinomial Theorem and its coefficients
- Pigeon-Hole Principle and Constructive Counting
- Review and Evaluation



Combinatorics IOA δ

3 weeks

- Principle of Inclusion and Exclusion and Derangements
- Recurrence Relations
- Introduction to Graph Theory

Curriculum continues



Geometry IOA - θ

7 weeks

- Triangular Inequality
- Congruences and Parallel Lines
- Properties of Triangles
- Similar Triangles
- Ceva's and Menelaus's theorem
- Mathematical Games
- Review and Evaluation



Geometry IOA - δ

7 weeks

- Area of Triangles and Volume
- Basics of Circles - IAT
- Tangent to Circles - AST, Pitot's Theorem
- Cyclic Quadrilaterals - Pedal line and Ptolemy's Theorem
- Miscellaneous problems on Triangles and Circles
- Construction Problems
- Review and Evaluation



Algebra IOA - θ

7 weeks

- Inequality - Basic inequalities and Cross multiplication method
- Inequality - AM-GM-HM inequality proof, Cauchy Schwarz inequality, Transformation
- Measures of Central Tendency
- System of Linear Equations in 2, 3 variables; Matrices and Determinants
- Finite Series and Sequences - AP, GP, Special Finite series and Telescoping series
- Finite Series and Sequences Trigonometric series and Summations with Binomial coefficients
- Review and Evaluation



Algebra IOA - δ

7 weeks

- Polynomials - Division Algorithm, Remainder and Factor Theorem, Vieta's Formula, FTA
- Polynomials - Rational Root Theorem, Reciprocal and Symmetric Polynomial
- Polynomials - Harder problems on Polynomials
- Complex Numbers in Algebraic Form
- Complex Numbers in Trigonometric Form and nth Roots unity
- Basic Functional Equations
- Review and Evaluation

Toolkit Module



Coordinate Geometry and Trigonometry

10 weeks

- Coordinate Geometry - Axes and Straight Lines
- Coordinate Geometry - Family of Lines, Shifting of Origin, Circles and Tangents
- Basic Trigonometry
- Trigonometric Identities, Equations, Inverse Functions
- Triangular Trigonometry - Sine and Cosine Law, Incentre and Excentre

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

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 10 [AMC
10] and 12 [AMC 12]**



**NMTC Subjunior and
Junior**



**IOQM (First Level of
Math Olympiads in
India)**



**University of
Waterloo Contests
(for Canada)**



UKMT (for UK)



SMO (for Singapore)



ISI - CMI Entrances

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.

Thank You

Passion for Mathematical Science

Let us know if you need more information.



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