

Std. 8 Online Training Programme
Foundations of Mathematics
by
Bhaskaracharya Pratishthana, Pune

Date of Commencement of the course: 15th June 2021.

Eligibility for the course:

More than 85% or equivalent grade in Mathematics in Std. 7.

The students who do 8th Std. “Foundations of Mathematics” Course this year can go for “Olympiad Level 1” Course next year.

The students who are keen to appear for Mathematical Olympiad Examinations (RMO, INMO) and have good background and competence in Mathematics may consider “Olympiad Level 1” course instead of the “Foundations of Mathematics” Course. Olympiad Level 1 Course will be more demanding.

During/At the end of the programme, students will be able to:

- Read and understand Mathematical material based on the concepts known to them.
- Get introduced to abstraction in Mathematics.
- Understand the interrelation between Algebra and Geometry.
- Enhance problem solving abilities and critical thinking skills.

Timings for the course:

Tuesday: 6.00 pm to 7.30 pm and Saturday: 5.30 pm to 7.00 pm

Fees for the programme: Rs. 16000/-

Syllabus for 8th Standard:

Semester I: (Approx. 50 hours)

Arithmetic (14 Hours)

- Divisibility (GCD, LCM and their properties)
- Squares and Square roots, Cubes and Cube Roots
- Percentage
- Simple and Compound interest
- Time and Work, Speed and Distance
- Ratio, Proportion and Variation
- Average

Algebra (10 Hours)

- Indices
- Identities and Factors
- Linear Equations in one and two variables
- Algebraic Expressions

Geometry (16 Hours)

- Angles
- Triangles

- Pythagorean Theorem
- Geometric Constructions
- Perimeter and Area
- Polygons
- Circles (Basics)

Practice and Problem Solving (10 Hours)

Semester II: (Approx. 50 Hours)

Algebra (10 Hours)

- Principle of Mathematical Induction
- Simultaneous Linear Equations
(with no solution, unique solution, infinitely many solutions)

Geometry (10 Hours)

- Triangles – Congruence and Similarity
- Quadrilaterals

Number Theory (20 Hours)

- Divisibility, Primes, Prime Factorisation, Euclid's Division Algorithm
- Congruences
- Chinese Remainder Theorem
- Diophantine Equations
- Fermat's Little Theorem

Combinatorics (10 Hours)

- Basic Counting Principles
- Permutations and Combinations – Basic Properties
- Principle of Inclusion – Exclusion

Activities:

In addition to the aforementioned syllabus, some interesting hands on activities; viz. mathematics through origami and paper folding, learning similarity and congruence through tangrams, understanding fractals through Pascal's triangle etc. as well as guest lectures on various topics from applied math are conducted for the students in the duration of the course.

List of reference books:

- Ganit Prabhatva (Std. 8) : Mumbai and Pune Jilha Adhyaapak Mandal
- Mathematics (Class 8) : Pearson IIT Foundation Series
- Challenge and Thrill of Pre-College Mathematics : New Age International Publishers

Teaching Faculty for the programme:

- Dr. Abhijit Ranjekar (M.Sc., Ph.D. in Mathematics)
- Ms. Sayali Deshpande (M.Sc. Mathematics)

Coordinator of the programme:

Ms. Sayali Deshpande
8087611702
shabd.21@gmail.com