

Session 1: Introduction to MOEMSS and Problem-Solving Strategies

- Overview of MOEMSS structure and types of problems
- Introduction to common problem-solving strategies
- Practice with elementary problem-solving techniques

Session 2: Number Theory Fundamentals

- Prime numbers, divisibility rules, and factorization
- Properties of integers and basic number theory concepts
- Application of number theory in problem-solving

Session 3: Geometry Essentials

- Basic geometric shapes, angles, and properties
- Perimeter, area, and volume calculations
- Geometric problem-solving techniques

Session 4: Combinatorics and Counting Principles

- Introduction to combinatorics and counting methods
- Permutations and combinations
- Application of counting principles in problem-solving

Session 5: Algebraic Expressions and Equations

- Fundamental algebraic concepts
- Solving equations and inequalities
- Application of algebraic techniques in problem-solving

Session 6: Advanced Number Theory

- Modular arithmetic and its applications
- Diophantine equations and number theory challenges
- Advanced problem-solving in number theory

Session 7: Intermediate Geometry

- Advanced geometric concepts and theorems
- Similarity, congruence, and transformations
- Challenging geometry problem-solving exercises

Session 8: Advanced Combinatorics

- Pigeonhole principle and advanced counting techniques
- Graph theory basics and applications
- Problem-solving in advanced combinatorics

Session 9: Advanced Algebra

- Polynomials, functions, and inequalities
- Vieta's formulas and advanced algebraic techniques
- Problem-solving in advanced algebra

Session 10: Mock Olympiad and Review

- Simulated MOEMS-style exam with a variety of problems

- Comprehensive review of key concepts and strategies
- Feedback and discussion on problem-solving approaches