

Problem Solving in Prealgebra Syllabus

Instructor: Satvik Dasariraju

Weekly Classes on Fridays, 6:30 PM EST

Course Description

This course is aimed towards bright elementary and middle school students looking to get ahead in math. Unlike typical prealgebra courses, this course will emphasize developing the problem solving techniques that are crucial in later courses and competition math. After a review of arithmetic and exponents, the course will focus on utilizing equations and inequalities to solve word problems. The course will also cover common core subjects, including statistics, decimals, and ratios. Later, after students have a strong foundation in algebraic thinking, the course will introduce basic geometry, number theory, and the fundamental principles of combinatorics. The course will give students the tools to succeed in beginner math competitions, and is designed to be a stepping stone into prestigious middle and high school contests.

Meeting Agenda

6/12 Meeting 1: Review of Arithmetic and Operations

- Sets of Numbers
- Order of Operations
- Speed Tricks for Competitions

6/19 Meeting 2: Exponents and Roots

- Explanation of Concepts
- Operations

6/26 Meeting 3: Fractions and Decimals

- Operations
- Tips and Tricks for Competitions
- Common Contest Problems

7/3 Meeting 4: Percentages and Ratios

- Explanation of Concepts
- Applications in World Problems

7/10 Meeting 5: Solving Equations and Inequalities

- Simplifying Expressions
- Techniques to Solve Linear Equations and Systems
- Introduction to Inequalities

7/17 Meeting 6: Graphing and Problem Solving with Equations

- Graphing Equations
- Problem Solving with Equations in Contests

7/24 Meeting 7: Introduction to Number Theory

- Definitions
- Divisibility Tests and Tricks
- Prime Factorization
- LCM, GCF
- Common Contest Problems

7/31 Meeting 8: Basic Combinatorics and Statistics

- Fundamental Principles of Counting
- Techniques to Solve Counting Problems
- Probability
- Mean, Mode, Median, and Range

8/7 Meeting 9: Geometry

- Angle Chasing
- Perimeter
- Area
- Right Triangles
- Problem Solving Strategies in Geometry

8/14 Meeting 10: Applications of Prealgebra in Competitions

- Exploration of Problems from Contests
- Applications of Strategies Covered

8/21 Meeting 11: What's Next

- Discussion of Competitions, Opportunities, and Resources
- More Problems from Contests