Geometry in AMC 8 Syllabus

Instructor: Siddhartha Basu
Weekly classes on Fridays, 7:00 PM EST

Course Description

This course is aimed towards people who are looking to hone their geometry skills at the AMC 8 level. By the end of this course, students should be more comfortable with geometry and should be able to tackle problems with the concepts learned in class. The course will first introduce basic techniques and concepts, such as angle chasing and triangles, and will go into more depth on how to apply these to competition problems in the AMC 8. This class will also include quadrilaterals, circles, and harder topics such as 3D and analytic geometry. Every topic will include extensions to competition problems from the AMC 8 and easier AMC 10. This course is designed to aid students starting out with competition geometry and provide them with the tools they need to solve problems at the AMC 8 level consistently.

Meeting Agenda

7/21 Meeting 1: Angle chasing
- Parallel & Perpendicular lines
- Angle properties
- Problems

7/28 Meeting 2: Triangles
- Different types of triangles(Isosceles, Scalene, etc)
- Congruence theorems
- Problems

8/4 Meeting 3: Perimeter and Area of triangles
- Formulas for calculating perimeter and area
- Common base/altitude examples
- Problems

8/11 Meeting 4: Similarity in Triangles
- Different types of similarities in triangles(SAS, AA, etc)
- Problems

8/18 Meeting 5: Special Triangle Properties
- Bisectors, Medians, altitudes
- Problems

8/25 Meeting 6: Problem solving on Triangles
- Problems from the AMC 8
- Easier problems from AMC 10

9/1 Meeting 7: Quadrilaterals
- Basics
- Trapezoids, Parallelograms, Rectangles, Squares
- Problems

9/8 Meeting 8: Angle chasing in quadrilaterals
- Tricks for AMC problems
- Problems

9/15 Meeting 9: Polygons
- Introduction
- Polygon angles, and areas
- Problems

9/22 Meeting 10: Circles
- Introduction
- Arcs and Arc lengths
- Special areas
- Problems

9/29 Meeting 11: Angle chasing in circles
- Inscribed angles
- Angle theorems
- Tangents
- Problems

10/6 Meeting 12: 3D geometry
- Introduction
- Prisms, Pyramids,
- Properties of 3D shapes(area, surface area, etc)
- Problems

10/13 Meeting 13: More on 3D geometry
- Cones, Spheres, Cylinders
- Problems

10/20 Meeting 14: Advanced Circle lesson
- Power of a point
- More advanced problems(AMC 8, 10)

10/27 Meeting 15: Trigonometry
- Introduction
- Sine and cosine
- Law of sines and cosines
- Problems

11/3 Meeting 16: Coordinate Geometry
- Equation of a line, circles, distance formula
- Problems

11/10 Meeting 17: Problem solving session
- Mixed problems from the AMC 8 and AMC 10
- More on opportunities and resources