High School Geometry Math Curriculum

Our goal is to equip students with the essential geometry skills needed for success in higher-level math courses like Algebra 2 and Pre-Calculus. We also want students to develop the confidence to think logically, reason spatially, and apply math to real-world situations.

Geometry is a key high school course that focuses on the properties and relationships of shapes, angles, lines, and space. Students will explore concepts such as congruence, similarity, transformations, right triangles, circles, and geometric proofs. This course builds on the algebra skills developed in earlier math courses and helps students develop a deeper understanding of how math describes the physical world.

What Math Should a Student Know Before Starting Geometry?

Students should have a solid understanding of foundational math concepts developed in middle school and Algebra 1. These skills are essential for success, as Geometry builds upon them with a focus on logic, reasoning, and spatial thinking. Key topics include solving linear equations and inequalities, working with algebraic expressions, understanding coordinate graphing, and having a basic grasp of polynomials and quadratic equations.

Students should already be comfortable with:

- Solving and graphing systems of linear equations and inequalities
- Simplifying algebraic expressions using the distributive property
- Working with ratios, proportions, and percentages
- Different methods for factoring polynomials
- Understanding, graphing, and solving quadratic equations
- Using logic and reasoning to solve multi-step word problems

Having these skills in place will help students confidently transition into Geometry, where they'll explore constructions, congruence, similarity, transformations, circles, trigonometry, number sequences, and proofs.

What Do Students Learn in High School Geometry?

The major math concepts covered in this Geometry curriculum are:

- Shapes & Constructions
- Lines & Angles
- Shape Transformations
- Similarity
- 2D Plane Geometry (& Composites)
- Surface Area
- Volume
- Right Angle Geometry
- Number Sequences
- Geometric Proofs

A YEAR AT A GLANCE Be sure to include a bit of wiggle room in case your student needs extra time with a math topic. The sequence below is our recommendation for a full year course:

STUDY SCHEDULE: FULL HIGH SCHOOL GEOMETRY COURSE

This is an example of the schedule that covers a full year of Geometry (prerequisite: Algebra 1).

September	**October**	**November**	**December**
Geometry #1 *Shapes & Constructions*	Geometry #2 *Angles* Geometry #3 *Triangles*	Geometry #4 *Circles*	Two weeks of extra practice if needed.
January	**February**	**March**	**April**
Geometry #5 *Plane Geometry*	Geometry #6 *Similarity* Geometry #7 *Surface Area*	Geometry #8 *Volume*	Geometry #9 *Right Angle Geometry*
May	**June**	**July**	**August**
Geometry #10: *Number Sequences & Geometric Proofs*	Advanced Labs #1-4	Advanced Labs #5-7	Full Review (Algebra 1 & Geometry)

Geometry Math Lesson Plan – 31 Weeks

Fall Term (Sept – Dec)

- Week 1: Geometry Basics*
- Week 2: Constructing Shapes
- Week 3: Geometry Transformations Part 1
- Week 4: Geometry Transformations Part 2
- Week 5: Bisecting and Constructing Shapes
- Week 6: Types of Angles Part 1*
- Week 7: Types of Angles Part 2
- Week 8: Properties of Triangles Part 1*
- Week 9: Properties of Triangles Part 2
- Week 10: Properties of Circles Part 1*
- Week 11: Properties of Circles Part 2

Winter Term (Jan – Feb)

- Week 12: Rectangles & Parallelograms*
- Week 13: Triangles & Trapezoids
- Week 14: Composite Figures
- Week 15: Similarity & Scale Factor
- Week 16: Similarity & Review
- Week 17: Surface Area of Prisms*
- Week 18: Surface Area of Pyramids
- Week 19: Surface Area Applications & Review

Spring Term (March – May)

- Week 20: Volume of Rectangular Prisms & Cross Sections*
- Week 21: Volume of Triangular Prisms
- Week 22: Volume of Cylinders & Cones; Composite Figures
- Week 23: Volume Applications & Review
- Week 24: Angles, Right Triangles & the Pythagorean Theorem
- Week 25: Trigonometric Functions: Sine, Cosine
- Week 26: Trigonometric Functions: Sine, Cosine, Tangent
- Week 27: Trigonometry Applications
- Week 28: Arithmetic Number Sequences
- Week 29: Geometric Number Sequences
- Week 30: Geometric Proofs
- Week 31: Full Algebra 1 & Geometry Review

Please bring these materials with you to *every* Geometry Lesson with a teacher:

- Math journal / notebook
- Pencils and eraser
- Protractor
- Compass (one with a set screw adjustment)
- Ruler (inches and cm)
- Calculator

***Geometry Build Challenges!**

In addition to math lessons with teachers and working on homework assignments, students also explore how geometry is used in the science and engineering fields by designing and building several Geometry Challenge Projects!

Your child will need materials to participate in all the hands-on fun! Click for materials list.