



Wayland High School

*Mathematics Department
Honors Geometry
Curriculum Guide*

Unit 1: Overview of Geometry

- General Vocabulary
- Complementary and Supplementary word problems
- Pythagorean Theorem
- Special Right Triangles
- Conditional Sentences
- Drawing Conclusions and Properties for Proof Writing

Unit 2: Parallel Lines And Congruent Triangles

- Conditional Sentences and their converses
- Proof writing concepts with Parallel lines
- Algebraic Solving
- Proof and application of Triangle Sum
- Basic Proof writing with Congruent Triangles (SSS, SAS, ASA)
- CPCTC

Unit 3: Polygons

- Vocabulary
- Derivation and application of Interior Angle Sum
- Derivation and application of Exterior Angle Sum
- Derivation and application of the number of Diagonals
- Specific focus on Regular polygons
- Surrounding a point for tiling

Unit 4: More with Congruent Triangles

- Overlapping Triangles
- Definitions and applications of Median, Altitude, Perpendicular Bisector
- HL
- AAS
- Equidistance

Unit 5: Quadrilaterals

- Properties of Quadrilaterals
- Proof of a Parallelogram
- Coordinate Proofs of specific Quadrilaterals
- Always, Sometimes, Never Practice

Unit 6: Concurrency

- Circumcenter
- Centroid
- Orthocenter
- Incenter
- Distance from point to a line
- Systems of Equations

Unit 7: Conic Sections

- Completing the Square
- Locus Definitions with Parabola, Circle, and Ellipse
- Graphing and Completing the square with Parabola, Circle, Ellipse, and Hyperbola

Unit 8: Area

- Formulas and strategy with Triangles, Quadrilaterals, Regular Polygons, and Circles
- Special Right Triangle and Pythagorean Theorem review
- Hero's formula and Brahmagupta's formula
- Shoelace formula and coordinate area
- Surface Area with Prisms, Cones, Pyramids, Frustums, Cylinders, Spheres

Unit 9: Volume

- Formulas with Prisms, Cones, Pyramids, Frustums, Cylinders, Spheres

Unit 10: Similarity

- Altitude to Hypotenuse Solving
- Proofs of Similar Triangles
- Ratios of perimeters, areas, and volumes

Unit 11: Trigonometry

- SOH CAH TOA
- Angle of Elevation and Depression
- Law of Sines
- Law of Cosines
- Areas of Regular Polygons with apothems

Unit 12: Circles

- Arc Length
- Central Angle and Inscribed angle measures
- Derivation of Theorems with Tangents, Secants, and Chords
 - Proof writing to apply Theorems

Unit 13: Probability

- Combinations
- Permutations