Geometry Honors

Grades	Credits	Weeks per MP	Course Length
9, 10, 11, 12	5	10	Full Year

Prerequisites	Algebra 1
Textbooks	Geometry (2006)
Date Developed	06-2005
Date Revised	06-2010

Program Description:

Honors Geometry is a full year, 5 credit, accelerated program which provides an in-depth study of Euclidian Geometry with proofs for students who achieved excellence in their Honors Algebra I course. The student is exposed to elements of logic for application to his/her conceptual skill development. The course integrates algebraic and geometric facts as coordinated units for addressing problem solving activites appropriate to such standardized tests as the HSPA, PSAT, and SAT. Application of these skills to realistic life problems which require logic and reasoning is stressed. The major units of stuyd include: the basic figures of geometry, introduction to two-column proofs, parellel lines and planes, triangle congruency, posulates and theorems, polygons with emphasis on quadrilaterals, similarity properties of triangles, circles, properties of right triangles, and areas of geometric figures. Special projects required for the honors geometry program include, but are not limited to: development of a series of problems each marking period; peer demonstrations for solving special problems from supplemental resources, and special notebook. The curriculum addresses, but is not limited to the state's established core content standards.

Program Purpose:

The Honors Geometry program is designed to expand and solidify the students college preparatory math curricula which integrates Algebra and related problem solving to enhance the students college entrance skills for post secondary education.

See Outline of Course

See Curriculum Map

See State Standard Grid

Geometry (Honors): Outline of Course

I. Basic Figures in Geometry Segments and Measurement

A. **The coordinate Plane** September

1. Points lines and plane

B. **Measuring Segments: Distance Formula** September

1. Segments, distance formula

C. **Midpoint Formula** September

1. Midpoint and bisector

D. **Classifying and Measuring Angles** October

1. Naming and classifying angles

II. Reasoning and Proof

A. **Reasoning and Conjecturing** October

1. Using postulates and theorems of basic figures
2. Deductive reasoning and conditional statements

B. **Proofs** October

1. Properties of equality
2. Algebraic proofs
3. Geometric proofs with properties of eqality
4. Geometric proofs using midpoint and bisector

III. Angle Relationships, Parallel Lines

A. **Angle Relationships** October

1. Special pairs of angles
2. Geometric proofs involving angles
3. Perpendicular lines

B. **Parallel Lines and Transversals** October

1. Classifying angles when lines are parallel
2. Angel relationships when a transversal intersects
3. Proving lines parallel and angles congruent

C. **Parallel lines and Slope** November

1. Use slope to prove lines parallel and perpendicula

IV. Congruent Triangles

A. **Classifying Triangles** November

1. Classifying triangles

B. **Measuring Angles in Triangles** November

1. Measuring interior and exterior angles

C. **Proving Triangles congruent** November

1. Using SSS,SAS, and ASA congruence
2. Using AAS congruence
3. Proving triangles congruent in complex proofs
4. Right triangle congruence HL
5. Using CPCTC to solve complex proofs

V. Special Relationships in Triangles

A. **Analyzin Isosceles Triangles** December

1. Using properties of Isosceles triangles

B. **Special Segments in Triangles** December

1. Medins, altitudes, and perpendicular bisector

VI. Parallelograms

A. **Parallelograms** January

1. Properties of parallelograms
2. Proving parallelograms

B. **Rectangles** January

1. Properties of rectangles

C. **Squares and Rhombi** February

1. Properties of rhombi and square
2. Proving rectangles, rhombi, and squares

D. **Trapezoids** February

1. Properties of trapezoids
2. Proving trapezoids

VII. Similar Polygons

A. **Similar Triangles** February

1. Ratio proportion and similar figures
2. Similar triangles

B. **Parallel lines and Proportional Parts** February

1. Proportional lengths with parallel lines

VIII. Special Relationships in Right Triangles

A. **Geometric Mean** March

1. Using geometric mean to find lengths in triangles

B. **Pythagorean Theorem** March

1. Using pythagorean theorem to problem solve

C. **Special Right Triangles** March

1. Using ratios of special right triangles

D. **Trigonometric Ratios** March

1. Using trigonometric ratios in right triangles
2. Problem solving using trigonometric ratios
3. Using law of sines, cosines, and tangents

IX. Circles

A. **Angles and Arcs** April

1. Angle arc relationships

B. **Arcs and Chords** April

1. Arc chord and angle relationships

C. **Central and inscribed Angles** April

1. Using central and inscribed angles

D. **Secants, Tangents, and Angle measures** May

1. Finding interior and exterior angles

E. **Segment relationships in circles** May

1. Proportional segments in circles

F. **Equations of Circles** May

1. Solve problems using equation of a circle

X. Area of Polygons

A. **Area of Parallelograms** May

1. Finding area of parallelograms

B. **Area of regular and irregular polygons** May

1. Area of rectangle, triangle, rhombi,and square
2. Finding area of irregular figures
3. Finding area of regular polygons

C. **Area and Circumference of Circles** May

1. Finding area and circumference of circles
2. Finding area of sectors and arcs

D. **Geometric Probability** May

XI. Area and Volume of Solids

A. **Exploring Polyhedrons** May

1. Finding areas of prisms and cylinders
2. Finding volume of prisms and cylinders

B. **Cones, Pyramids** June

1. Finding area of cones, and pyramid
2. Finding volume of cones and pyramid

C. **Spheres** June

1. Finding volume and area of spheres

Course Map for Geometry Honors

Month	Major Unit	Instructional Unit
September	Basic Figures in Geometry Segments and Measurement	• The coordinate Plane • Measuring Segments: Distance Formula • Midpoint Formula
October	Basic Figures in Geometry Segments and Measurement Reasoning and Proof Angle Relationships, Parallel Lines	• Classifying and Measuring Angles • Reasoning and Conjecturing • Proofs • Angle Relationships • Parallel Lines and Transversals
November	Angle Relationships, Parallel Lines Congruent Triangles	• Parallel lines and Slope • Classifying Triangles • Measuring Angles in Triangles • Proving Triangles congruent
December	Special Relationships in Triangles	• Special Segments in Triangles • Analyzin Isosceles Triangles
January	Parallelograms	• Parallelograms • Rectangles
February	Parallelograms Similar Polygons	• Squares and Rhombi • Trapezoids • Similar Triangles • Parallel lines and Proportional Parts
March	Special Relationships in Right Triangles	• Geometric Mean • Pythagorean Theorem • Special Right Triangles • Trigonometric Ratios
April	Circles	• Angles and Arcs • Arcs and Chords • Central and inscribed Angles
May	Area of Polygons Circles Area of Polygons Area and Volume of Solids Circles	• Area and Circumference of Circles • Equations of Circles • Area of Parallelograms • Area of regular and irregular polygons • Geometric Probability • Exploring Polyhedrons • Secants, Tangents, and Angle measures

		• Segment relationships in circles
June	Area and Volume of Solids	• Cones, Pyramids • Spheres