Board Approved October 2021

Wilson Area School District
Planned Course Guide

Title of planned course: Academic Geometry

Subject Area: Mathematics

Grade Level: 11

Course Description: This course is primarily concerned with developing geometric thinking through visualization, analysis, informal deduction and formal deduction. This course is consistent with current Common Core state standards. Students will study the following topics: tools of geometry, parallel and perpendicular lines, relationships within triangles, polygons and quadrilaterals, similarity, right triangles and trigonometry, area, surface area and volume, circles and transformations.

Time/Credit for this Course: One Full Academic Year / 1.0 Credit

Curriculum Writing Committee: BethAyn S. Tarsi

Curriculum Map

August: Chapter 10: Area
Chapter 11: Surface Area and Volume

September: Chapter 11: Surface Area and Volume

October: Chapter 11: Surface Area and Volume
Chapter 1: Tools of Geometry

November: Chapter 1: Tools of Geometry
Chapter 3: Parallel and Perpendicular Lines

December: Chapter 3: Parallel and Perpendicular Lines
Chapter 5: Relationships Within Triangles

January: Chapter 5: Relationships Within Triangles
Chapter 6: Polygons and Quadrilaterals

February: Chapter 6: Polygons and Quadrilaterals
Chapter 8: Right Triangles and Trigonometry

March: Chapter 8: Right Triangles and Trigonometry
Chapter 12: Circles

April: Chapter 12: Circles

May: Chapter 9: Transformations

June: Chapter 9: Transformations

Wilson Area School District
Planned Course Materials

Course Title: Academic Geometry

Textbook: Pearson's Prentice Hall Geometry Common Core ©2012

Supplemental Books:

- Making Geometry Come Alive
- Cooperative Learning & Geometry
- What's Wrong With This Picture (Critical Thinking Exercises in Geometry)

Teacher Resources:

- Textbook
- Multimedia
- Calculators
- Practice Worksheets
- SMART Board
- Geogebra

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Area

Time frame: 1 - 2 weeks

Common Core Standards: G2.2.HS.C.1, 2.3.HS.A.2, 3, 8, 9, 13, 14

Keystone Assessment Anchors: G.1.1.1.1, G.1.2.1.1-4, G.2.2.2.4-5, G.2.2.3.1, G.2.2.4.1, G.2.2.2.3

Essential content/objectives: At end of the unit, students will be able to:
- Find the area of parallelograms and triangles
- Find the area of trapezoids, rhombuses and kites
- Find the area of a regular polygon
- Find the perimeters and areas of similar polygons
- Find the measures of central angles and arcs of circles
- Find the circumference and arc length of circles
- Find the area of circles, sectors, and segments of circles
- Use segment and area models to find the probabilities of events

Core Activities: Students will complete/participate in the following:
- Classroom lectures and discussion
- Guided and Independent practice
- Group work

Extensions:
- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:
- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:
- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice

Materials & Resources:
- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board

Assessments:

- Homework Assignments
- Quizzes and Tests

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Surface Area and Volume

Time frame: 7 - 8 weeks

Common Core Standards: 2.3.HS.A.1, 3, 12, 13, 14

Keystone Assessment Anchors: G.1.2.1.5, G.2.3.1.1-3, G.2.3.2.1

Essential content/objectives: At end of the unit, students will be able to:
- Recognize polyhedra and their parts
- Visualize cross sections of space figures
- Find the surface area of a prism and a cylinder
- Find the surface area of a pyramid and a cone
- Find the volume of a prism and a cylinder
- Find the volume of a pyramid and a cone
- Find the surface area and volume of spheres
- Solve for a missing dimension given surface area
- Solve for a missing dimension given volume

Core Activities: Students will complete/participate in the following:
- Classroom lectures and discussion
- Guided and Independent practice
- Group work

Extensions:
- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:
- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:
- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice

Materials & Resources:
- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board

Assessments:

- Homework Assignments
- Quizzes and Tests

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Tools of Geometry

Time frame: 2 - 3 weeks

Common Core Standards: 2.2.HS.C.1, 2.3.8.A.3, 2.3.HS.A.3, 11

Keystone Assessment Anchors: G.2.1.2.1, G.2.1.2.3, G.2.2.2.1, G.2.2.2.2

Essential content/objectives: At end of the unit, students will be able to:
- Make nets and drawings of 3-dimensional figures
- Define basic terms and postulates of geometry
- Measure and compare lengths of segments
- Measure and compare measures of angles
- Identify special angle pairs and use their relationship to find angle measures
- Find the midpoint of a segment
- Find the distance between two points in the coordinate plane
- Find the perimeter or circumference of basic shapes
- Find the area of basic shapes

Core Activities: Students will complete/participate in the following:
- Classroom lectures and discussion
- Guided and Independent practice
- Small group work

Extensions:
- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:
- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:
- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice
- Geogebra

Materials & Resources:
- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board

Assessments:

- Homework Assignments
- Quizzes and Tests
- Geogebra Assignments

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Parallel and Perpendicular Lines

Time frame: 2 - 3 weeks

Common Core Standards: 2.3.8.A.2, 3; 2.3.HS.A.3, 11

Keystone Assessment Anchors: G.2.1.2.2-3, G.2.2.1.1-2

Essential content/objectives: At end of the unit, students will be able to:
- Identify relationships between figures in space
- Identify angles formed by two lines and a transversal
- Prove theorems about parallel lines
- Use properties of parallel lines to find angle measures
- Determine whether two lines are parallel
- Relate parallel and perpendicular lines
- Use parallel lines to prove a theorem about triangles
- Find measures of angles of triangles
- Graph and write linear equations
- Relate slope to parallel and perpendicular lines

Core Activities: Students will complete/participate in the following:
- Classroom lectures and discussion
- Guided and Independent practice
- Small group work

Extensions:
- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:
- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island
- Tutoring in the Math Lab

Instructional Methods:
- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice
- Geogebra

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geogebra

Assessments:

- Homework Assignments
- Quizzes and Tests
- Geogebra Assignments

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Relationships Within Triangles

Time frame: 4-5 weeks

Common Core Standards: 2.2.HS.C.9, 2.3.8.A.2, 2.3.HS.A.3, 6, 8, 13

Keystone Assessment Anchors: G.1.2.1.1, G.1.3.2.1

Essential content/objectives: At end of the unit, students will be able to:
- Use properties of midsegments to solve problems
- Use properties of perpendicular bisectors and angle bisectors
- Identify properties of perpendicular bisectors and angle bisectors of a triangle
- Identify properties of medians and altitudes of a triangle
- Use inequalities involving angles and sides of triangles
- Apply inequalities in two triangles

Core Activities: Students will complete/participate in the following:
- Classroom lectures and discussion
- Guided and Independent practice
- Small group work

Extensions:
- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:
- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:
- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice
- Geogebra

Materials & Resources:
- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geogebra

Assessments:

- Homework Assignments
- Quizzes and Tests
- Geogebra Assignments

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Polygons and Quadrilaterals

Time frame: 3 - 4 weeks

Common Core Standards: 2.2.HS.C.9, 2.3.8.A.2, 2.3.HS.A.3, 6, 8, 13

Keystone Assessment Anchors: G.1.2.1.2, G.1.2.1.4, G.1.3.2.1

Essential content/objectives: At end of the unit, students will be able to:

- Find the sum of the measures of the interior angles of a polygon
- Find the sum of the measures of the exterior angles of a polygon
- Use the relationships among sides and angles of parallelograms
- Use the relationships among diagonals of parallelograms
- Determine whether a quadrilateral is a parallelogram
- Define and classify special types of parallelograms
- Use properties of diagonals of rhombuses and rectangles
- Determine whether a parallelogram is a rhombus or rectangle
- Verify and use properties of trapezoids and kites

Core Activities: Students will complete/participate in the following:

- Classroom lectures and discussion
- Guided and Independent practice
- Small group work

Extensions:

- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:

- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:

- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice
- Geogebra

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geogebra

Assessments:

- Homework Assignments
- Quizzes and Tests
- Geogebra Assignments

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Right Triangles and Trigonometry

Time frame: 3 - 4 weeks

Common Core Standards: 2.2.HS.C.9, 2.3.HS.A.2, 3, 7, 13

Keystone Assessment Anchors: G.1.2.1.1, G.2.1.1.1, G.2.1.1.2

Essential content/objectives: At end of the unit, students will be able to:
- Use the Pythagorean Theorem and its converse
- Use the properties of a 45-45-90 and a 30-60-90 triangle
- Use the sine, cosine and tangent ratios to determine side lengths and angles measures in right triangles
- Use angles of elevation and depression to solve problems
- Apply the Law of Sines
- Apply the Law of Cosines

Core Activities: Students will complete/participate in the following:
- Classroom lectures and discussion
- Guided and Independent practice
- Group work

Extensions:
- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:
- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:
- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice
- Geogebra

Materials & Resources:
- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geogebra

Assessments:

- Homework Assignments
- Quizzes and Tests
- Geogebra Assignments

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Circles

Time frame: 5 - 6 weeks

Common Core Standards: 2.3.HS.A.1, 2, 5, 6, 8, 9

Keystone Assessment Anchors: G.1.1.1.1-4, G.1.3.1.2, G.2.2.2.2-3

Essential content/objectives: At end of the unit, students will be able to:

- Use the properties of the tangent to a circle
- Use congruent chords, arcs, and central angles
- Use perpendicular bisectors to chords
- Find the measure of an inscribed angle
- Find the measure of angle formed by a tangent and a chord
- Find measures of angles formed by chords, secants, and tangents
- Find the lengths of segments associated with circles
- Write the equation of a circle
- Find the center and radius of a circle

Core Activities: Students will complete/participate in the following:

- Classroom lectures and discussion
- Guided and Independent practice
- Group work

Extensions:

- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:

- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:

- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice
- Geogebra

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geogebra

Assessments:

- Homework Assignments
- Quizzes and Tests
- Geogebra assignments

Curriculum Scope & Sequence

Planned Course: Academic Geometry

Unit: Transformations

Time frame: 12 - 14 Days

Common Core Standards: 2.3.HS.A.1, 2, 3, 4, 5, 6, 13

Keystone Assessment Anchors: G.1.2.1.1, G.1.2.1.2, G.1.2.1.4

Essential content/objectives: At end of the unit, students will be able to:
- Identify isometries
- Find translation images of figures
- Find reflection images of figures
- Draw and identify rotation images of figures
- Classify isometries
- Demonstrate dilation images of figures

Core Activities: Students will complete/participate in the following:
- Classroom lectures and discussion
- Guided and Independent practice
- Group work

Extensions:
- Explaining problems on the board during guided practice
- Enrichment worksheet with more challenging problems
- Concept Bytes in textbook

Remediation:
- PowerGeometry.com Lesson Quizzes
- Reteaching worksheets with worked out examples
- Study Island

Instructional Methods:
- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Independent and small group practice
- Geogebra

Materials & Resources:
- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geogebra

Assessments:

- Homework Assignments
- Quizzes and Tests
- Geogebra Assignments