Board Approved
October 2013

Wilson Area School District
Planned Course Guide

Title of planned course: Applied Geometry

Subject Area: Mathematics

Grade Level: 11 - 12

Course Description: Applied geometry 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: basics of Geometry, segments and angles, parallel and perpendicular lines, triangle relationships, congruent triangles, quadrilaterals, similarity, polygons and area, surface area and volume, right triangles and trigonometry, and circles.

Time/Credit for this Course: Full year / 1 credit

Curriculum Writing Committee: Christal Vitko

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Curriculum Map

August: Chapter 1: Basics of Geometry

September: Chapter 1: Basics of Geometry (cont'd)
Chapter 2: Segments and Angles

October: Chapter 2: Segments and Angles (cont'd)
Chapter 3: Parallel and Perpendicular Lines

November: Chapter 3: Parallel and Perpendicular Lines (cont'd)
Chapter 4: Triangles Relationships

December: Chapter 5: Congruent Triangles

January: Chapter 5: Congruent Triangles (cont'd)

February: Chapter 6: Quadrilaterals
Chapter 7: Similarity

March: Chapter 7: Similarity (cont'd)
Chapter 8: Polygons and Area

April: Chapter 9: Surface Area
Chapter 10: Right Triangles and Trigonometry

May: Chapter 10: Right Triangles and Trigonometry (cont'd)
Chapter 11: Circles

June: Chapter 11: Circles (cont'd)

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Wilson Area School District
Planned Course Materials

Course Title: Applied Geometry

Textbook:

McDougall Littell Geometry Concepts and Skills ©2005

Supplemental Books:

Teaching Geometry with Geometers' Sketchpad

Teacher Resources:

- Textbook
- Multimedia
- Calculators
- Practice Worksheets
- SMART Board
- Geometers' Sketchpad

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Basic of Geometry (Chapter 1)

Time frame: 14 - 16 Days

Common Core Standards: 2.3.8.A.2, 2.3.HS.A.3
Keystone Assessment Anchors: G.2.2.1.1

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

- Find patterns and use them to make predictions
- Use inductive reasoning to make conjectures
- Use postulates and undefined terms
- Sketch simple figures and their intersections
- Measure segments and add segment lengths
- Measure and classify angles
- Add angle measures

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Segments and Angles (Chapter 2)

Time frame: 14 - 16 Days

Common Core Standards: 3.3.8.A.2, 2.3.HS.A.3, 11

Keystone Assessment Anchors: G.1.3.2.1, G.2.1.2.1, G.2.1.2.3

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

- Bisect a segment
- Find the coordinates of the midpoint of a segment
- Bisect an angle
- Find the measures of complementary and supplementary angles
- Find the measures of angles formed by intersecting lines
- Use if-then statements
- Apply the Law of Detachment and the Law of Syllogism
- Use properties of equality and congruence

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

- Classroom lectures and discussion
- Guided and Independent practice
- Small group work
- Paper folding activities/constructions in textbook

Extensions:

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

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Parallel and Perpendicular Lines (Chapter 3)

Time frame: 18 - 20 Days

Common Core Standards: 2.2.HS.C.9, 2.3.8.A.2, 3; 2.3.HS.A.3, 6, 8, 11

Keystone Assessment Anchors: G.1.3.2.1, G.2.1.2.2, G.2.2.1.1, G.2.2.1.2

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

- Identify relationships between lines
- Use theorems about perpendicular lines
- Identify angles formed by transversals
- Find the congruent angles formed when a transversal cuts parallel lines
- Show that two lines are parallel using converse theorems
- Construct parallel and perpendicular lines
- Use properties of parallel and perpendicular lines

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

- Classroom lectures and discussion
- Guided and Independent practice
- Small group work
- Paper folding activities/constructions in textbook

Extensions:

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

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Triangle Relationships (Chapter 4)

Time frame: 16 - 18 Days

Common Core Standards: 2.3.8.A.2, 2.3.HS.A.1, 2, 3, 5, 6, 7, 9, 13

Keystone Assessment Anchors: G.1.2.1.1, G.1.2.1.3, G.1.3.1.1, G.2.1.1.1, G.2.1.2.1

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

- Classify triangles by their sides and by their angles
- Find angle measures in triangles
- Use properties of isosceles and equilateral triangles
- Use the Pythagorean Theorem and the Distance Formula
- Use the Converse of the Pythagorean Theorem
- Use side lengths to classify triangles
- Identify and use medians of a triangle
- Use triangles measurements to decide which side is longest and which angle is largest

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Congruent Triangles (Chapter 5)

Time frame: 18 - 20 Days

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

Keystone Assessment Anchors: G.1.2.1.1, G.1.2.1.3, G.1.3.2.1

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

- Identify congruent triangles and corresponding parts
- Show triangles are congruent using SSS and SAS
- Show triangles are congruent using ASA and AAS
- Use the HL Congruence Theorem and summarize congruence postulates and theorems
- Show corresponding parts of congruent triangles are congruent
- Use angle bisectors and perpendicular bisectors

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Quadrilaterals (Chapter 6)

Time frame: 14 – 16 Days

Common Core Standards: 2.3.HS.A.2, 3

Keystone Assessment Anchors: G.1.2.1.2, G.1.2.1.4

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

- Identify and classify polygons
- Find angle measures of polygons
- Use properties of parallelograms
- Show that a quadrilateral is a parallelogram
- Use properties of special types of parallelograms
- Use properties of trapezoids
- Identify special quadrilaterals based on limited information

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Similarity (Chapter 7)

Time frame: 14 - 16 Days

Common Core Standards: 2.3.8.A.2, 2.3.HS.A. 1, 2, 3, 5, 6

Keystone Assessment Anchors: G.1.2.1, G.1.3.1.1, G.1.3.1.2, G.1.3.2.1

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

- Use ratios and proportions
- Identify similar polygons
- Show that two triangles are similar using the AA Similarity Postulate
- Show that two triangles are similar using SSS and SAS Theorems
- Use the Triangle Proportionality Theorem and its converse

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Polygons and Area (Chapter 8)

Time frame: 12 - 14 Days

Common Core Standards: 2.2.HS.C.1, 2.3.HS.A.3, 8, 14

Keystone Assessment Anchors: G.2.2.2.1, G.2.2.2.2, G.2.2.2.3, G.2.2.2.4, G.2.2.3.1, G.2.2.4.1

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

- Describe polygons
- Find the measures of interior and exterior angles of polygons
- Find the area of squares and rectangles
- Find the area of triangles
- Find the area of parallelograms
- Find the area of trapezoids
- Find the circumference and area of circles
- Find geometric probability using lengths and areas (Appendix 2)
- Determine how changes in dimensions affect the perimeter and area of geometric figures (Appendix 3)

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and lesson quizzes
- Reteaching worksheets with worked out examples
- Study Island
- Tutoring in the Math Lab

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Instructional Methods:

- Explicit Instruction with discussion
- Notes on SMART Board with outlined notes
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Surface Area and Volume (Chapter 9)

Time frame: 12 - 14 Days

Common Core Standards: 2.3.8.A.1, 2.3.HS.A.1, 3, 12, 13, 14

Keystone Assessment Anchors: G.1.1.1.4, G.1.2.1.5, G.1.3.1.1, G.1.3.1.2, G.2.3.1.1, G.2.3.1.2, G.2.3.1.3, G.2.3.2.1

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

- Identify and name solid figures
- Find the surface areas of prisms and cylinders
- Find the surface areas of pyramids and cones
- Find the volumes of prisms and cylinders
- Find the volumes of pyramids and cones
- Find surface areas and volumes of spheres
- Determine how changes in dimensions affect the surface area and volume of geometric figures (Appendix 3)

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Right Triangles and Trigonometry (Chapter 10)

Time frame: 14 - 16 Days

Common Core Standards: 2.2.HS.C.9, 2.3.8.A.2, 2.3.HS.A.2, 3, 7

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:

- Simplify square roots
- Find the side lengths of 45-45-90 triangles
- Find the side lengths of 30-60-90 triangles
- Find the tangent of an acute angle
- Find the sine and cosine of an acute angle
- Solve a right triangle
- Use the Law of Sines and the Law of Cosines to solve oblique triangles (Supplement)

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
- Geo-Activities in textbook

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments

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Curriculum Scope & Sequence

Planned Course: Applied Geometry

Unit: Circles (Chapter 11)

Time frame: 14 - 16 Days

Common Core Standards: 2.3.HS.A.1, 3, 8, 9

Keystone Assessment Anchors: G.1.1.1.1, G.1.1.1.2, G.1.1.1.3, G.2.2.2.5 G.2.2.2.2

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

- Identify segments and lines related to circles
- Use properties of a tangent to a circle
- Use properties of arcs of circles
- Find the area of a sector of a circle (Supplement)
- Use properties of chords of circles
- Use properties of inscribed angles
- Use properties of chords in a circle
- Write and graph the equation of a circle

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

- Classroom lectures and discussion
- Guided and Independent practice
- Small group work
- Paper folding activities/constructions in textbook

Extensions:

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

Remediation:

- Classzone.com homework help and 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
- Geometry in Motion Videos
- Independent and small group practice
- Technology practice in computer lab (Geometers' Sketchpad)

Materials & Resources:

- Textbook
- Calculators
- Outlined Notes
- Worksheets
- SMART Board
- Geometers' Sketchpad

Assessments:

- Homework Assignments
- Quizzes and Tests
- Lab Assignments