Kenilworth Public Schools
Curriculum Guide

Content Area: Geometry
Grade: 10
BOE Approved: 8/13/2012

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Submitted by: Ben DeVito
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Geometry and Geometry Honors - Scope and Sequence

Unit 1- Essentials of Geometry, Reasoning & Proofs, Lines and Angles	Unit 2- Similarity and Congruence	Unit 3- Right Triangles and Trigonometry	Unit 4- Polygons	Unit 5- Circles	Unit 6- Transformations and Vectors	Unit 7- Solids	Unit 8- Relationships within Triangles
Weeks 1-6	Weeks 7-11	Weeks 12-20	Weeks 21-24	Weeks 25-28	Weeks 29-30	Weeks 31-32	Weeks 33-35
Unit Description: Lines, Angles, and Proofs (Chapters 1,2,3)	*Unit Description:* Similarity and Congruence (Chapters 4.1-4.8,6.1, 6.3-6.5, 5.1, 5.5-5.6)	*Unit Description:* Right Triangles and Trigonometry (Chapter 7)	*Unit Description:* Polygons (Chapters 1.6, 8, 11.3)	*Unit Description:* Circles and their properties (Chapters 10, 11.1, 11.2,)	*Unit Description:* Transformations and vectors (Chapter 9)	*Unit Description:* Volume and Surface area of 3D objects (Sections 11.5-11.9)	*Unit Description:* Midsegments, Bisectors, Medians Altitudes, Points of Concurrency (Chapter 5.2-5.4)
Unit Targets: • Identify points, lines, and planes. • Use segments and congruence. • Use midpoint and distance formulas.	*Unit Targets:* • Apply properties, postulates, and theorems of triangles to analyze triangle relationships. • Midsegment	*Unit Targets:* • Apply the Pythagorean Theorem. • Use the Converse of the Pythagorean Theorem. • Use Similar	*Unit Targets:* • Classify Polygons. • Find Angle measures of polygons. • Use properties of parallelograms. • Apply	*Unit Targets:* • Use properties of tangents. • Find arc measures. • Apply properties of chords and other angle	*Unit Targets:* • Translate figures and use vectors. • Basic operations with matrices. • Perform and identify reflections, rotations, and dilations. • Apply	*Unit Targets:* • Explore solids. • Find volume and surface area of regular solids. • Identify similar solids.	*Unit Targets:* • Midsegment theorem and coordinate proof. • Use perpendicular bisectors. • Use angle bisectors of triangles.

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• Measure and classify angles. • Describe angle pair relationships. • Use and apply inductive/ deductive reasoning and analyze conditional statements. • Apply properties, postulates and theorems to formal proofs. • Identify angles formed by parallel lines and transversals.	Theorem. • Use properties of similarity on triangles. • Use inequalities in triangles.	Right Triangles. • Use Special Right Triangles. • Apply the Sine, Cosine, and Tangent Ratios. • Solve Right Triangles.	properties of Rhombi, Rectangles, and Squares, Trapezoids, and Kites. • Find perimeter and areas of quadrilaterals.	relationships. • Use inscribed angles and polygons. • Find segment lengths in circles. • Write and graph equations of circles. • Find circumference and arc length. • Find area of circles and sectors.	compositions of transformations. • Identify symmetry using lines of symmetry.		• Use medians and altitudes.

Geometry and Geometry Honors - Unit 1

Unit title: Essentials of Geometry, Reasoning & Proofs, Lines & Angles (Chapters 1,2,3)	
Unit summary: Lines, Angles, and Proofs	
Primary interdisciplinary connections: Business, Social Studies, Science	
21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy	

Learning Targets
NJSLS Standards: 9-12.G.CO.1, 9-12.G.GPE.7, 9-12.G.MG.1, 9-12.G.CO.9, 9-12.A.REI.1, 9-12.G.GPE.5, 9-12.G.C.3, CC: 9-12.G-CO.1, 9-12.G.CO.9, 9-12.G.MG.1, 9-12.G.GPE.5, 9-12.A.REI.1

Content Statements:

1	Points, lines, and planes
2	Segments and congruence
3	Midpoint and distance formulas
4	Measurement and classification of angles
5	Describe angle pair relationships
6	Inductive/ deductive reasoning conditional statements
7	Properties, postulates and theorems in formal proofs
8	Identify angles formed by parallel lines and transversals

Big Idea: The essential elements and their relationships combined with reasoning can be used to solve problems.

Unit Essential Questions:	Unit Enduring Understandings:
• What are the essential elements of geometry? • How are the essential elements related? • How can I use reasoning to make conclusions?	• Points, lines, planes and angles are the building blocks of geometry. • All two- and three-dimensional objects are formed with the basic elements of geometry. • Inductive/deductive reasoning can be used to find missing information and make conclusions formally (proofs) and informally.

Unit Learning Targets
Students will…

• Identify points, lines, and planes.
• Use segments and congruence.
• Use midpoint and distance formulas.
• Measure and classify angles.

- Describe angle pair relationships.
- Use and apply inductive/ deductive reasoning and analyze conditional statements.
- Apply properties, postulates, and theorems to formal proofs.
- Identify angles formed by parallel lines and transversals.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
- Homework
- Classwork
- Other activities at teacher's discretion

Lesson Plans

Activities	Timeframe

• Construct Angle and Segment Bisectors using Compass and straight-edge and/or electronic construction tools (i.e. Geometer's Sketchpad).
    o Manual Construction: requires Compasses and Straight Edges.
    o Digital Construction: requires Computer Access with appropriate software.
	20 minutes

• Use deductive reasoning to solve a logic problem o Graph paper or support paper with a chart are needed.	15 minutes
Students with Disabilities, English Language Learners, and Gifted & Talented Students: Differentiating instruction is a flexible process that includes the planning and design of instruction, how that instruction is delivered, and how student progress is measured. Teachers recognize that students can learn in multiple ways. By providing appropriately challenging learning, teachers can maximize success for all students. Examples of Strategies and Practices that Support Students with Disabilities: • Use of visual and multisensory formats • Use of assisted technology	Weeks 1-6

• Use of prompts
• Modification of content and student products
• Testing accommodations
• Authentic assessments

Examples of Strategies and Practices that Support Gifted & Talented Students:
• Adjusting the pace of lessons
• Curriculum compacting
• Inquiry-based instruction
• Independent study
• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Examples of Strategies and Practices that Support English Language Learners:
• Pre-teaching of vocabulary and concepts
• Visual learning, including graphic organizers
• Use of cognates to increase comprehension
• Teacher modeling
• Pairing students with beginning English language skills with students who have more advanced English language skills
• Scaffolding
• Word walls
• Sentence frames
• Think-pair-share
• Cooperative learning groups
• Teacher think-aloud

Teacher Resources	*Teacher Note*
• Either compasses and straight edges or computer access with geometry software • Graph paper or a support paper with a chart • Geometry, HMH, 2012 edition	The construction activity can be done either manually or digitally.

Geometry and Geometry Honors - Unit 2

Unit title: Similarity and Congruence (Chapters 4.1-4.8,6.1, 6.3-6.5, 5.1, 5.5-5.6)	
Unit summary: Similarity and Congruence	
Primary interdisciplinary connections: Business, Social Studies, Science	
21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy	

Learning Targets

NJSLS Standards: 9-12.G.CO.10, 9-12.G.CO.7, 9-12.G.CO.6, 9-12.G.CO.8, 9-12.G.SRT.5, 9-12.G.SRT.3, 9-12.G.SRT.4, 9-12.G.CO.2, 9-12.G.GPE.4, 9-12.G.CO.9, 9-12.G.CO.10, CC.9-12.G.CO.10, 9-12.G.CO.8, 9-12.G.CO.9, 9-12.G.SRT.5, 9-12.G.SRT.4, 9-12.G.GPE.4

Content Statements:

1	Postulates of triangles and triangle relationships
2	Midsegment Theorem
3	Properties of Triangles
4	Inequalities of triangles

Big Idea: The relationships among the elements of a triangle, or between two or more triangles, can be used to solve problems.

Unit Essential Questions:	Unit Enduring Understandings:
• How can you find an angle of a triangle if you know the other two angles? • What are congruent triangles? • What are angle bisectors, and segment bisectors and what is important about their points of concurrency? • What are similar triangles?	● The triangle sum theorem allows you to find the missing angle of any triangle. ● Congruent triangles have the same shape and size and numerous theorems can be used to prove this congruence. ● There are significant relationships between the bisectors of a triangle. ● Similar triangles have the same shape, but not the same size.

Unit Learning Targets
Students will...

● Apply properties, postulates and theorems of triangles to analyze triangle relationships.
● Midsegment Theorem.
● Use properties of similarity on triangles.
● Use inequalities in triangles.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
- Homework
- Classwork
- Other activities at teacher's discretion

Lesson Plans

Activities	Timeframe
● Group Activity: Given three measurements, determine if a triangle is possible. Groups will be given different measurements and attempt to construct a triangle with those measurements. If a construction is not possible, students will explain to the class why not. 　　o Materials: Rulers, Drawing paper 　　o Teacher Note: sizes should be predetermined to have a mix of possible and impossible value	10 minutes
● Individual Activity: Relate the midsegments of a triangle to the sides of a triangle. 　　o Materials: Graph paper, ruler, chart	15 minutes
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Examples of Strategies and Practices that Support Gifted & Talented Students: • Adjusting the pace of lessons • Curriculum compacting • Inquiry-based instruction • Independent study • Higher-order thinking skills • Interest-based content • Student-driven instruction • Real-world problems and scenarios Examples of Strategies and Practices that Support English Language Learners: • Pre-teaching of vocabulary and concepts • Visual learning, including graphic organizers • Use of cognates to increase comprehension • Teacher modeling • Pairing students with beginning English language skills with students who have more advanced English language skills • Scaffolding •Word walls •Sentence frames •Think-pair-share •Cooperative learning groups •Teacher think-aloud	
Teacher Resources	*Teacher Note*
• Drawing paper • Graph paper, ruler, chart • Geometry, HMH, 2012 edition	Students should be given different types of triangles.

Geometry and Geometry Honors - Unit 3

Unit title: Right Triangles and Trigonometry (Chapter 7)	
Unit summary: Right Triangles and Trigonometry	
Primary interdisciplinary connections: Business, Social Studies, Science	
21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy	

Learning Targets

NJSLS Standards: 9-12.G.SRT.8, 9-12.G.SRT.5, 9-12.G.SRT.6, CC.9-12.G.SRT.8, 9-12.G.SRT.5, 9-12.G.SRT.6, 9-12.G.SRT.4, 9-12.GPE.7

Content Statements:

1	Pythagorean Theorem
2	Converse of Pythagorean Theorem
3	Similar Right Triangles
4	Special Right Triangles
5	Sine, Cosine and Tangent Ratios
6	Solve Right Triangles

Big Idea: There are many important relationships that pertain to right triangles.

Unit Essential Questions:	**Unit Enduring Understandings:**
• Are there special relationships among the sides and angles of right triangles? • What are the two special right triangles? • What is Trigonometry?	• The Pythagorean Theorem describes the relationship between the sides of any right triangle. • 45-45-90 and 30-60-90 are the special right triangles. • The Sine, Cosine, and Tangent functions describe the ratio of the sides of any right triangle. • The Sine, Cosine, and Tangent functions can be used to find missing sides and angles.

Unit Learning Targets
Students will…

- Apply the Pythagorean Theorem.
- Use the Converse of the Pythagorean Theorem.
- Use Similar Right Triangles.
- Use Special Right Triangles.
- Apply the Sine, Cosine, and Tangent Ratios.
- Solve Right Triangles.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
- Homework
- Classwork
- Other activities at teacher's discretion

Lesson Plans

Activities	Timeframe
• Determine the height of the room and other local objects using simple tools and right angle trigonometry. o Materials: Ruler, Protractor, String, Tape, Weight (to be attached to string)	~15 minutes
• Students will work in pairs. Using the side lengths and the converse of the Pythagorean Theorem, determine if the triangle is right, obtuse, or acute. o Materials: Scientific calculator, paper for a chart for comparison.	20 minutes
Students with Disabilities, English Language Learners, and Gifted & Talented Students: Differentiating instruction is a flexible process that includes the planning and design of instruction, how that instruction is delivered, and how student progress is measured. Teachers recognize that students can learn in multiple ways. By providing appropriately challenging learning, teachers can maximize success for all students. Examples of Strategies and Practices that Support Students with Disabilities: • Use of visual and multisensory formats • Use of assisted technology • Use of prompts • Modification of content and student products • Testing accommodations • Authentic assessments	Weeks 12-20

Examples of Strategies and Practices that Support Gifted & Talented Students: • Adjusting the pace of lessons • Curriculum compacting • Inquiry-based instruction • Independent study • Higher-order thinking skills • Interest-based content • Student-driven instruction • Real-world problems and scenarios Examples of Strategies and Practices that Support English Language Learners: • Pre-teaching of vocabulary and concepts • Visual learning, including graphic organizers • Use of cognates to increase comprehension • Teacher modeling • Pairing students with beginning English language skills with students who have more advanced English language skills • Scaffolding •Word walls •Sentence frames •Think-pair-share •Cooperative learning groups •Teacher think-aloud	
Teacher Resources	*Teacher Note*
• Ruler, protractor, string, tape, weight (to be attached to string) • Scientific calculator, paper for a chart for comparison • Geometry, HMH, 2012 edition	Activities can be done in groups.

Geometry and Geometry Honors - Unit 4

Unit title: Polygons (Chapter 1.6, 8, 11.3)	

Unit summary: Polygons

Primary interdisciplinary connections: Business, Social Studies, Science

21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy

Learning Targets

NJSLS Standards: 9-12.G.MG.1, 9-12.G.CO.11, 9-12.G.SRT.5, 9-12.G.SRT.8, CC.9-12.G.GMD.4, 9-12.G.MG.1, 9-12.G.CO.11, 9-12.G.SRT.5, 9-12.G.GPE.7, 9-12.G.GPE.4, 9-12.G.SRT.8

Content Statements:

1	Polygons
2	Angle measures of a polygon
3	Parallelograms
4	Properties of rhombi, rectangles, squares, trapezoids, and kites
5	Perimeter and area of quadrilaterals

Big Idea: There are many types of polygons which have specific properties to be used for identification and solving problems.

Unit Essential Questions:	**Unit Enduring Understandings:**
• What are polygons? • What are the properties of various polygons? • How do you find the area and perimeter of polygons? • How can the properties be used?	• Polygons are closed figures made of three or more lines and can be classified into numerous types. • Different types of polygons have special properties. • There are formulas used to find the area and perimeter of any polygon. • The properties can be used to determine the type of polygon and to solve problems.

Unit Learning Targets
Students will…

● Classify Polygons.
● Find Angle measures of polygons.
● Use properties of parallelograms.
● Apply properties of Rhombi, Rectangles, and Squares, Trapezoids, and Kites.
● Find perimeter and areas of quadrilaterals.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
● Homework
● Classwork
● Other activities at teacher's discretion

Lesson Plans

Activities	Timeframe

● Students will use electronic tools (i.e. Sketchpad) to accurately construct parallelograms and explore their properties.
     o   Computer Lab Activity
     o   Alternate: Have student demonstrate construction on projector and have other students take turns constructing and analyzing properties.
	20-30 minutes

● Individual activity: Investigate angle sums in polygons and develop a formula.
     o   This could also be a sketchpad activity.
     o   Materials: Ruler, paper to construct a table.
	15 minutes

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• Authentic assessments

Examples of Strategies and Practices that Support Gifted
& Talented Students:
• Adjusting the pace of lessons
• Curriculum compacting
• Inquiry-based instruction
• Independent study
• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Examples of Strategies and Practices that Support English
Language Learners:
• Pre-teaching of vocabulary and concepts
• Visual learning, including graphic organizers
• Use of cognates to increase comprehension
• Teacher modeling
• Pairing students with beginning English language skills
with students who have more advanced English language
skills
• Scaffolding
 •Word walls
 •Sentence frames
 •Think-pair-share
 •Cooperative learning groups
 •Teacher think-aloud

Teacher Resources	*Teacher Note*
• Access to computer lab or software projector • Ruler, paper to construct a table • Geometry, HMH, 2012 edition	Both activities can be done either in a computer lab or in the classroom.

Geometry and Geometry Honors - Unit 5

Unit title: Circles (Chapters 10, 11.1, 11.2,)
Unit summary: Circles and their properties
Primary interdisciplinary connections: Business, Social Studies, Science
21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy

Learning Targets

NJSLS Standards: 9-12.G.CO.1, 9-12.G.C.2, 9-12.G.C.3, 9-12.G.C.2, 9-12.G.GPE.1, 9-12.G.C.5, CC.9-12.G.CO.1, 9-12.G.C.2, 9-12.G.C.4, 9-12.G.C.5, 9-12.G.GPE.1, 9-12.G.GMD.1

Content Statements:

1	Tangents
2	Arc Measures
3	Chords and other angle relationships
4	Inscribed angles and polygons
5	Segment lengths in circles
6	Equation of a circle
7	Circumference and arc length
8	Area and sectors of circles

Big Idea: Investigate aspects of circles and the properties of circles.

Unit Essential Questions:	**Unit Enduring Understandings:**
• What are the properties of circles? • How are the properties of circles used to solve problems? • What is the equation of a circle? • Why is it important to know the relationships among circles and their parts?	• There are many properties specific to circles and their parts. • There are formulas used to find circumference, area, arc length and sectors of circles. • The equation of a circle can be derived from the Pythagorean Theorem. • Properties within one circle and between two or more circles can be used to solve real-life problems.

Unit Learning Targets
Students will…

● Use properties of tangents.
● Find arc measures.
● Apply properties of chords and other angle relationships.
● Use inscribed angles and polygons.
● Find segment lengths in circles.

- Write and graph equations of circles.
- Find circumference and arc length.
- Find area of circles and sectors.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
- Homework
- Classwork
- Other activities at teacher's discretion

Lesson Plans

Activities	Timeframe

• Measuring a segment tangent to a circle and measuring a segment normal to the same circle that intersects the first circle, students will determine the circle's radius.
   o Groups will illustrate methods and compare results to actual value.
   o Materials: Rulers/yard sticks and circular object (i.e. round table).
	15 minutes

• Students will work individually to establish the relationship between central and inscribed angles of a circle. o Materials: Compass, straight-edge, and protractor.	15 minutes
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• Use of assisted technology
• Use of prompts
• Modification of content and student products
• Testing accommodations
• Authentic assessments

Examples of Strategies and Practices that Support Gifted
& Talented Students:
• Adjusting the pace of lessons
• Curriculum compacting
• Inquiry-based instruction
• Independent study
• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Examples of Strategies and Practices that Support English
Language Learners:
• Pre-teaching of vocabulary and concepts
• Visual learning, including graphic organizers
• Use of cognates to increase comprehension
• Teacher modeling
• Pairing students with beginning English language skills
with students who have more advanced English language
skills
• Scaffolding
 •Word walls
 •Sentence frames
 •Think-pair-share
 •Cooperative learning groups
 •Teacher think-aloud

Teacher Resources	*Teacher Note*
• Rulers, yard sticks and circular object (i.e. round table) • Compasses, straight-edges, and protractors • Geometry, HMH, 2012 edition	The first is a group activity and the second is an individual activity.

Geometry and Geometry Honors - Unit 6

Unit title: Transformations and Vectors (Chapter 9)
Unit summary: Transformations and vectors
Primary interdisciplinary connections: Business, Social Studies, Science
21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy

Learning Targets

NJSLS Standards: 9-12.G.CO.5, 9-12.G.N.VM.8, 9-12.G.CO.5, 9-12.G.CO.3, 9-12.G.SRT.1, CC.9-12.G.CO.4, 9-12.G.CO.5, 9-12.G.N.VM.8, 9-12.G.CO.2, 9-12.G.CO.3, 9-12.G.SRT.1, 9-12.G.SRT.2

Content Statements:

1	Translating figures and vectors
2	Matrices
3	Reflections, rotations and dilations
4	Compositions of transformations
5	Symmetry

Big Idea: Objects can be transformed by specific means.

Unit Essential Questions:	**Unit Enduring Understandings:**
• What are transformations? • How can transformations be used? • What are vectors and how are they used? • What is symmetry?	• There are four types of transformations and they can be combined to form compound transformations. • Transformations can be used to relocate objects. • Vectors have magnitude and direction and there are procedures for combining them. • Symmetry exists when an object can be mapped onto itself by reflection in a line.

Unit Learning Targets
Students will...

• Translate figures and use vectors.
• Basic operations with Matrices.
• Perform and identify reflections, rotations, and dilations.
• Apply compositions of transformations.
• Identify symmetry using lines of symmetry.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
- Homework
- Classwork
- Other activities at teacher's discretion

Lesson Plans	
Activities	*Timeframe*

- Students will create Tessellations using vectors.
    o Equilateral triangles, Parallelograms and regular hexagons can form the basis of a tessellated pattern.
    o Geometer's Sketchpad has tools well suited to the creation of tessellations, but these figures can also be drawn manually.
	30-40 minutes

- Students will use Geometer's Sketchpad to reflect, translate, and rotate a polygon.	40 minutes
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& Talented Students:
- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Examples of Strategies and Practices that Support English
Language Learners:
- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills
with students who have more advanced English language
skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups
- Teacher think-aloud

Teacher Resources	*Teacher Note*
• Geometer's Sketchpad software (or straight edges and protractors for the first activity) • Geometry, HMH, 2012 edition	Geometer's Sketchpad is recommended for both activities.

Unit title: Solids (Sections 11.5-11.9)

Unit summary: Volume and Surface Area of 3D objects

Primary interdisciplinary connections: Business, Social Studies, Science

21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy

Learning Targets

NJSLS Standards: 9-12.G.GMD.4, 9-12.G.GMD.3, CC.9-12.G.GMD.4, 9-12.G.GMD.3, 9-12.G.GMD.1, 9-12.G.MG.3

Content Statements:

1	Solids
2	Volume and surface area
3	Similar solids

Big Idea: Geometric Solids are objects with three dimensions and specific properties.

Unit Essential Questions:	Unit Enduring Understandings:
• What are geometric solids and their attributes? • How can you find volume and surface area of solid figures? • What are similar solids?	• There are various geometric solids which are three-dimensional objects and each type has specific characteristics. • There are formulas used to find the volume and surface area of solid figures. • Similar solids are objects with the same shape and different sizes.

Unit Learning Targets
Students will…

• Explore Solids.
• Find Volume and surface area of regular solids.
• Identify Similar Solids.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
• Homework
• Classwork
• Other activities at teacher's discretion

Lesson Plans	
Activities	*Timeframe*

● Students will construct the Platonic Solids.
    ○ Materials: Paper, Scissors, Tape, Templates
    ○ McDougal Little Geometry 2004 Resources has cut-out templates of all of the platonic Solids.
	20 minutes

● In groups of two, students will compare the volume of a prism and a pyramid using nets. ○ Materials: Ruler, poster board, scissors, tape, and uncooked rice	20 minutes
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• Student-driven instruction • Real-world problems and scenarios Examples of Strategies and Practices that Support English Language Learners: • Pre-teaching of vocabulary and concepts • Visual learning, including graphic organizers • Use of cognates to increase comprehension • Teacher modeling • Pairing students with beginning English language skills with students who have more advanced English language skills • Scaffolding •Word walls •Sentence frames •Think-pair-share •Cooperative learning groups •Teacher think-aloud	
Teacher Resources	*Teacher Note*
• Paper, scissors, tape, templates • Rulers, poster boards, scissors, tape, and uncooked rice • Geometry, HMH, 2012 edition	McDougal Little Geometry 2004 Resources has cut-out templates of all of the platonic solids.

Geometry and Geometry Honors - Unit 8

Unit title: Relationships within Triangles (Chapter 5.2-5.4)
Unit summary: Midsegments, Bisectors, Medians, Altitudes, Points of Concurrency
Primary interdisciplinary connections: Business, Social Studies, Science
21st Century Themes: Global Awareness, Financial, Economic, Business and Entrepreneurial Literacy, Life and Career Skills, Information Literacy

Learning Targets

NJSLS Standards: 9-12.G.CO.9, 9-12.G.C.3, 9-12.G.CO.10, CC.9-12.G.CO.9, 9-12.G.CO.10

Content Statements:

1	Midsegment theorem and coordinate proof
2	Perpendicular bisectors
3	Angle bisectors of triangles
4	Medians and altitudes

Big Idea: There are special relationships among bisectors and segments of triangles.

Unit Essential Questions:	**Unit Enduring Understandings:**
• What are the Midsegments, Bisectors, Medians, Altitudes, and Points of Concurrency of a triangle?	• The segments formed by connecting midpoints of sides and vertices of a triangle have special relationships.
	• Angle bisectors and altitudes have points of concurrency with important relationships.

Unit Learning Targets
Students will…

- Midsegment theorem and coordinate proof.
- Use perpendicular bisectors.
- Use angle bisectors of triangles.
- Use medians and altitudes.

Evidence of Learning

Summative Assessment: Quizzes, Tests

Formative Assessments:
- Homework
- Classwork
- Other activities at teacher's discretion

Lesson Plans	
Activities	*Timeframe*

● Construct Angle and Segment Bisectors within two triangles respectively.
      o   Note: Patty Paper or construction paper may be used.
      o   Manual Construction: requires Compasses and Straight Edges.
      o   Digital Construction: requires Computer Access with appropriate software.
	30-40 minutes

● In groups of two, students will find the balance point (centroid) of several different types of triangles. o Materials: Pre-made right, obtuse, and acute triangles, (made out of cardboard) and a ruler.	20 minutes
Students with Disabilities, English Language Learners, and Gifted & Talented Students: Differentiating instruction is a flexible process that includes the planning and design of instruction, how that instruction is delivered, and how student progress is measured. Teachers recognize that students can learn in multiple ways. By providing appropriately challenging learning, teachers can maximize success for all students. Examples of Strategies and Practices that Support Students with Disabilities: • Use of visual and multisensory formats • Use of assisted technology • Use of prompts • Modification of content and student products • Testing accommodations • Authentic assessments Examples of Strategies and Practices that Support Gifted & Talented Students: • Adjusting the pace of lessons • Curriculum compacting • Inquiry-based instruction • Independent study	Weeks 33-35

• Higher-order thinking skills
• Interest-based content
• Student-driven instruction
• Real-world problems and scenarios

Examples of Strategies and Practices that Support English Language Learners:
• Pre-teaching of vocabulary and concepts
• Visual learning, including graphic organizers
• Use of cognates to increase comprehension
• Teacher modeling
• Pairing students with beginning English language skills with students who have more advanced English language skills
• Scaffolding
• Word walls
• Sentence frames
• Think-pair-share
• Cooperative learning groups
• Teacher think-aloud

Teacher Resources	*Teacher Note*
• Patty paper or construction paper, compasses and straight edges OR computer access with appropriate software. • Pre-made right, obtuse, and acute triangles (made out of cardboard and a ruler). • Geometry, HMH, 2012 edition	The first activity can be done manually or on computer software, and the second activity requires pre-made materials.