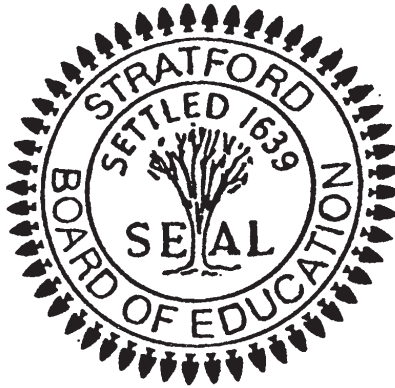


STRATFORD PUBLIC SCHOOLS

Stratford, Connecticut



“Tantum eruditi sunt liberi”
Only The Educated Are Free

Geometry Curriculum

Adopted by the Board of Education on June 25, 2012

Irene Cornish
Superintendent

Elaine Watson
Assistant Superintendent

DISTRICT MISSION

The mission of the Stratford Public Schools is to develop a community of learners in which students acquire the knowledge, skills and confidence to meet the challenges of a changing and increasingly diverse 21st century society.

DISTRICT CORE VALUES

Students will acquire content knowledge, strengthen higher-order thinking, and develop character in order to address 21st century challenges.

BUNNELL HIGH SCHOOL BELIEFS

We believe teachers must work collaboratively in support of student learning and to model collaboration as a social skill with students. We believe that a rigorous curriculum for all students, an acceptance of diversity, and a culture that actively welcomes all learners will contribute to a more knowledgeable community and society. We believe in the value of a strong education as a means of preparing students for work and life in the remainder of the 21st century.

STRATFORD HIGH SCHOOL BELIEFS

- a safe, positive school climate that embraces diversity is essential to ensure respect and opportunity for each individual
- students should understand the world beyond their community in order to contribute to a global society
- parents and students must share responsibility and work in partnership with the school in order to improve academic performance and to develop lifelong learners
- students should use technology effectively to acquire, process, and deliver information

BUNNELL HIGH SCHOOL and STRATFORD HIGH SCHOOL

LEARNING EXPECTATIONS

All students will...

- use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. (Academic)
- work independently and collaboratively to solve problems and accomplish goals. (Civic-Social)
- communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. (Academic)
- demonstrate innovation, flexibility and adaptability in thinking patterns, work habits and working/learning conditions. (Academic)
- effectively apply the analysis, synthesis and evaluation processes that enable productive problem solving. (Academic)
- value and demonstrate personal responsibility, character, cultural understanding and ethical behavior. (Civic-Social)
- show competence in all core academic subjects and other fields of interest, including the ability to clearly and effectively communicate content information in multiple formats. (Academic)

Stratford Public Schools
Geometry - Unit #1

Unit Name: Tools of Geometry

Est. # of Weeks: 3 weeks

Synopsis:

- In this unit, students will learn how to make plausible conclusions based on patterns students observe.
- Students will learn the foundation blocks for the structure of geometry.
- These foundations will provide students with ways to measure segments and angles.
- Students will also learn to use constructions and the coordinate plane to represent geometric figures.

STUDENT LEARNING GOALS

Content-Specific Powered Standards

1.1

Core: Understand and describe patterns and functional relationships.

a. Describe relationships and make generalizations about patterns and functions.

1.1

Extended: Understand and describe patterns and functional relationships.

a. Model real-world situations and make generalizations about mathematical relationships using a variety of patterns and functions.

2.1

Core: Understand that a variety of numerical representations can be used to describe quantitative relationships.

a. Extend the understanding of number to include integers, rational numbers and real numbers.

b. Interpret and represent large sets of numbers with the aid of technologies.

2.1

Extended: Understand that a variety of numerical representations can be used to describe quantitative relationships.

a. Extend the understanding of number to include the set of complex numbers.

2.2

Core: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.

a. Develop strategies for computation and estimation using properties of number systems to solve problems.

2.2

Extended: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.

a. Investigate mathematical properties and operations related to objects that are not numbers.

Interdisciplinary Standards (Technology Integration)

Standard 1: Information Strategies

Students determine their need for information and apply strategies to select, locate, and access information resources.

Standard 2: Information Use

Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

Standard 3: Information and Technology Application

Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.

Standard 4: Literacy and Literary Appreciation

Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.

Standard 5: Personal Management

Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.

Key Vocabulary

- Point
- Line
- Acute angle
- Angle bisector
- Collinear points
- Congruent angles
- Congruent segments
- Conjecture
- Coordinate
- Coplanar
- Counterexample
- Inductive reasoning
- Obtuse angle
- Parallel lines
- Parallel planes
- Perpendicular bisector
- Perpendicular lines
- Plane
- Postulate
- Ray
- Right angle

3.1

Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.
- b. Develop and evaluate mathematical arguments using reasoning and proof.

3.1

Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.
- b. Explore non-Euclidean geometries.

3.2

Core: Use spatial reasoning, location and geometric relationships to solve problems

- a. Verify geometric relationships using algebra coordinate geometry and transformations.

3.2

Extended: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three- dimensions using appropriate tools and technologies.

3.3

Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.

3.3

Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.

- Segment
- Skew lines
- Straight angle

21st Century Skills

1. Use real-world digital and other research tools to access, evaluate, and effectively apply information

appropriate for authentic tasks.
2. Work independently and collaboratively to solve problems and accomplish goals.
3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.
5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.
6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students use inductive reasoning to formulate conjectures and to promote an understanding of postulates and theorems • Students identify various geometric figures and express the relationships presented in postulates in order to reason inductively • Students apply basic postulates about points, lines and planes without finding proofs. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How does one use inductive reasoning to make conjectures? • How does one determine the length of a segment and measure of an angle? • How do you calculate, algebraically, the distance between geometric figures found on the coordinate system? • How do you discover “a” algebraically as the next number in a pattern sequence
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Learning Objectives / Grade Level Expectations
Students will:

- **Make** conclusions based on pattern observations.
- **Measure** segments and angles.
- **Construct** and **use** the coordinate plane to **represent** geometric figures

ASSESSMENT PLAN

<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> • Points Lines and Planes Critical Skills Rubric # 2 	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • Informal assessments of class work • Weekly Quiz • Homework Review • Chapter Assessment <p><u>CAPT Activities:</u> Sec 1-1 Amaryllis Bulb, 3-Level Pyramid, How Many Stickers? Sec 1-6 Computer Lab Sec 1-7 Planetarium, Landscape Architect’s Designs, Better Pizza De</p>
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LEARNING PLAN COMPONENTS

Section #	Prentice Hall- Geometry	Page #	Level 2	Level 1	Honors
1-1	Patterns and Inductive Reasoning	6	#1-30	#1-53	#1-55
1-2	Points, Lines, and Planes	13	#1-37	#1-78	#1-84
1-3	Segments, Rays, Parallel Lines and Planes	19	#1-24	#1-55	#1-62
1-4	Measuring Segments and Angles	29	#1-28	#1-79	#1-81
1-5	Basic Constructions (vocabulary only)	37	#9-12, 18	#9-12, 18	#9-12, 18
1-6	The Coordinate Plane	46	#1-31	#1-56	#1-63
1-7	Perimeter, Circumference and Area	55	#1-40	#1-65	#1-72

Stratford Public Geometry- Unit #2

Unit Name: Reasoning and Proof	Est. # of Weeks: 2 weeks
Synopsis	
<ul style="list-style-type: none"> • In this unit, students will learn how to write special types of statements known as conditionals, biconditionals, and definitions. • Students will use such statements and deductive reasoning to conclude that other statements are true. • Understanding how deductive reasoning works, students will apply it to form conclusions using algebra. • Students will also use it to study elementary proofs and form their first significant conclusions about geometric relationships. 	

STUDENT LEARNING GOALS

<p>Content-Specific Powered Standards <u>Fundamental Content Standards:</u></p> <p>1.3 Core: Use operations, properties and algebraic symbols to determine equivalence and solve problems.</p> <p>a. Manipulate equations, inequalities and functions to solve problems.</p> <p>1.3 Extended: Use operations, properties and algebraic symbols to determine equivalence and solve problems.</p> <p>a. Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.</p> <p>2.2 Core: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</p> <p>a. Develop strategies for computation and estimation using properties of number systems to solve problems. b. Solve proportional reasoning problems.</p> <p>2.2 Extended: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</p> <p>a. Investigate mathematical properties and operations related to objects that are not numbers.</p> <p>3.1 Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. b. Develop and evaluate mathematical arguments using reasoning and proof.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>adjacent angles (p. 96)</u> • <u>biconditional (p. 75)</u> • <u>complementary angles (p. 96)</u> • <u>conclusion (p. 68)</u> • <u>conditional (p. 68)</u> • <u>converse (p. 69)</u> • <u>deductive reasoning (p. 82)</u> • <u>hypothesis (p. 68)</u> • <u>supplementary angles (p. 96)</u> • <u>theorem (p. 100)</u> • <u>truth value (p. 69)</u> • <u>vertical angles (p. 96)</u>
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3.1
Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.
- b. Explore non-Euclidean geometries.

3.2
Core: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Verify geometric relationships using algebra, coordinate geometry and transformations.

3.2
Extended: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technologies.

3.3
Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.

3.3
Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.

4.2
Core: Analyze data sets to form hypotheses and make predictions.

- a. Analyze real-world problems using statistical techniques.

4.2
Extended: Analyze data sets to form hypotheses and make predictions.

- a. Describe and analyze sets of data using statistical models.

21st Century Skills

2. Work independently and collaboratively to solve problems and accomplish goals.

4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.

5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.
6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will apply postulates, deductive reasoning and laws of logic to write paragraph proofs. • Students will evaluate logical arguments using deductive reasoning. • Students will use algebraic properties to justify solving algebraic equations. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How will deductive reasoning be used to conclude that other statements are true? • How can advertisements be misleading in their statements? • What is the converse, inverse, and contra-positive of a conditional statement?
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Learning Objectives / Grade Level Expectations
Students will:

- **Write** conditional and bi-conditional statements.
- **Use** conditional and bi-conditional statements to **find** conclusions.
- **Form** conclusions using algebra.
- **Use** indirect reasoning to find conclusions for statements.

ASSESSMENT PLAN

<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>Critical Skills Rubric # 1-6</p>	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • CFA Pre 2a & post 2b • Verbal assessments • Informal assessments of class work • Weekly quiz • Home work review • Chapter assessment • Quizzes
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LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
2-1	Conditional Statements	71	#1-32	#1-58	#1-67
2-2	Bi-conditionals and Definitions	78	#1-23	#1-46	#1-54
2-3	Deductive Reasoning – Definition c	82			
2-4	Reasoning in Algebra	91	#1-15	#1-30	#1-42
2-5	Proving Angles Congruent	100	#1-25	#1-54	#1-66

Stratford Public Schools
Geometry - Unit #3

Unit Name: Parallel and Perpendicular Lines

Est. # of Weeks: 3 weeks

Synopsis:

- In this unit, students will use deductive reasoning to make conclusions about parallel and perpendicular lines.
- Students will use parallel lines to learn about angle measures in triangles and other polygons.
- Students will also learn ways to think about parallel and perpendicular lines in a coordinate plane.

STUDENT LEARNING GOALS

Content-Specific Powered Standards

1.3

Core: Use operations, properties and algebraic symbols to determine equivalence and solve problems.

a. Manipulate equations, inequalities and functions to solve problems.

1.3

Extended: Use operations, properties and algebraic symbols to determine equivalence and solve problems.

a. Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.

2.1

Core: Understand that a variety of numerical representations can be used to describe quantitative relationships.

a. Extend the understanding of number to include integers, rational numbers and real numbers.

b. Interpret and represent large sets of numbers with the aid of technologies.

2.1

Extended: Understand that a variety of numerical representations can be used to describe quantitative relationships.

a. Extend the understanding of number to include the set of complex numbers.

2.2

Core: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.

a. Develop strategies for computation and estimation using properties of number systems to solve problems.

b. Solve proportional reasoning problems.

2.2

Extended: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.

a. Investigate mathematical properties and operations related to objects that are not numbers.

Interdisciplinary Standards (Technology Integration)

Standard 1: Information Strategies

Students determine their need for information and apply strategies to select, locate, and access information resources.

Standard 2: Information Use

Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

Standard 3: Information and Technology Application

Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.

Standard 4: Literacy and Literary Appreciation

Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.

Standard 5: Personal Management

Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.

Key Vocabulary

- alternate interior angles (p. 115)
- concave polygon (p. 144)
- convex polygon (p. 144)
- corresponding angles (p. 115)
- equiangular triangle (p. 133)
- equilateral triangle (p. 133)
- exterior angle of a polygon (p. 133)
- flow proof (p. 123)
- isosceles triangle (p. 133)
- polygon (p. 143)
- regular polygon (p. 146)
- remote interior angles (p. 133)
- same-side interior angles (p. 115)
- scalene triangle (p. 133)
- transversal (p. 115)

3.1

Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.
- b. Develop and evaluate mathematical arguments using reasoning and proof.

3.1

Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.
- b. Explore non-Euclidean geometries.

3.2

Core: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Verify geometric relationships using algebra, coordinate geometry and transformations.

3.2

Extended: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three- dimensions using appropriate tools and technologies.

3.3

Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.

3.3

Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.

21st Century Skills

- 1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.**
- 2. Work independently and**

collaboratively to solve problems and accomplish goals.

3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.

4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.

5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.

6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

<p>Enduring Understandings</p> <ul style="list-style-type: none"> Students will use deductive reasoning to make conclusions about parallel and perpendicular lines Students will build on their knowledge of angles to prove and use properties of parallel lines. Students will learn the relationship that different forms of linear equations have with the slopes of parallel and perpendicular lines. 	<p>Essential Questions</p> <ul style="list-style-type: none"> Which angles will be congruent or supplementary when formed by two lines and a transversal? What is the sum of angle measures in a polygon having n sides? How is an equation of a line graphed? How are the slopes of parallel and perpendicular lines related?
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Learning Objectives / Grade Level Expectations
Students will:

- Make** conclusions about parallel and perpendicular lines cut by transversals.
- Use** parallel lines to learn about angles measures in triangles and polygons.
- Calculate** the sum of the measures of the interior and exterior angles of a polygon.
- Graph** lines given their equations and to **write** equations of lines.

ASSESSMENT PLAN

<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> Stock Market Project Critical Skills Rubric # 3 & 4 	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> Verbal assessments Informal assessments of class work Weekly quiz Home work review Chapter assessment Quizzes CAPT Sec 3-5 Motor Bike Rental, Health Club, College Savings Sec 3-6 Bradley's Wages, Two Water Sources
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LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
3-1	Properties of Parallel Lines	118	#1-16	#1-30	#1-41
3-2	Proving Lines Parallel (NO Formal Proofs)	125	#1-25	#1-44	#1-55
3-3	Parallel Lines and the Triangle Angle-Sum Theorem	134	#1-30	#1-55	#1-69
3-4	The Polygon Angle-Sum Theorems	147	#1-27	#1-56	#1-70
3-5	Lines in the Coordinate Plane	155	#1-32	#1-56	#1-69
3-6	Slopes of Parallel and Perpendicular Lines	161	#1-24	#1-46	#1-66

Stratford Public Schools
Geometry- Unit #4

Unit Name: Congruent Triangles and Relationships within Triangles **Est. # of Weeks: 2 weeks**

Synopsis:

- In this unit, students will learn the meaning of congruent polygons.
- Students will learn how to prove two triangles congruent by five different methods.
- By learning how to prove triangles congruent, students will discover properties of an isosceles triangle.
- Students will also learn how to draw other conclusions, once two triangles have been proved congruent.

STUDENT LEARNING GOALS

Content-Specific Powered Standards

3.1

Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.
- b. Develop and evaluate mathematical arguments using reasoning and proof.

3.1

Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.
- b. Explore non-Euclidean geometries.

3.2

Core: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Verify geometric relationships using algebra, coordinate geometry and transformations.

3.2

Extended: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technologies.

3.3

Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.

3.3

Interdisciplinary Standards (Technology Integration)

Standard 1: Information Strategies

Students determine their need for information and apply strategies to select, locate, and access information resources.

Standard 2: Information Use

Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

Standard 3: Information and Technology Application

Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.

Standard 4: Literacy and Literary Appreciation

Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.

Standard 5: Personal Management

Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.

Key Vocabulary

- base of an isosceles triangle (p. 211)
- base angle of an isosceles triangle (p. 211)
- congruent polygons (p. 180)
- corollary (p. 212)
- CPCTC (corresponding parts of congruent triangles are congruent) (p. 203)
- hypotenuse (p. 217)
- legs of a right triangle (p. 217)
- legs of an isosceles triangle (p. 211)
- vertex angle of an isosceles triangle (p. 211)

<p>Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p> <p>a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.</p>	
<p>21st Century Skills appropriate for authentic tasks.</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>	
<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will learn about congruency in polygons. • Students will know the properties of isosceles triangles. • Students will identify properties of medians and altitudes of a triangle. <p>Students will apply indirect reasoning to deduce information about triangle inequalities</p>	<p>Essential Questions</p> <ul style="list-style-type: none"> • Which parts should be congruent to tell if two figures are congruent? • What are the properties of isosceles triangles? • What is the difference between medians and altitudes in a triangle? • How are the angles and sides of a triangle related?
<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> • Recognize congruent figures and their corresponding parts. • Apply properties of isosceles triangles. • Apply properties of medians and altitudes of a triangle. • Apply inequalities involving angles and sides of a triangle. 	
<p>ASSESSMENT PLAN</p>	
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>Critical Skills Rubric # 1-6</p>	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • CFA Pre 3a & post 3b • Verbal assessments • Informal assessments of class work • Weekly quiz • Homework review • Chapter assessment • Quizzes • CAPT

LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
4-1	Congruent Figures	182	#1-28	#1-45	#1-52
4-5	Isosceles and Equilateral Triangles (Definitions, Theorems, Corollaries – No formal proofs)	213	#1-18	#1-36	#1-49
5-3	Concurrent Lines, Medians, and Altitudes Definitions: circumscribed, inscribed, median, altitude)	260	#14-22	#14-22	#14-22
5-4	Inverses, Contrapositives, and Indirect Reasoning	267	#1-21	#1-38	#1-46
5-5	Inequalities in Triangles	276	#1-27	#1-36	#1-47

Stratford Public Schools
Geometry- Unit #5

Unit Name: Quadrilateral	Est. # of Weeks: 2 weeks
Synopsis:	
<ul style="list-style-type: none"> • In this unit, students will learn properties of parallelograms and other special quadrilaterals. • Students will learn properties of quadrilaterals that allow you to classify quadrilaterals. • Students will use these properties to help you place figures in the coordinate plane. • Students will verify properties of figures using coordinate techniques. 	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards <u>Fundamental Content Standards:</u></p> <p>3.1 Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>c. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.</p> <p>d. Develop and evaluate mathematical arguments using reasoning and proof.</p> <p>3.1 Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.</p> <p>b. Explore non-Euclidean geometries.</p> <p>3.2 Core: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Verify geometric relationships using algebra, coordinate geometry and transformations.</p> <p>3.2 Extended: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technologies.</p> <p>3.3 Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>base angles of a trapezoid (p. 320)</u> • <u>consecutive angles (p. 294)</u> • <u>isosceles trapezoid (p. 288)</u> • <u>kite (p. 288)</u> • <u>midsegment of a trapezoid (p. 332)</u> • <u>parallelogram (p. 288)</u> • <u>rectangle (p. 288)</u> • <u>rhombus (p. 288)</u> • <u>square (p. 288)</u> • <u>trapezoid (p. 288)</u>

<p>a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.</p> <p>3.3 Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p> <p>a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.</p>	
<p><u>21st Century Skills</u></p> <p>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>	
<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will know the hierarchy of special quadrilaterals, their properties, and the applications of those properties. • Students will apply triangle relationships and algebraic techniques to the study of quadrilaterals. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How are the properties of quadrilaterals used to classify them? • What are the properties of angles, sides, and diagonals in the various quadrilaterals? • How is a quadrilateral determined to be a parallelogram?
<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> • Define and classify special types of quadrilaterals. • Determine if a parallelogram is a square, rectangle or rhombus. • Verify and use the properties of trapezoids and kites. • Use the relationships among sides, angles, diagonals and transversals of parallelograms. 	
<p>ASSESSMENT PLAN</p>	
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> • Lego – Design By Me Critical Skills Rubric # 1 	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • Verbal assessments • Informal assessments of class work • Weekly quiz • Home work review • Chapter assessment • Quizzes • CAPT

LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
6-1	Classifying Quadrilaterals	288	#1-24	#1-55	#1-59
6-2	Properties of Parallelograms	294	#1-33	#1-58	#1-62
6-3	Proving that a Quadrilateral is a Parallelogram (NO formal proofs)	303	#1-16	#1-35	#1-38
6-4	Special Parallelograms	312	#1-23	#1-60	#1-60
6-5	Trapezoids and Kites	320	#1-19	#1-38	#1-44

Stratford Public Schools Geometry- Unit 6

Unit Name: Area	Est. # of Weeks: 4 weeks
Synopsis: <ul style="list-style-type: none"> • In this unit, students will learn how finding the area of a rectangle can help you find the areas of parallelograms and triangles. • Students will learn the Pythagorean Theorem and its converse. • Students will use the Pythagorean Theorem to find relationships in special right triangles. • Students will also learn how to find the areas of special quadrilaterals and regular polygons. 	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards</p> <p><u>Fundamental Content Standards:</u></p> <p>2.2 Core: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</p> <p>a. Develop strategies for computation and estimation using properties of number systems to solve problems.</p> <p>b. Solve proportional reasoning problems.</p> <p>2.2 Extended: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</p> <p>a. Investigate mathematical properties and operations related to objects that are not numbers.</p> <p>3.1 Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>e. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.</p> <p>f. Develop and evaluate mathematical arguments using reasoning and proof.</p> <p>3.1 Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.</p> <p>b. Explore non-Euclidean geometries.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>adjacent arcs (p. 387)</u> • <u>apothem of a regular polygon (p. 380)</u> • <u>arc length (p. 389)</u> • <u>central angle (p. 386)</u> • <u>circumference (p. 388)</u> • <u>concentric circles (p. 388)</u> • <u>congruent arcs (p. 389)</u> • <u>diameter (p. 386)</u> • <u>geometric probability (p. 402)</u> • <u>major arc (p. 387)</u> • <u>minor arc (p. 387)</u> • <u>Pythagorean triple (p. 357)</u> • <u>radius (p. 386)</u> • <u>radius of a regular polygon (p. 380)</u> • <u>sector of a circle (p. 396)</u> • <u>segment of a circle (p. 397)</u> • <u>semicircle (p. 387)</u>

3.2
Core: Use spatial reasoning, location and geometric relationships to solve problems.
 a. Verify geometric relationships using algebra, coordinate geometry and transformations.

3.2
Extended: Use spatial reasoning, location and geometric relationships to solve problems.
 a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three- dimensions using appropriate tools and technologies.

3.3
Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.
 a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.

3.3
Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.
 a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.

4.3
Core: Understand and apply basic concepts of probability.
 a. Understand and apply the principles of probability in a variety of situations.

4.3
Extended: Understand and apply basic concepts of probability.
 a. Solve problems using the methods of discrete mathematics.
 b. Make statistical inferences through the use of probability.

21st Century Skills and Expectations
Rubric: Critical Skills
 1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.
 2. Work independently and collaboratively to solve problems and accomplish goals.

<p>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding and ethical behavior</p>	
<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students investigate the relationship between area and perimeter on grid paper and devise a formula for each. • Students prove the Pythagorean Theorem using areas. • Geometric probabilities can be found by using segment and area models. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • What is the relationship between circumference, perimeter and area of various geometric figures? • How is the area of a parallelogram similar to that of a square and a triangle? • How are the areas of various geometric figures calculated? • What is meant by geometric probability and how is it calculated?
<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> • Calculate the area of a rectangle and apply it in finding the areas of parallelograms and triangles. • Apply the Pythagorean Theorem. • Measure central angles, arcs, circumferences, and arc lengths. • Calculate the areas of special quadrilaterals, circles and sectors. • Calculate geometric probability by applying area. 	
<p>ASSESSMENT PLAN</p>	
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>Critical Skills Rubric # 1 - 6</p>	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • CFA Pre 3a & post 3b • Verbal assessments • Informal assessments of class work • Weekly quiz • Homework review • Chapter assessment • CAPT <p>Sec 7-1 Office Space, Tile the Floor Sec 7-2 Hot Air Balloon, Building a Cabin Sec 7-4 Paving with Asphalt Sec 7-6 Rotary Circle, Allowance, Bicycle Wheels, Skateboard Park Sec 7-8 Spinner, Fastest Runner, Glacier Speeds</p>

LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
7-1	Areas of Parallelograms and Rectangles	351	#1-21	#1-46	#1-51
7-2	The Pythagorean Theorem and Its Converse	360	#1-35	#1-64	#1-70
7-3	Special Right Triangles	366	#1-23	#1-39	#1-41
7-4	Areas of Trapezoids, Rhombuses, and Kites	376	#1-20	#1-38	#1-41
7-5* H/L	Area of Regular Polygons	380	#1-18	#1-42	#1-45
7-6	Circles and Arcs	389	#1-39	#1-69	#1-72
7-7	Areas of Circles and Sectors	397	#1-21	#1-34	#1-40
7-8	Geometric Probability	404	#1-21	#1-45	#1-47

*****MID TERM TO FOLLOW THIS UNIT**

Stratford Public Schools
Geometry- Unit #7

Unit Name: Similarity	Est. # of Weeks: 2 weeks
Synopsis <ul style="list-style-type: none"> • : In this unit, students will learn that similar polygons are polygons that have the same shape but not necessarily the same size. • Students will learn how to prove triangles similar. • Through proving triangles similar, students will find additional relationships within triangles. • Students will also learn how the perimeters and areas of similar figures are related. 	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards</p> <p><u>Fundamental Content Standards:</u></p> <p><u>Fundamental Content Standards:</u></p> <p>2.1</p> <p>Core: Understand that a variety of numerical representations can be used to describe quantitative relationships.</p> <p>a. Extend the understanding of number to include integers, rational numbers and real numbers.</p> <p>b. Interpret and represent large sets of numbers with the aid of technologies.</p> <p>Extended: Understand that a variety of numerical representations can be used to describe quantitative relationships.</p> <p>a. Extend the understanding of number to include the set of complex numbers.</p> <p>2.2</p> <p>Core: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</p> <p>a. Develop strategies for computation and estimation using properties of number systems to solve problems.</p> <p>b. Solve proportional reasoning problems.</p> <p>Extended: Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</p> <p>a. Investigate mathematical properties and operations related to objects that are not numbers.</p> <p>3.1</p> <p>Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies</p> <p>Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use</p> <p>Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application</p> <p>Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation</p> <p>Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management</p> <p>Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>Cross-Product Property (p. 417)</u> • <u>extended proportion (p. 417)</u> • <u>geometric mean (p. 440)</u> • <u>golden ratio (p. 425)</u> • <u>golden rectangle (p. 425)</u> • <u>indirect measurement (p. 434)</u> • <u>proportion (p. 417)</u> • <u>ratio (p. 416)</u> • <u>scale (p. 418)</u> • <u>scale drawing (p. 418)</u> • <u>similar (p. 423)</u> • <u>similarity ratio (p. 423)</u>

<p>b. Develop and evaluate mathematical arguments using reasoning and proof. Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures. b. Explore non-Euclidean geometries.</p> <p>3.2 Core: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Verify geometric relationships using algebra, coordinate geometry and transformations. Extended: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technologies.</p> <p>3.3 Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p> <p>a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios. Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p> <p>a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.</p>	
<p><u>21st Century Skills</u> <u>21st Century Skills and Expectations</u> Rubric: Critical Skills</p> <p>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</p>	

<p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding and ethical behavior</p>	
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<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will learn properties of ratios and proportions that are needed to study similarity. • Students will learn ways to identify and prove similar polygons. • Students will how triangle sides are divided proportionally. • Students will find perimeters and areas of similar figures. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • What are the properties of similar polygons? • How are the algebraic properties of proportions used to solve proportions? • How does the ratios of the perimeters and areas of similar figures compare?
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<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> • Apply the Cross-Product Property to solve proportions. • Identify and apply similar polygons. • Divide sides of a triangle proportionally. • Calculate the perimeters and areas of similar polygons.

ASSESSMENT PLAN

<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>Critical Skills Rubric # 1</p>	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • Verbal assessments • Informal assessments of class work • Weekly quiz • Homework review • Chapter assessment • CAPT • Sec 8-1 City Construction, Tysheena’s Trip
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LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
8-1	Ratio and Proportion	416	#1-25	#1-55	#1-61
8-2	Similar Polygons	423	#1-20	#1-50	#1-52
8-5	Proportions in Triangles	446	#1-23	#1-50	#1-51
8-6	Perimeters and Areas of Similar Figures	454	#1-16	#1-40	#1-44

**Stratford Public Schools
Geometry- Unit #8**

Unit Name: Surface Area and Volume	Est. # of Weeks: 3 weeks
Synopsis:	
<ul style="list-style-type: none"> • In this unit, students will learn about special three-dimensional figures built from two-dimensional figures such as triangles and rectangles. • To help students work with these space figures, they will learn how to create three-dimensional drawings on a two-dimensional sheet of paper. • Students will use what they know about finding perimeter and area to help them find surface area and volume. 	

STUDENT LEARNING GOALS

<p>Content-Specific Powered Standards <u>Fundamental Content Standards:</u></p> <p>3.1 Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>g. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.</p> <p>h. Develop and evaluate mathematical arguments using reasoning and proof.</p> <p>3.1 Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.</p> <p>b. Explore non-Euclidean geometries.</p> <p>3.2 Core: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Verify geometric relationships using algebra, coordinate geometry and transformations.</p> <p>3.2 Extended: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three- dimensions using appropriate tools and technologies.</p> <p>3.3 Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>altitude (pp. 528, 530, 537, 539)</u> • <u>base(s) (pp. 528, 537)</u> • <u>cone (p. 539)</u> • <u>cross section (p. 522)</u> • <u>cylinder (p. 530)</u> • <u>foundation drawing (p. 521)</u> • <u>height (pp. 528, 530, 537, 539)</u> • <u>isometric drawing (p. 520)</u> • <u>net (p. 512)</u> • <u>orthographic drawing (p. 521)</u> • <u>prism (p. 528)</u> • <u>pyramid (p. 537)</u> • <u>similar solids (p. 566)</u> • <u>sphere (p. 558)</u>
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<p>a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.</p> <p>3.3 Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p> <p>a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.</p>	<ul style="list-style-type: none"> • <u>surface area (pp. 528, 530, 538)</u> • <u>volume (p. 544)</u>
<p>21st Century Skills</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>	
<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will find the surface areas and volume of prisms, cylinders, pyramids, cones and spheres. • Students will look at the relationship between ratios of lengths, surface areas and volumes of similar solids. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • What is the relationship between ratios of the lengths of similar solids? • How does finding the volume of scaled prisms assist in the real world situation?
<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> • Construct special three-dimensional figures from two dimensional figures. • Create space figures on two dimensional paper. • Use their knowledge of finding perimeter and area to assist them in finding surface area and volume. 	
<p>ASSESSMENT PLAN</p>	
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <ul style="list-style-type: none"> • Bluebird House Critical Skills Rubric # 5 	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • Verbal assessments • Informal assessments of class work • Weekly quiz • Homework review • Chapter assessment • CAPT • Sec 10-4 Great Pyramid • Sec 10-5 Cheesecake Pans, Ice Chest Capacities, Popcorn

LEARNING PLAN COMPONENTS	

Section #	Title	Page #	Level 2	Level 1	Honors
10-3	Surface Areas of Prisms and Cylinders	529	#1-15	#1-32	#1-44
10-4	Surface Areas of Pyramids and Cones	540	#1-20	#1-47	#1-60
10-5	Volumes of Prisms and Cylinders	547	#1-13	#1-35	#1-45
10-6	Volumes of Pyramids and Cones	554	#1-15	#1630	#1-42
10-7	Surface Areas and Volumes of Spheres	560	#1-20	#1-44	#1-59
10-8	Areas and Volumes of Similar Solids	568	#1-19	#1-34	#1-42

Stratford Public Schools
Geometry- Unit #9

Unit Name: Right Triangle Trigonometry	Est. # of Weeks: 2 weeks
<p>Synopsis:</p> <ul style="list-style-type: none"> • In this unit, students will use similar right triangles to define the sine, cosine, and tangent ratios. • With these ratios, students will solve height and distance problems using angles of elevation and angles of depression. • Students will also learn how to use vectors as a tool in other applications of trigonometry. 	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards <u>Fundamental Content Standards:</u></p> <p>1.1 Core: Understand and describe patterns and functional relationships. a. Describe relationships and make generalizations about patterns and functions. Extended: Understand and describe patterns and functional relationships. a. Model real-world situations and make generalizations about mathematical relationships using a variety of patterns and functions.</p> <p>1.2 Core: Represent and analyze quantitative relationships in a variety of ways. a. Represent and analyze linear and non-linear functions and relations symbolically and with tables and graphs. Extended: Represent and analyze quantitative relationships in a variety of ways. a. Relate the behavior of functions and relations to specific parameters and determine functions to model real-world situations.</p> <p>1.3 Core: Use operations, properties and algebraic symbols to determine equivalence and solve problems. b. Manipulate equations, inequalities and functions to solve problems. Extended: Use operations, properties and algebraic symbols to determine equivalence and solve problems. a. Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>angle of depression (p. 482)</u> • <u>angle of elevation (p. 482)</u> • <u>cosine (p. 477)</u> • <u>identity (p. 478)</u> • <u>initial point (p. 490)</u> • <u>magnitude (p. 490)</u> • <u>resultant (p. 492)</u> • <u>sine (p. 477)</u> • <u>tangent (p. 470)</u> • <u>terminal point (p. 490)</u> • <u>vector (p. 490)</u>

3.1

Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- i. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.
- j. Develop and evaluate mathematical arguments using reasoning and proof.

Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.

- a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.
- b. Explore non-Euclidean geometries.

3.2

Core: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Verify geometric relationships using algebra, coordinate geometry and

Extended: Extended: Use spatial reasoning, location and geometric relationships to solve problems.

- a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technologies.

3.3

Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios.

Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.

- a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.

<p>21st Century Skills</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>	
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<p>Enduring Understandings</p> <ul style="list-style-type: none"> ● Students use the Pythagorean Theorem to find relationships in special right triangles. ● Students calculate the areas of regular polygons. ● Students use similar right triangles to define the trigonometric ratios. ● Students apply the ratios to find unknown lengths and angle measures in diagrams and real-world scenarios. 	<p>Essential Questions</p> <ul style="list-style-type: none"> ● How are the sides related in a 45-45-90 and 30-60-90 triangle? ● How is the area of a regular polygon found? ● How are the trigonometric ratios used to determine side lengths and angle measures in a right triangle?
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<p>Learning Objectives / Grade Level Expectations</p> <p><i>Students will:</i></p> <ul style="list-style-type: none"> ● Evaluate using the properties of the 45-45-90 and 30-60-90 triangle. ● Calculate using the area formula for a regular polygon. ● Apply sine, cosine and tangent ratios to find side lengths and angle measures in a right triangle. ● Calculate problems using the angles of elevation and depression.

ASSESSMENT PLAN

<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>Critical Skills Rubric # 1- 6</p>	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> ● Verbal assessments ● Informal assessments of class work ● Weekly quiz ● Homework review ● Chapter assessment ● Unit Assessment
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LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
9-1	The Tangent Ratio	470	#1-16	#1-45	#1-52
9-2	Sine and Cosine Ratio	477	#1-16	#1-30	#1-35
9-3	Angles of Elevation and Depression	482	#1-18	#1-33	#1-36

Stratford Public Schools
Geometry- Unit #10

Unit Name: Circles	Est. # of Weeks: 3 weeks
<p>Synopsis:</p> <ul style="list-style-type: none"> • In this unit, students will learn the many properties of circles and of lines and segments that intersect circles. • When these lines and segments meet to form angles, students will learn how the angles are related to the arcs they intercept on a circle. • Students will also learn how to describe a set of points as a locus. 	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards <u>Fundamental Content Standards:</u></p> <p>3.1 Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>k. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.</p> <p>l. Develop and evaluate mathematical arguments using reasoning and proof.</p> <p>Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.</p> <p>b. Explore non-Euclidean geometries.</p> <p>3.2 Core: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Verify geometric relationships using algebra, coordinate geometry and transformations.</p> <p>Extended: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technologies.</p> <p>3.3 Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>chord (p. 590)</u> • <u>circumscribed about (p. 585)</u> • <u>inscribed angle (p. 598)</u> • <u>inscribed in (p. 585)</u> • <u>intercepted arc (p. 598)</u> • <u>locus (p. 621)</u> • <u>point of tangency (p. 582)</u> • <u>secant (p. 607)</u> • <u>standard form of an equation of a circle (p.615)</u> • <u>tangent to a circle (p. 582)</u>

<p>a. Solve a variety of problems involving one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios. Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p> <p>a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.</p>					
<p>21st Century Skills</p> <p>2. Work independently and collaboratively to solve problems and accomplish goals.</p> <p>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</p> <p>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</p> <p>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</p>					
<p>Enduring Understandings</p> <ul style="list-style-type: none"> Students will learn the many properties of circles and of lines and segments that intersect circles. Students will learn how angles are related to the arcs they intercept on a circle. 		<p>Essential Questions</p> <ul style="list-style-type: none"> How are angle measures related to their intercepted arcs? How are the lengths of segments associated with circles? 			
<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> Calculate the measure of an inscribed angle and an angle formed by a tangent and a chord. Calculate the measures of angles formed by chords, secants, and tangents. Evaluate the lengths of segments associated with circles. 					
ASSESSMENT PLAN					
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>Critical Skills Rubric # 1 - 6</p>		<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> Verbal assessments Informal assessments of class work Weekly quiz Homework review Chapter assessment 			
LEARNING PLAN COMPONENTS					
Section #	Title	Page #	Level 2	Level 1	Honors
11-1	Tangent Lines	582	#1-19	#1-37	#1-42
11-2	Chords and Arcs	590	#1-16	#1-36	#1-40
11-3	Inscribed Angles	598	#1-20	#1-39	#1-45
11-4	Angle Measures and Segment Lengths	607	#1-16	#1-33	#1-37

**Stratford Public Schools
Geometry- Unit #11**

Unit Name: Congruent Triangles and Similarity	Est. # of Weeks: 3 weeks
Synopsis <ul style="list-style-type: none"> • In this unit, students will learn the meaning of congruent polygons. • Students will learn how to prove two triangles congruent by five different methods. • By learning how to prove triangles congruent, students will discover properties of an isosceles triangle. • Students will also learn how to draw other conclusions, once two triangles have been proved congruent. 	
STUDENT LEARNING GOALS	
<p>Content-Specific Powered Standards <u>Fundamental Content Standards:</u></p> <p>3.1 Core: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>m. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools.</p> <p>n. Develop and evaluate mathematical arguments using reasoning and proof.</p> <p>Extended: Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.</p> <p>a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.</p> <p>b. Explore non-Euclidean geometries</p> <p>3.2 Core: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Verify geometric relationships using algebra, coordinate geometry and transformations.</p> <p>Extended: Use spatial reasoning, location and geometric relationships to solve problems.</p> <p>a. Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technologies.</p> <p>3.3 Core: Develop and apply units, systems, formulas and appropriate tools to estimate and measure.</p> <p>a. Solve a variety of problems involving</p>	<p><u>Interdisciplinary Standards (Technology Integration)</u></p> <p>Standard 1: Information Strategies Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p>Standard 2: Information Use Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p>Standard 3: Information and Technology Application Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p>Standard 4: Literacy and Literary Appreciation Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p>Standard 5: Personal Management Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p>Key Vocabulary</p> <ul style="list-style-type: none"> • <u>base of an isosceles triangle (p. 211)</u> • <u>base angle of an isosceles triangle (p. 211)</u> • <u>congruent polygons (p. 180)</u> • <u>corollary (p. 212)</u> • <u>CPCTC (corresponding parts of congruent triangles are congruent) (p. 203)</u> • <u>hypotenuse (p. 217)</u> • <u>legs of a right triangle (p. 217)</u> • <u>legs of an isosceles triangle (p. 211)</u> • <u>vertex angle of an isosceles triangle (p. 211)</u> • <u>Indirect measurement (p. 434)</u> • <u>Geometric mean (p 440)</u>

<p>one-, two- and three-dimensional measurements using geometric relationships and trigonometric ratios. Extended: Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.</p>		
<p>21st Century Skills and Expectations Rubric: Critical Skills 1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks. 2. Work independently and collaboratively to solve problems and accomplish goals. 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. 4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions. 5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving. 6. Value and demonstrate personal responsibility, character, cultural understanding and ethical behavior</p>		
<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Students will learn the meaning of congruent and similar polygons. • Students will learn how to prove two triangles congruent by five different methods. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How are triangles proved congruent? • How are triangles proved similar? 	
<p>Learning Objectives / Grade Level Expectations <i>Students will:</i></p> <ul style="list-style-type: none"> • Apply their knowledge of corresponding parts of congruent polygons to postulates and theorems related to triangle congruence. • Prove triangles similar by various similarity statements. 		
ASSESSMENT PLAN		
<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>Critical Skills Rubric # 1 - 6</p>	<p>Formative and Diagnostic Assessment(s)</p> <ul style="list-style-type: none"> • Verbal assessments • Informal assessments of class work • Weekly quiz • Homework review • Chapter assessment • Final Exam 	

LEARNING PLAN COMPONENTS

Section #	Title	Page #	Level 2	Level 1	Honors
4-2	Triangle Congruence by SSS and SAS	186	#1-21	#1-40	#1-44
4-3	Triangle Congruence by ASA and AAS	194	#1-18	#1-35	#1-45
4-4	Using Congruent Triangles: CPCTC	203	#1-14	#1-25	#1-27
4-6	Congruence in Right Triangles	217	#1-15	#1-32	#1-38
4-7	Using Corresponding Parts of Congruent Triangles	224	#1-18	#1-27	#1-31
8-3	Proving Triangles Similar	432	#1-19	#1-41	#1-44
8-4	Similarity in Right Triangles	439	#1-21	#1-48	#1-56