



# **Pine Grove Area**

## SCHOOL DISTRICT

**MATHEMATICS**

**CP GEOMETRY**

**October 15, 2009**

**I. PHILOSOPHY**

The CP Geometry course reflects the complexity and sophistication that students are expected to demonstrate on the geometry portion of the Grade 11 PSSA and SAT/ACT. It will reinforce previous learning that enables the students to communicate mathematically, use mathematics as a tool to help organize and understand information from other academic disciplines, and use technology effectively to enhance their learning of mathematics concepts and skill. The course will allow for the accommodation of many learning styles, motivational levels, and academic abilities.

## II. CORE CONCEPTS

1. Terms & definitions: points, lines, planes, angles, collinearity, betweenness, perpendicularity, complementary angles, supplementary angles, vertical angles
2. Reasoning & proofs: paragraph proofs, deductive structure, statements of logic, drawing conclusions, addition/subtraction/multiplication/division/transitive/substitution properties, indirect proof
3. Congruent triangles: classifying triangles, constructing and proving congruent triangles, types of triangles, overlapping triangles, inequalities for sides and angles, hypotenuse-leg postulate
4. Parallel & perpendicular lines and planes: detours and midpoints, right-angle theorem, equidistance theorem, slope, proving lines or planes parallel/perpendicular, congruent angles
5. Quadrilaterals: properties/formulas of and proving figures are parallelograms, rectangles, squares, rhombi, kites, trapezoids, similar polygons
6. Right triangles & trigonometry: Pythagorean Theorem, altitude-on-hypotenuse theorems, distance formula, families of right triangles, special right triangles, ratios in right triangles, angles of elevation and depression, Law of Sines, Law of Cosines
7. Circles: angles, arcs, chords, tangents, secants, inscribed and circumscribed polygons, circumference, arc length
8. Area: parallelograms, triangles, rhombi, trapezoids, regular polygons, circles
9. Surface area: nets, prisms, cylinders, pyramids, cones, spheres
10. Volumes: prisms, cylinders, pyramids, cones, spheres

### **III. COURSE OF STUDY**

A. Course Name: CP Geometry

B. Grade Level: 9-10

C. Length of Course: full year

1. Frequency: daily

2. Duration: one period

D. Academic Level: College Prep

E. Credits: 1

F. Prerequisites: None

G. Course Description:

This course deals with the logical development of Euclidean geometry through the application of definitions and theorems in completing proofs and in problem solving in a variety of practical and theoretical situations. Topics include congruent and similar polygons, parallel lines, circles, the Pythagorean Theorem and related right triangles, as well as measurements and constructions of various models and the calculation of perimeter, area, and volume.

**IV. CONTENT: CP GEOMETRY**

**CORE CONCEPT 1:** Terms & definitions

**MAJOR OBJECTIVE:** points, lines, planes, angles, collinearity, betweenness, perpendicularity, complementary angles, supplementary angles, vertical angles

**CURRICULUM STANDARD:**

PA State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.5.11.B</b> Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas and results.</p>	<p>Teacher will guide students to:</p> <p>Recognize points, lines, segments, rays, angles, and triangles.</p> <p>Classify angles and name the parts of a degree.</p> <p>Recognize congruent angles and segments.</p> <p>Recognize collinear and noncollinear points.</p> <p>Recognize when a point is between two other points.</p> <p>Apply the triangle-inequality principle.</p> <p>Correctly interpret geometric diagrams.</p> <p>Identify bisectors and trisectors of segments and angles.</p> <p>Understand the concept of perpendicularity.</p> <p>Recognize complementary and supplementary angles.</p> <p>Recognize opposite rays.</p> <p>Recognize vertical angles.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 1:** Terms & definitions

**MAJOR OBJECTIVE:** points, lines, planes, angles, collinearity, betweenness, perpendicularity, complementary angles, supplementary angles, vertical angles

**CURRICULUM STANDARD:**

PA State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.3.11.A</b> Select and use appropriate units and tools to measure to the degree of accuracy required in particular measurement situations.</p>	<p>Teacher will guide students to:  Measure segments and angles.</p>	<p>Teacher evaluation of:  Student board work.  Student responses.  Student homework/class work assignments.  Student group work.  Student workbooks.  Student notebooks/journals.  Student quizzes/tests.  Student presentations.  Student performance on Study Island.</p>	<p>Textbook resources  Computer programs/web sites  Journal or notebook  Supplemental materials  Graphing calculators  Measurement tools  Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 2:** Reasoning & proofs

**MAJOR OBJECTIVE:** paragraph proofs, deductive structure, statements of logic, drawing conclusions, addition/ subtraction/ multiplication/ division/transitive/substitution properties, indirect proof

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.4.11.A</b> Use direct proofs, indirect proofs or proof by contradiction to validate conjectures.</p>	<p>Teacher will guide students to:</p> <p>Write simple two-column proofs.</p> <p>Write paragraph proofs.</p> <p>Write indirect proofs.</p> <p>Recognize conditional statements and the negation, the converse, the inverse, and the contrapositive of a statement.</p> <p>Use the chain rule to draw conclusions.</p> <p>Prove angles congruent.</p> <p>Apply the addition/subtraction/multiplication/division/transitive properties of segments and angles.</p> <p>Apply the substitution property.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 2:** Reasoning & proofs

**MAJOR OBJECTIVE:** paragraph proofs, deductive structure, statements of logic, drawing conclusions, addition/ subtraction/ multiplication/ division/transitive/substitution properties, indirect proof

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.4.11.B</b> Construct valid arguments from stated facts.</p>	<p>Teacher will guide students to:  Follow a five-step procedure to draw logical conclusions.</p>	<p>Teacher evaluation of:  Student board work.  Student responses.  Student homework/class work assignments.  Student group work.  Student workbooks.  Student notebooks/journals.  Student quizzes/tests.  Student presentations.  Student performance on Study Island.</p>	<p>Textbook resources  Computer programs/web sites  Journal or notebook  Supplemental materials  Graphing calculators  Measurement tools  Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 3:** Congruent triangles

**MAJOR OBJECTIVE:** classifying triangles, constructing and proving congruent triangles, types of triangles, overlapping triangles, inequalities for sides and angles, hypotenuse-leg postulate

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.D</b> Identify corresponding parts in congruent triangles to solve problems.</p>	<p>Teacher will guide students to:</p> <p>Understand the concept of congruent figures.</p> <p>Accurately identify the corresponding parts of figures.</p> <p>Identify included angles and included sides.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 3:** Congruent triangles

**MAJOR OBJECTIVE:** classifying triangles, constructing and proving congruent triangles, types of triangles, overlapping triangles, inequalities for sides and angles, hypotenuse-leg postulate

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.B</b> Prove that two triangles or two polygons are congruent or similar using algebraic, coordinate and deductive proofs.</p>	<p>Teacher will guide students to:</p> <p>Apply the SSS, SAS, and ASA Postulates.</p> <p>Apply the principle of CPCTC.</p> <p>Write proofs involving steps beyond CPCTC.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

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**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.4.11.A</b> Use direct proofs, indirect proofs or proof by contradiction to validate conjectures.</p>	<p>Teacher will guide students to:</p> <p>Use overlapping triangles in proofs.</p> <p>Use the HL postulate to prove right triangles congruent.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 3:** Congruent triangles

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**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.I</b> Model situations geometrically to formulate and solve problems.</p>	<p>Teacher will guide students to:</p> <p>Identify medians and altitudes of triangles.</p> <p>Name the various types of triangles and their parts.</p> <p>Apply theorems relating the angle measures and side lengths of triangles.</p> <p>Apply theorems about the interior angles, the exterior angles, and the midlines of triangles.</p> <p>Apply the No-Choice Theorem and the AAS theorem.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 4:** Parallel & perpendicular lines and planes

**MAJOR OBJECTIVE:** detours and midpoints, right-angle theorem, equidistance theorem, slope, proving lines or planes parallel/perpendicular, congruent angles

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.4.11.A</b> Use direct proofs, indirect proofs or proof by contradiction to validate conjectures.</p>	<p>Teacher will guide students to:</p> <p>Use detours in proofs.</p> <p>Prove that two angles are right angles.</p> <p>Apply the Exterior Angle Inequality Theorem.</p> <p>Prove lines parallel.</p> <p>Apply theorems about parallel lines.</p> <p>Apply postulates concerning lines and planes.</p> <p>Apply the basic theorem concerning the perpendicularity of a line and a plane.</p> <p>Use properties relating parallel lines and planes.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT: CP GEOMETRY**

**CORE CONCEPT 4:** Parallel & perpendicular lines and planes

**MAJOR OBJECTIVE:** detours and midpoints, right-angle theorem, equidistance theorem, slope, proving lines or planes parallel/perpendicular, congruent angles

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.5.11.B</b> Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas and results.</p>	<p>Teacher will guide students to:</p> <p>Apply the midpoint formula.</p> <p>Understand the concept of slope.</p> <p>Relate the slope of a line to its orientation in the coordinate plane.</p> <p>Recognize the relationships between the slopes of parallel and perpendicular lines.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT: CP GEOMETRY**

**CORE CONCEPT 4:** Parallel & perpendicular lines and planes

**MAJOR OBJECTIVE:** detours and midpoints, right-angle theorem, equidistance theorem, slope, proving lines or planes parallel/perpendicular, congruent angles

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.I</b> Model situations geometrically to formulate and solve problems.</p>	<p>Teacher will guide students to:</p> <p>Recognize the relationship between equidistance and perpendicular bisection.</p> <p>Recognize planes.</p> <p>Understand the basic concepts relating to a plane.</p> <p>Identify four methods of determining a plane.</p> <p>Recognize when a line is perpendicular to a plane.</p> <p>Recognize lines parallel to a plane, parallel planes, and skew lines.</p> <p>Recognize transversals.</p> <p>Identify the pairs of angles formed by a transversal.</p> <p>Recognize parallel lines.</p> <p>Identify the pairs of angles formed by a transversal cutting parallel lines.</p> <p>Solve crook problems.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT: CP GEOMETRY**

**CORE CONCEPT 5: Quadrilaterals**

**MAJOR OBJECTIVE:** properties/formulas of and proving figures are parallelograms, rectangles, squares, rhombi, kites, trapezoids, similar polygons

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.C</b> Identify and prove the properties of quadrilaterals involving opposite sides and angles, consecutive sides and angles and diagonals using deductive proofs.</p>	<p>Teacher will guide students to:</p> <p>Recognize and name polygons.</p> <p>Recognize convex polygons.</p> <p>Recognize diagonals of polygons.</p> <p>Identify special types of quadrilaterals.</p> <p>Identify properties of parallelograms, rectangles, kites, rhombi, squares, and isosceles trapezoids.</p> <p>Prove that a quadrilateral is a parallelogram/rectangle/kite/rhombus/square/isosceles triangle.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 5:** Quadrilaterals

**MAJOR OBJECTIVE:** properties/formulas of and proving figures are parallelograms, rectangles, squares, rhombi, kites, trapezoids, similar polygons

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.5.11.B</b> Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas and results.</p>	<p>Teacher will guide students to:</p> <p>Use formulas that apply to polygons.</p> <p>Recognize regular polygons.</p> <p>Use a formula to find the measure of an exterior angle of an equiangular polygon.</p> <p>Recognize and work with ratio and proportion.</p> <p>Apply the product and ratio theorems.</p> <p>Calculate geometric means.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 5:** Quadrilaterals

**MAJOR OBJECTIVE:** properties/formulas of and proving figures are parallelograms, rectangles, squares, rhombi, kites, trapezoids, similar polygons

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.B</b> Prove that two triangles or two polygons are congruent or similar using algebraic, coordinate and deductive proofs.</p>	<p>Teacher will guide students to:</p> <p>Identify the characteristics of similar figures.</p> <p>Prove that triangles are similar.</p> <p>Use the concept of similarity to establish the congruence of angles and the proportionality of segments.</p> <p>Solve shadow problems.</p> <p>Apply theorems used to establish proportionality.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT: CP GEOMETRY**

**CORE CONCEPT 6:** Right triangles & trigonometry

**MAJOR OBJECTIVE:** Pythagorean Theorem, altitude-on-hypotenuse theorems, distance formula, families of right triangles, special right triangles, ratios in right triangles, angles of elevation and depression, Law of Sines, Law of Cosines

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.10.11.B</b> Identify, create and solve practical problems involving right triangles using the trigonometric functions and the Pythagorean Theorem.</p>	<p>Teacher will guide students to:</p> <p>Use the Pythagorean Theorem and its converse.</p> <p>Recognize groups of whole numbers known as Pythagorean Triples.</p> <p>Identify the ratio of side lengths in a 30°-60°-90° triangle and a 45°-45°-90° triangle.</p> <p>Apply the Pythagorean Theorem to solid figures.</p> <p>Understand the three basic trigonometric relationships.</p> <p>Use trigonometric ratios to solve right triangles.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT: CP GEOMETRY**

**CORE CONCEPT 6:** Right triangles & trigonometry

**MAJOR OBJECTIVE:** Pythagorean Theorem, altitude-on-hypotenuse theorems, distance formula, families of right triangles, special right triangles, ratios in right triangles, angles of elevation and depression, Law of Sines, Law of Cosines

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.5.11.B</b> Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas and results.</p>	<p>Teacher will guide students to:</p> <p>Simplify radical expressions and solve quadratic equations.</p> <p>Identify the relationship between the parts of a right triangle when an altitude is drawn to the hypotenuse.</p> <p>Use the distance formula to compute lengths of segments in the coordinate plane.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 7:** Circles

**MAJOR OBJECTIVE:** angles, arcs, chords, tangents, secants, inscribed and circumscribed polygons, circumference, arc length

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.F</b> Use the properties of angles, arcs, chords, tangents and secants to solve problems involving circles.</p>	<p>Teacher will guide students to:</p> <ul style="list-style-type: none"> <li>Identify the characteristics of circles, chords, and diameters.</li> <li>Recognize special relationships between radii and chords.</li> <li>Apply the relationship between congruent chords of a circle.</li> <li>Identify different types of arcs, determine the measure of an arc, and recognize congruent arcs.</li> <li>Relate congruent arcs, chords, and central angles.</li> <li>Identify secant and tangent lines and segments.</li> <li>Distinguish between two types of tangent circles.</li> <li>Recognize common internal and external tangents.</li> <li>Determine the measures of central, inscribed, tangent-chord, chord-chord, secant-secant, secant-tangent, and tangent-tangent angles.</li> <li>Recognize congruent inscribed and tangent-chord angles.</li> <li>Determine the measure of an angle inscribed in a semicircle.</li> <li>Apply the relationship between the measures of a tangent-tangent angle and its minor arc.</li> </ul>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> <li>Student board work.</li> <li>Student responses.</li> <li>Student homework/class work assignments.</li> <li>Student group work.</li> <li>Student workbooks.</li> <li>Student notebooks/journals.</li> <li>Student quizzes/tests.</li> <li>Student presentations.</li> <li>Student performance on Study Island.</li> </ul>	<ul style="list-style-type: none"> <li>Textbook resources</li> <li>Computer programs/web sites</li> <li>Journal or notebook</li> <li>Supplemental materials</li> <li>Graphing calculators</li> <li>Measurement tools</li> <li>Construction tools</li> </ul>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 7:** Circles

**MAJOR OBJECTIVE:** angles, arcs, chords, tangents, secants, inscribed and circumscribed polygons, circumference, arc length

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.E</b> Solve problems involving inscribed and circumscribed polygons.</p>	<p>Teacher will guide students to:</p> <p>Recognize inscribed and circumscribed polygons.</p> <p>Apply the relationship between opposite angles of an inscribed quadrilateral.</p> <p>Identify the characteristics of an inscribed parallelogram.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 7:** Circles

**MAJOR OBJECTIVE:** angles, arcs, chords, tangents, secants, inscribed and circumscribed polygons, circumference, arc length

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.5.11.B</b> Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas and results.</p>	<p>Teacher will guide students to:  Determine circle circumference and arc length.</p>	<p>Teacher evaluation of:  Student board work.  Student responses.  Student homework/class work assignments.  Student group work.  Student workbooks.  Student notebooks/journals.  Student quizzes/tests.  Student presentations.  Student performance on Study Island.</p>	<p>Textbook resources  Computer programs/web sites  Journal or notebook  Supplemental materials  Graphing calculators  Measurement tools  Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 8:** Area

**MAJOR OBJECTIVE:** parallelograms, triangles, rhombi, trapezoids, regular polygons, circles

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.I</b> Model situations geometrically to formulate and solve problems.</p>	<p>Teacher will guide students to:</p> <p>Understand the concept of area.</p> <p>Use the basic properties of area.</p> <p>Find the areas of rectangles, squares, parallelograms, triangles, trapezoids, kites, equilateral triangles, regular polygons, circles, sectors, and segments.</p> <p>Use the measure of a trapezoid's median to find its area.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 9:** Surface area

**MAJOR OBJECTIVE:** nets, prisms, cylinders, pyramids, cones, spheres

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.I</b> Model situations geometrically to formulate and solve problems.</p>	<p>Teacher will guide students to:</p> <p>Find the surface area of prisms, pyramids, cylinders, cones, and spheres.</p> <p>Find the surface area of an object using its net.</p>	<p>Teacher evaluation of:</p> <p>Student board work.</p> <p>Student responses.</p> <p>Student homework/class work assignments.</p> <p>Student group work.</p> <p>Student workbooks.</p> <p>Student notebooks/journals.</p> <p>Student quizzes/tests.</p> <p>Student presentations.</p> <p>Student performance on Study Island.</p>	<p>Textbook resources</p> <p>Computer programs/web sites</p> <p>Journal or notebook</p> <p>Supplemental materials</p> <p>Graphing calculators</p> <p>Measurement tools</p> <p>Construction tools</p>

**CONTENT:** CP GEOMETRY

**CORE CONCEPT 10:** Volumes

**MAJOR OBJECTIVE:** prisms, cylinders, pyramids, cones, spheres

**CURRICULUM STANDARD:**

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p><b>PA Standard 2.9.11.I</b> Model situations geometrically to formulate and solve problems.</p>	<p>Teacher will guide students to:  Find the volume of prisms, cylinders, pyramids, cones, and spheres.</p>	<p>Teacher evaluation of:  Student board work.  Student responses.  Student homework/class work assignments.  Student group work.  Student workbooks.  Student notebooks/journals.  Student quizzes/tests.  Student presentations.  Student performance on Study Island.</p>	<p>Textbook resources  Computer programs/web sites  Journal or notebook  Supplemental materials  Graphing calculators  Measurement tools  Construction tools</p>

**V. EXPECTED LEVELS OF ACHIEVEMENT**

A. Students are expected to reach the tenth grade level of achievement in mathematics. These skills include all of those noted in the specific content area of this curriculum.

B. Grading system this course is as follows:

<b>Grading Scale</b>	
A	100%-90%
B	89%-80%
C	79%-70%
D	69%-60%
F	Below 60%

C. A student's grade will be determined at the conclusion of each marking period. Progress reports will be sent home at the mid-point of each marking period for those students achieving below 70%.