

# *Wallenpaupack Area School District*

## **COURSE:** Applied Geometry

**GRADE LEVEL:** Tenth and Eleventh Grade

**LENGTH OF COURSE:** 90 days/semester (Block Schedule)

**TEXT:** Cord Geometry: Mathematics in Context

**PUBLISHER:** Globe Fearon Educational Publisher

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### **COURSE DESCRIPTION:**

Applied Geometry bridges the gap between abstract geometrical concepts and real-world applications. It integrates geometry with ideas from algebra, probability, statistics, discrete mathematics, and trigonometry, while challenging students to apply mathematical principles to real-life situations and to develop their capacity for problems solving.

### **CURRICULUM WRITING TEAM:**

Mary Gilson  
Lynn Cunningham  
Jay Haupt  
Tim Tirjan

### **DATE OF REVISION:**

2006

# Wallenpaupack Area School District

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Similar Triangles

**PA Standards:** 2.1.11.A  
2.2.11.A  
2.2.11.C  
2.2.11.F  
2.2.11.I  
2.3.11.C  
2.3.11.C  
2.4.11.B  
2.4.11.E  
2.5.11.B  
2.5.11.C  
2.8.11.D  
2.9.11.A  
2.9.11.B  
2.9.11.G

<b>Topics:</b> Ratio and proportions Similarity Proportions in similar triangles	<b>Skills:</b> Use ratio and proportion to solve problems Identify similar polygons Investigate proportions in similar triangles
<b>Activities:</b> Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator Distortion Project	<b>Performance Assessments:</b> Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework Project

# Wallenpaupack Area School District

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Right Triangle Relationships

**PA Standards:** 2.1.11.A  
2.2.11.A  
2.2.11.C  
2.2.11.F  
2.2.11.I  
2.3.11.C  
2.4.11.B  
2.4.11.E  
2.5.11.A  
2.5.11.B  
2.5.11.C  
2.8.11.D  
2.9.11.A  
2.9.11.G

<b>Topics:</b>	<b>Skills:</b>
The Pythagorean Theorem Special right triangles	Define and apply the Pythagorean Theorem and its converse Identify special right triangles and their properties
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

# Wallenpaupack Area School District

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Trigonometric Ratios

**PA Standards:** 2.1.11.A  
2.2.11.A  
2.2.11.C  
2.2.11.E  
2.2.11.F  
2.3.11.A  
2.3.11.C  
2.4.11.B  
2.4.11.E  
2.5.11.A  
2.5.11.B  
2.5.11.C  
2.8.11.D  
2.8.11.S  
2.9.11.A  
2.9.11.G  
2.10.11.B

<b>Topics:</b>	<b>Skills:</b>
Sine and cosine ratios Tangent ratio	Use the tangent, sine, and cosine trigonometric ratios to solve problems involving right triangles
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

## *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Coordinate Geometry

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.C  
 2.2.11.F  
 2.3.11.C  
 2.4.11.B  
 2.4.11.E  
 2.5.11.B  
 2.5.11.C  
 2.8.11.D  
 2.8.11.J  
 2.8.11.L  
 2.9.11.A  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Distance on the coordinate plane Slope Linear equations	Use the distance and midpoint formulas to find lengths in the coordinate plane Use the slope formula to solve problems Use linear equations to solve problems
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

# *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Area

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.B  
 2.2.11.C  
 2.2.11.E  
 2.2.11.F  
 2.3.11.A  
 2.3.11.C  
 2.4.11.B  
 2.4.11.E  
 2.5.11.A  
 2.5.11.B  
 2.5.11.C  
 2.5.11.D  
 2.7.11.D  
 2.8.11.D  
 2.9.11.A  
 2.9.11.E  
 2.9.11.G  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Rectangles and squares Parallelograms and triangles Area of a trapezoid Circumference and area Geometric probability	Understand the physical meaning of the area of a polygon and of a circle Solving problems involving the area of a squares, rectangles, parallelograms, triangles, trapezoids, and circles Solve problems involving the circumference of a circle and the area of a sector of a circle Using geometric properties to find the probability of an event
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

## *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Surface Area and Volume

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.B  
 2.2.11.C  
 2.2.11.E  
 2.2.11.F  
 2.3.11.A  
 2.3.11.C  
 2.4.11.B  
 2.4.11.E  
 2.5.11.A  
 2.5.11.B  
 2.5.11.C  
 2.5.11.D  
 2.8.11.D  
 2.9.11.A  
 2.9.11.G  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Surface area of prisms and cylinders Volume of prisms and cylinders Volume and surface area of pyramids, cones and spheres	Calculate the surface area and volume of prisms and cylinders Calculate the surface area of volume of pyramids and cones Calculate the surface area and volume of pyramids and cones Calculate the surface area and volume of spheres Solve problems involving the surface area and volume of solids
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

# Wallenpaupack Area School District

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Discovering Geometry

**PA Standards:** 2.1.11.A  
2.2.11.A  
2.2.11.C  
2.2.11.F  
2.3.11.A  
2.4.11.B  
2.5.11.B  
2.9.11.A  
2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Measurement of basic geometric figures Measurement of line segments and angles Special pairs of angles Parallel and perpendicular lines	Identify the basic geometric figures Find the measures of segments and angles Identify and solve problems containing special pairs of angles Recognize parallel and perpendicular lines
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

# Wallenpaupack Area School District

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Reasoning and Proof

**PA Standards:** 2.1.11.A  
2.4.11.A  
2.4.11.B  
2.4.11.C  
2.5.11.B  
2.8.11.A  
2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Inductive, deductive and logical reasoning	Identify and use both inductive and deductive reasoning Determine the converse, inverse, and contrapositive of a given conditional
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator Analyzing advertising project	Class assignments Class participation Teacher observation Board work Homework Project

# *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Parallel Lines

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.C  
 2.2.11.F  
 2.3.11.A  
 2.4.11.B  
 2.4.11.C  
 2.4.11.E  
 2.5.11.A  
 2.5.11.B  
 2.5.11.C  
 2.8.11.D  
 2.8.11.G  
 2.8.11.K  
 2.8.11.L  
 2.9.11.A  
 2.9.11.G  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Lines in space Parallel lines and transversals Proving lines parallel	Identify the special pairs of angles formed by parallel lines and a transversal (alternate interior angles, corresponding angles, alternate exterior angles, same side interior angles and same side exterior angles) Prove lines are parallel based on angle relationships.
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator Line design project	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework Project

## *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Triangles

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.B  
 2.2.11.C  
 2.2.11.F  
 2.3.11.A  
 2.4.11.A  
 2.4.11.B  
 2.4.11.E  
 2.5.11.A  
 2.5.11.B  
 2.5.11.C  
 2.9.11.A  
 2.9.11.G  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Triangle sum theorem Inequalities in geometry Triangle inequality theorem	Solve problems using the Triangle Sum Theorem and the Exterior Angle Theorem Use indirect proof to prove theorems Solve problems using the Triangle Inequality Theorems
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

## *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Congruent Triangles

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.C  
 2.2.11.F  
 2.3.11.A  
 2.4.11.B  
 2.4.11.C  
 2.4.11.E  
 2.5.11.B  
 2.5.11.C  
 2.8.11.D  
 2.9.11.A  
 2.9.11.B  
 2.9.11.D  
 2.9.11.G  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Congruent triangles Proving triangles congruent Using congruent triangles Isosceles and right triangle theorems	Identify the corresponding parts of congruent triangles Prove triangles congruent using the relationships between corresponding sides and angles Solve problems using corresponding parts of congruent triangles Use the Isosceles Triangle Theorem and the Hypotenuse-Leg Theorem to solve problems involving congruent triangles
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

## *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Polygons and Quadrilaterals

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.C  
 2.2.11.F  
 2.4.11.B  
 2.4.11.E  
 2.5.11.A  
 2.5.11.B  
 2.5.11.C  
 2.8.11.D  
 2.9.11.A  
 2.9.11.C  
 2.9.11.G  
 2.9.11.I  
 2.9.11.J

<b>Topics:</b>	<b>Skills:</b>
Types of polygons Angles of polygons Properties of quadrilaterals Types and properties of parallelograms	Identify and define the different types of polygons Determine the measures of interior and exterior angles of convex polygons Investigate the characteristics of quadrilaterals Identify parallelograms and use the properties of parallelograms to solve problems
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator Stellated polyhedron project	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework Project

## *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Special Parallelograms

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.C  
 2.2.11.F  
 2.4.11.A  
 2.4.11.E  
 2.5.11.A  
 2.5.11.B  
 2.5.11.C  
 2.8.11.D  
 2.9.11.A  
 2.9.11.C  
 2.9.11.G  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Special parallelograms Trapezoids	Define rectangles, squares, and rhombuses, and use them to solve problems Identify trapezoids and use the properties of trapezoids to solve problems
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

# *Wallenpaupack Area School District*

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Circles

**PA Standards:** 2.1.11.A  
 2.2.11.A  
 2.2.11.C  
 2.2.11.F  
 2.3.11.B  
 2.4.11.B  
 2.4.11.E  
 2.5.11.A  
 2.5.11.B  
 2.5.11.C  
 2.8.11.C  
 2.9.11.A  
 2.9.11.F  
 2.9.11.I

<b>Topics:</b>	<b>Skills:</b>
Equation of circles Tangents Chords and arcs Inscribed angles Secants and tangents Radians and degrees	Given a circle's radius and point on a circle, write the equation of the circle Define tangent, chord, and secant, and use their properties to solve problems Describe and use the relationships between central angles, inscribed angles, and arcs Use the relationships between angles formed by tangents, chords, and secants to solve problems Convert radians to degrees and degrees to radians
<b>Activities:</b>	<b>Performance Assessments:</b>
Textbook problem solving Worksheets Partner work/cooperative learning Board work Utilization of the scientific calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

# Wallenpaupack Area School District

**Course:** Applied Geometry

**Grade Level:** Grade 10 and 11

**Unit:** Constructions

**PA Standards:** 2.2.11.C  
2.3.11.A  
2.3.11.C  
2.4.11.B  
2.5.11.B  
2.9.11.A  
2.9.11.E

<b>Topics:</b> Constructions Altitudes, medians, and bisectors	<b>Skills:</b> Perform basic geometric constructions using a compass and a straight edge Construct altitudes, medians, perpendicular bisectors and angle bisectors Recognize the orthocenter, centroid, circumcenter, and incenter of triangles
<b>Activities:</b> Textbook problem solving Worksheets Partner work/cooperative learning	<b>Performance Assessments:</b> Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework