

# Wallenpaupack Area School District Planned Course Curriculum Guide

**Department:**  
**Mathematics Department**

**Course Name:**  
**Honors Precalculus with Trigonometry**

**Course Description:** This course is designed for students to have deeper understanding of using Precalculus and Trigonometry to solve problems. Right triangular and a circular approach, curve sketching, simplifying and proving identities, solving oblique triangles, graphing and solving logarithmic problems will be covered.

**Initial Creation Date (if applicable) and Revision Dates:**

Initial Creation Date:

Revision Date: 2006

Revision Date: October, 2025

Curriculum Team: Mary Gilson

Lynn Cunningham

Wallenpaupack Area School District Curriculum	
<b>COURSE: Trigonometry</b>	<b>GRADE/S:10, 11, 12</b>
<b>UNIT 1: Prerequisites for Trigonometry</b>	<b>TIMEFRAME: 11 Blocks</b>

**PA COMMON CORE/NATIONAL STANDARDS:**

**CC.2.1.HS.F.1** Apply and extend the properties of exponents to solve problems with rational numbers.

**CC.2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems.

**CC.2.2.HS.D.2** Write expressions in equivalent forms to solve problems.

**CC.2.2.HS.D.3** Extend the knowledge of arithmetic operations and apply it to polynomials.

**CC.2.2.HS.D.4** Understand the relationship between zeros and factors of polynomials to generalize about functions and their graphs.

**CC.2.2.HS.D.5** Use polynomial identities to solve problems.

**CC.2.2.HS.D.6** Extend the knowledge of rational functions to rewrite in equivalent forms.

**CC.2.2.HS.D.8** Apply inverse operations to solve equations or formulas for a given variable.

**CC.2.2.HS.D.9** Use reasoning to solve equations and justify the solution method.

**CC.2.3.HS.A.10** Translate between the geometric description and the equation for a conic section.

**UNIT OBJECTIVES (SWBATS):**

Students will be able to:

- Categorize numbers as natural numbers, integers, rational numbers or irrational numbers
- Order the real numbers on the number line
- Distinguish the difference between bounded and unbounded intervals
- Solve linear, quadratic, radical and higher order polynomial equations
- Utilize the distance and midpoint formulas
- Determine the center and radius of a circle
- Recognize and determine the equation of a circle
- Utilize tests of symmetry
- Determine x and y intercepts of graphs of equations
- Determine the slope of a line
- Utilize the point-slope form, slope intercept form, and intercept form of lines

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- Direct instruction with guided examples
- Textbook and worksheet problem solving
- Partner and group work
- Interactive board work and class discussions
- Real world connections
- Utilizing the scientific calculator

**ANCHOR VOCABULARY:**

- Review of Real Numbers and their Properties
- Solving Equations
- The Cartesian Plane and Graphs of Equations
- Linear Equations in Two Variables

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- Exit questions
- Formative: Class participation, homework checks, board work
- Summative: In class quizzes, online quizzes, unit assessments

**DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)**

- Peer tutoring
- Small group instruction
- Math lab opportunities
- Gifted resource room
- **\*will vary based on GIEP/IEP**
- Kuta Software for extra practice/differentiation of topics.
- Wayground website (Formerly known as Quizizz)

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Board approved textbook - Trigonometry, Seventh Edition, Larson and Hostetler
- Teacher made worksheets and activities
- Kuta Software
- Wayground website (Formerly known as Quizizz)

**RESOURCE SPECIFIC VOCABULARY:**

- Real numbers
- Irrational numbers
- Rational numbers
- Integers
- Whole numbers
- Natural numbers
- Interval notation
- Solutions and Zeros
- Extraneous solutions
- Distance formula
- Midpoint formula
- Slope or Average Rate of Change
- x- and y-intercepts
- Symmetry
- Slope Intercept Form

Wallenpaupack Area School District Curriculum	
<b>COURSE: Trigonometry</b>	<b>GRADE/S:10, 11, 12</b>
<b>UNIT 2: Prerequisites for Trigonometry</b>	<b>TIMEFRAME: 12 Blocks</b>

**PA COMMON CORE/NATIONAL STANDARDS:**

- CC.2.2.HS.C.1** Use the concept and notation of functions to interpret and apply them in terms of their context.
- CC.2.2.HS.C.2** Graph and analyze functions and use their properties to make connections between the different representations.
- CC.2.2.HS.C.3** Write functions or sequences that model relationships between two quantities.
- CC.2.2.HS.C.4** Interpret the effects transformations have on functions and find the inverse of functions.
- CC.2.2.HS.C.5** Construct and compare linear, quadratic and exponential models to solve problems.
- CC.2.2.HS.C.6** Interpret functions in terms of the situations they model.
- CC.2.2.HS.D.1** Interpret the structure of expression to represent a quantity in terms of its context.
- CC.2.2.HS.D.4** Understand the relationship between zeros and factors of polynomials to generalize about functions and their graphs.
- CC.2.2.HS.D.5** Use polynomial identities to solve problems.
- CC.2.2.HS.D.6** Extend the knowledge of rational functions to rewrite in equivalent forms.
- CC.2.2.HS.D.7** Create and graph equations or inequalities to describe numbers or relationships.
- CC.2.2.HS.D.9** Use reasoning to solve equations and justify the solution method.

**UNIT OBJECTIVES (SWBATS):**

Students will be able to:

- Test for and evaluate algebraic functions.
- Determine domain and range of algebraic functions.
- Graph algebraic functions.
- Distinguish between even and odd algebraic functions.
- Determine increasing or decreasing intervals of algebraic functions.
- Identify function families and transformations from parent function.
- Determine horizontal and vertical asymptotes and utilize them as an aid in graphing rational functions.
- Perform the function operations of addition, subtraction, multiplication, division and composition.
- Determine the existence of an inverse function and find the inverse function algebraically.

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- Direct instruction with guided examples
- Textbook and worksheet problem solving
- Partner and group work
- Interactive board work and class discussions
- Real world connections
- Utilizing the scientific calculator

**ANCHOR VOCABULARY:**

- Functions
- Analyze Graphs of Functions
- Parent Functions
- Transformations of Functions
- Combinations and Composition of Functions
- Inverse Functions

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- Exit questions
- Formative: Class participation, homework checks, board work
- Summative: In class quizzes, online quizzes, unit assessments

**DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)**

- Peer tutoring
- Small group instruction
- Math lab opportunities
- Gifted resource room
- **\*will vary based on GIEP/IEP**
- Kuta Software for extra practice/differentiation of topics
- Wayground website (Formerly known as Quizizz)

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Board approved textbook - Trigonometry, Seventh Edition, Larson and Hostetler
- Teacher made worksheets and activities
- Kuta Software
- Wayground website (Formerly known as Quizizz)

**RESOURCE SPECIFIC VOCABULARY:**

- |   |                            |
|---|----------------------------|
| • Function Notation                             | • Average Rate of Change   |
| • Domain and Range                              | • Symmetry                 |
| • Increasing, Decreasing and Constant Intervals | • Composition of Functions |
| • Transformations                               | • Inverse Functions        |
| • Patterns                                      |                            |

Wallenpaupack Area School District Curriculum	
<b>COURSE: Trigonometry</b>	<b>GRADE/S: 10, 11, 12</b>
<b>UNIT 3: Exponential and Logarithmic Functions</b>	<b>TIMEFRAME: 11 blocks</b>

**PA COMMON CORE/NATIONAL STANDARDS:**

- CC2.1.HS.F.1** Apply and extend the properties of exponents to solve problems with rational numbers.
- CC.2.1.HS.F.2** Apply properties of rational and irrational numbers to solve real world or mathematical problems.
- CC2.2.HS.C.2** Graph and analyze functions and use their properties to make connections between the different representations.
- CC 2.2.HS.C.4** Interpret the effects transformations have on functions and find the inverse of functions.
- CC.2.2.HS.C.5** Construct and compare linear, quadratic and exponential models to solve problems.
- CC.2.2.HS.C.6** Interpret functions in terms of the situations they model.
- CC2.2.HS.D.1** Interpret the structure of expression to represent a quantity in terms of its context.
- CC.2.2.HS.D.2** Write expressions in equivalent forms to solve problems.
- CC.2.2.HS.D.5** Use polynomial identities to solve problems.
- CC.2.2.HS.D.8** Apply inverse operations to solve equations or formulas for a given variable.
- CC.2.2.HS.D.9** Use reasoning to solve equations and justify the solution method.
- CC.2.2.HS.D.10** Represent, solve and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

**UNIT OBJECTIVES (SWBATS):**

Students will be able to:

- Use a scientific or graphic calculator to evaluate transcendental (exponential and logarithmic) functions.
- Evaluate transcendental (exponential and logarithmic) functions without the aid of a calculator.
- Evaluate logarithmic expressions without the aid of a calculator.
- Graph transcendental functions without the aid of a calculator.
- Use properties of logarithms to expand and/or condense logarithm expressions without the aid of a calculator.
- Be able to understand and use the properties of exponential and logarithmic functions with and without the aid of a calculator.
- Solve exponential and logarithmic equations with and without the aid of a calculator.
- Solve real life situations that can be modeled with transcendental functions.

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- Direct instruction with guided examples
- Textbook and worksheet problem solving
- Partner and group work
- Interactive board work and class discussions
- Real world connections
- Utilizing the scientific calculator

**ANCHOR VOCABULARY:**

- Exponential Functions and Their Graphs
- Logarithmic Functions and Their Graphs
- Properties of Logarithms
- Exponential and Logarithmic Equations
- Exponential and Logarithmic Models

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- Exit questions
- Formative: Class participation, homework checks, board work
- Summative: In class quizzes, Online quizzes, unit assessments

**DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)**

- Peer tutoring
- Small group instruction
- Math lab opportunities
- Kuta Software for extra practice/differentiation of topics
- Gifted resource room
- **\*will vary based on GIEP/IEP**
- Wayground website (Formerly known as Quizizz)

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Board approved textbook - Trigonometry, Seventh Edition, Larson and Hostetler
- Teacher made worksheets and activities
- Kuta Software
- Wayground website (Formerly known as Quizizz)

**RESOURCE SPECIFIC VOCABULARY:**

- Transcendental functions
- Exponential functions
- Natural base  $e$
- Logarithmic Functions
- Common logarithm
- Change of base formula

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: Trigonometry</b>	<b>GRADE/S: 10, 11, 12</b>
<b>UNIT 4: Trigonometry</b>	<b>TIMEFRAME: 18 blocks</b>

<p><b>PA COMMON CORE/NATIONAL STANDARDS:</b></p> <p><b>CC.2.1.HS.F.4</b> Use units to understand problems and to guide the solution to multi-step problems.</p> <p><b>CC.2.2.HS.C.7</b> Apply radian measure of an angle and the unit circle to analyze the trigonometric functions.</p> <p><b>CC.2.2.HS.C.9</b> Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>CC.2.2.HS.D.9</b> Use reasoning to solve equations and justify the solution method.</p> <p><b>CC.2.3.HS. A.7</b> Apply trigonometric ratios to solve problems involving right triangles.</p> <p><b>CC.2.3.HS.A.9</b> Extend the concept of similarity to determine arc lengths and area of sectors of circles.</p>
<p><b>UNIT OBJECTIVES (SWBATS):</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate knowledge of angle terminology.</li> <li>• Demonstrate knowledge of radian measure.</li> <li>• Find coterminal, complementary and supplementary angles <u>without the aid of a calculator</u></li> <li>• Perform manual and calculator conversions between radians and degrees <u>with and without the aid of a calculator.</u></li> <li>• Perform calculator conversion between decimal degree and degrees, minutes and seconds.</li> <li>• Apply knowledge of radians to solve angular speed situations.</li> <li>• Define the six trigonometric functions as a product of the unit circles <u>without the aid of a calculator.</u></li> <li>• Utilize the periodic nature of the six trigonometric functions <u>without the aid of a calculator.</u></li> <li>• Use the unit circle to evaluate the six trigonometric functions <u>without the aid of a calculator.</u></li> <li>• Evaluate trigonometric functions <u>with and without the aid of a calculator.</u></li> <li>• Know and use the right triangle definitions of the six trigonometric functions <u>with and without the aid of a calculator.</u></li> <li>• Determine reference angles and use those reference angles to evaluate trigonometric functions with and without the aid of a calculator.</li> </ul>
<p><b>INSTRUCTIONAL STRATEGIES/ACTIVITIES:</b></p> <ul style="list-style-type: none"> <li>• Direct instruction with guided examples</li> <li>• Textbook and worksheet problem solving</li> <li>• Partner and group work</li> <li>• Interactive board work and class discussions</li> <li>• Real world connections</li> <li>• Utilizing the scientific calculator</li> </ul>
<p><b>ANCHOR VOCABULARY:</b></p> <ul style="list-style-type: none"> <li>• Radian and Degree Measure</li> <li>• Trigonometric Functions: The Unit Circle</li> <li>• Right Triangle Trigonometry</li> <li>• Trigonometric Functions of Any Angle</li> <li>• Applications and Models</li> </ul>
<p><b>ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):</b></p> <ul style="list-style-type: none"> <li>• Exit questions</li> <li>• Formative: Class participation, homework checks, board work</li> <li>• Summative: In class quizzes, online quizzes, unit assessments</li> </ul>

**DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)**

- Peer tutoring
- Small group instruction
- Math lab opportunities
- Kuta Software for extra practice/differentiation of topics.
- Gifted resource room
  - \*will vary based on GIEP/IEP**
- Wayground website (Formerly known as Quizizz)

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Board approved textbook - Trigonometry, Seventh Edition, Larson and Hostetler
- Teacher made worksheets and activities
- Kuta Software
- Wayground website (Formerly known as Quizizz)

**RESOURCE SPECIFIC VOCABULARY:**

- |   |                               |
|---|-------------------------------|
| • Angle                                   | • Arc Length                  |
| • Initial Side                            | • Area of Sector              |
| • Terminal Side                           | • Angular Speed               |
| • Standard Position                       | • Linear Speed                |
| • Negative and Positive Coterminal Angles | • Sine, Cosine, Tangent       |
| • Radian                                  | • Cosecant, Secant, Cotangent |
| • Central Angle                           | • Reference Angle             |
| • Degrees                                 | • Bearings                    |
| • Complementary                           | • Angle of Elevation          |
| • Supplementary                           | • Angle of Depression         |

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: Trigonometry</b>	<b>GRADE/S: 10, 11, 12</b>
<b>UNIT 5: Trigonometry</b>	<b>TIMEFRAME: 12 blocks</b>

**PA COMMON CORE/NATIONAL STANDARDS:**

**CC.2.1.HS.F.3** Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.

**CC.2.2.HS.C.2** Graph and analyze functions and use their properties to make connections between the different representations.

**CC.2.2.HS.C.7** Apply radian measure of an angle and the unit circle to analyze the trigonometric functions

**CC.2.2.HS.C.8** Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs.

**CC.2.2.HS.D.1** Interpret the structure of expression to represent a quantity in terms of its context.

**CC.2.2.HS.D.2** Write expressions in equivalent forms to solve problems.

**CC.2.2.HS.D.8** Apply inverse operations to solve equations or formulas for a given variable.

**CC.2.2.HS.D.9** Use reasoning to solve equations and justify the solution method.

**CC.2.2.HS.C.4** Interpret the effects transformations have on functions and find the inverse of functions.

**UNIT OBJECTIVES (SWBATS):**

Students will be able to:

- Recognize and use key points and characteristics to graph the six trigonometric functions without a calculator
- Use addition of ordinates to sketch the graph of trigonometric functions without the aid of a calculator (if time permits)
- Evaluate inverse functions with or without the aid of a calculator
- Utilize characteristics of sinusoidal curves to create trigonometric models

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- Direct instruction with guided examples
- Textbook and worksheet problem solving
- Partner and group work
- Interactive board work and class discussions
- Real world connections
- Utilizing the scientific calculator

**ANCHOR VOCABULARY:**

- Graphs of Sine and Cosine
- Graphs of Tangent, Cotangent, Secant and Cosecant
- Inverse Trigonometric Functions

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- Exit questions
- Formative: Class participation, homework checks, board work
- Summative: In class quizzes, Online quizzes, unit assessments

**DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)**

- Peer tutoring
- Small group instruction
- Math lab opportunities
- Kuta Software for extra practice/differentiation of topics.
- Gifted resource room
  - \*will vary based on GIEP/IEP
- Wayground website (Formerly known as Quizizz)

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Board approved textbook - Trigonometry, Seventh Edition, Larson and Hostetler
- Teacher made worksheets and activities
- Kuta Software
- Wayground website (Formerly known as Quizizz)

**RESOURCE SPECIFIC VOCABULARY:**

- Period
- Key Points
- Amplitude
- Phase Shift
- Vertical Shift
- Increment
- Inverse functions
- Arcfunction (arcsin, arccos, arctan, etc)

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: Trigonometry</b>	<b>GRADE/S: 10, 11, 12</b>
<b>UNIT 6: Analytic Trigonometry</b>	<b>TIMEFRAME: 13 blocks</b>

<p><b>PA COMMON CORE/NATIONAL STANDARDS:</b></p> <p><b>CC.2.2.HS.C.7</b> Apply radian measure of an angle and the unit circle to analyze the trigonometric functions</p> <p><b>CC.2.2.HS.D.2</b> Write expressions in equivalent forms to solve problems.</p> <p><b>CC.2.2.HS.D.5</b> Use polynomial identities to solve problems.</p> <p><b>CC.2.2.HS.D.8</b> Apply inverse operations to solve equations or formulas for a given variable.</p> <p><b>CC.2.2.HS.D.9</b> Use reasoning to solve equations and justify the solution method.</p>
<p><b>UNIT OBJECTIVES (SWBATS):</b></p> <p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Know and use the fundamental identities to evaluate trigonometric functions <u>without the aid of a calculator.</u></li> <li>• Use the fundamental identities to simplify trigonometric expressions <u>without the aid of a calculator.</u></li> <li>• Use the fundamental identities to develop and verify additional trigonometric identities <u>without the aid of a calculator.</u></li> <li>• Use the fundamental identities to solve trigonometric equations <u>with and without the aid of a calculator.</u></li> </ul>
<p><b>INSTRUCTIONAL STRATEGIES/ACTIVITIES:</b></p> <ul style="list-style-type: none"> <li>• Direct instruction with guided examples</li> <li>• Textbook and worksheet problem solving</li> <li>• Partner and group work</li> <li>• Interactive board work and class discussions</li> <li>• Real world connections</li> <li>• Utilizing the scientific calculator</li> </ul>
<p><b>ANCHOR VOCABULARY:</b></p> <ul style="list-style-type: none"> <li>• Using Fundamental Identities</li> <li>• Verifying Trigonometric Identities</li> <li>• Solving Trigonometric Equations</li> </ul>
<p><b>ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):</b></p> <ul style="list-style-type: none"> <li>• Exit questions</li> <li>• Formative: Class participation, homework checks, board work</li> <li>• Summative: In class quizzes, online quizzes, unit assessments</li> </ul>
<p><b>DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)</b></p> <ul style="list-style-type: none"> <li>• Peer tutoring</li> <li>• Small group instruction</li> <li>• Math lab opportunities</li> <li>• Kuta Software for extra practice/differentiation of topics.</li> <li>• Gifted resource room</li> <li style="padding-left: 40px;">*will vary based on GIEP/IEP</li> <li>• Wayground website (Formerly known as Quizizz)</li> </ul>

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Board approved textbook - Trigonometry, Seventh Edition, Larson and Hostetler
- Teacher made worksheets and activities
- Kuta Software
- Wayground website (Formerly known as Quizizz)

**RESOURCE SPECIFIC VOCABULARY:**

- Fundamental Identities
- Sum and Difference Formulas
- Double Angle Formulas

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: Trigonometry</b>	<b>GRADE/S: 10, 11, 12</b>
<b>UNIT 6: Additional Topics in Trigonometry</b>	<b>TIMEFRAME: 6 blocks</b>

<p><b>PA COMMON CORE/NATIONAL STANDARDS:</b></p> <p><b>CC.2.2.HS.C.7</b> Apply radian measure of an angle and the unit circle to analyze the trigonometric functions</p> <p><b>CC.2.2.HS.D.8</b> Apply inverse operations to solve equations or formulas for a given variable.</p> <p><b>CC.2.2.HS.D.9</b> Use reasoning to solve equations and justify the solution method.</p>
<p><b>UNIT OBJECTIVES (SWBATS):</b></p> <ul style="list-style-type: none"> <li>• Use the Law of Sines and Law of Cosines to solve oblique triangles (AAS, SAS, SSA, SAS, SSS).</li> <li>• Find area of oblique triangles.</li> <li>• Use Heron’s Formula to find area of oblique triangles.</li> <li>• Use the Law of Sines or Law of Cosines to model and solve real-life problems.</li> </ul> <p><b>If Time: (6 additional blocks needed)</b></p> <ul style="list-style-type: none"> <li>• Represent vectors as directed line segments</li> <li>• Write the component forms of vectors</li> <li>• Perform basic vector operations and represent vectors graphically</li> <li>• Write vectors as linear combinations of unit vectors</li> <li>• Find the directional angles of vectors</li> <li>• Use vectors to model and solve real-life problems</li> <li>• Find the dot product of two vectors and use the properties of the dot product</li> <li>• Find the angle between two vectors and determine whether two vectors are orthogonal</li> <li>• Write vectors as sums of two vectors components</li> <li>• Use vectors to find the work done by a force</li> </ul>
<p><b>INSTRUCTIONAL STRATEGIES/ACTIVITIES:</b></p> <ul style="list-style-type: none"> <li>• Direct instruction with guided examples</li> <li>• Textbook and worksheet problem solving</li> <li>• Partner and group work</li> <li>• Interactive board work and class discussions</li> <li>• Real world connections</li> <li>• Utilizing the scientific calculator</li> </ul>
<p><b>ANCHOR VOCABULARY:</b></p> <ul style="list-style-type: none"> <li>• Law of Sines and Law of Cosines</li> <li>• Vectors in the Plane (if time)</li> <li>• Vectors and Dot Products (if time)</li> </ul>
<p><b>ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):</b></p> <ul style="list-style-type: none"> <li>• Exit questions</li> <li>• Formative: Class participation, homework checks, board work</li> <li>• Summative: In class quizzes, Online quizzes, unit assessments</li> </ul>
<p><b>DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)</b></p> <ul style="list-style-type: none"> <li>• Peer tutoring</li> <li>• Small group instruction</li> <li>• Math lab opportunities</li> <li>• Kuta Software for extra practice/differentiation of topics.</li> <li>• Gifted resource room</li> <li style="padding-left: 40px;">*will vary based on GIEP/IEP</li> <li>• Wayground website (Formerly known as Quizizz)</li> </ul>

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

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- Kuta Software
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**RESOURCE SPECIFIC VOCABULARY:**

- Ambiguous Case
- Directed line segment (if time)
- Terminal point (if time)
- Magnitude (if time)
- Initial Point/Standard Position (if time)
- Component form (if time)
- Vector Addition (if time)
- Scalar Multiplication (if time)
- Resultant (if time)
- Unit vector (if time)
- Direction Angle (if time)
- Dot Product (if time)
- Angle Between Two Vectors (if time)
- Orthogonal Vectors (if time)

<b>Wallenpaupack Area School District Curriculum</b>	
<b>COURSE: Trigonometry</b>	<b>GRADE/S: 10, 11, 12</b>
<b>UNIT 7: Complex Numbers (If Time)</b>	<b>TIMEFRAME: 6 blocks needed</b>

**PA COMMON CORE/NATIONAL STANDARDS:**

**CC.2.2.HS.C.7** Apply radian measure of an angle and the unit circle to analyze the trigonometric functions

**CC.2.1.HS.F.6** Extend the knowledge of arithmetic operations and apply complex numbers.

**CC.2.1.HS.F.7** Apply concepts of complex numbers in polynomial identities and quadratic equations to solve problems.

**CC.2.2.HS.D.2** Write expressions in equivalent forms to solve problems.

**CC.2.2.HS.D.4** Understand the relationship between zeros and factors of polynomials to generalize about functions and their graphs.

**CC.2.2.HS.D.5** Use polynomial identities to solve problems.

**CC.2.2.HS.D.8** Apply inverse operations to solve equations or formulas for a given variable.

**CC.2.2.HS.D.9** Use reasoning to solve equations and justify the solution method.

**UNIT OBJECTIVES (SWBATS):**

Students will be able to:

- Use imaginary unit,  $i$ , to write complex numbers without the aid of a calculator.
- Use arithmetic operations with complex numbers without the aid of a calculator.
- Use complex conjugates to write the equation of two complex numbers in standard form without the aid of a calculator.
- Find complex solutions for quadratic equations without the aid of a calculator.
- Determine the numbers of solutions of polynomial equations without the aid of a calculator.
- Find solutions of polynomial equations without the aid of a calculator.
- Find zeros of polynomial functions and find polynomial functions given the zeros of the function without the aid of a calculator.
- Plot complex numbers in the complex plain and find the absolute value of complex numbers without the aid of a calculator.
- Write the trigonometric form of complex numbers without the aid of a calculator.
- Multiply and divide complex numbers written in trigonometric form without the aid of a calculator.
- Use De Moivre's theorem to find powers of complex numbers without the aid of a calculator.
- Find  $n$ th roots of complex numbers.

**INSTRUCTIONAL STRATEGIES/ACTIVITIES:**

- Direct instruction with guided examples
- Textbook and worksheet problem solving
- Partner and group work
- Interactive board work and class discussions
- Real world connections
- Utilizing the scientific calculator

**ANCHOR VOCABULARY:**

- Complex Numbers
- Complex Solutions to Equations
- Trigonometric Form of a Complex Number
- De Moivre's Theorem

**ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):**

- Exit questions
- Formative: Class participation, homework checks, board work
- Summative: In class quizzes, online quizzes, unit assessments

**DIFFERENTIATED INSTRUCTION (Remediation/Acceleration/Enrichment)**

- Peer tutoring
- Small group instruction
- Math lab opportunities
- Kuta Software for extra practice/differentiation of topics.
- Gifted resource room
- **\*will vary based on GIEP/IEP**

**RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):**

- Board approved textbook - Trigonometry, Seventh Edition, Larson and Hostetler
- Teacher made worksheets and activities
- Kuta Software
- Wayground website (Formerly known as Quizizz)

**RESOURCE SPECIFIC VOCABULARY:**

- Imaginary unit,  $i$
- Complex number
- Standard form,  $a + bi$
- Complex conjugate
- Discriminant
- Real axis
- Imaginary axis
- Absolute Value
- De Moivre's Theorem
- $n$ th root