

Elizabethtown Area School District Curriculum

Date Adopted: 6/3/19

<b><u>Grade, Subject:</u></b> 9, 10, 11, 12; Algebra III/Trigonometry	
<b><u>Strand (Unit):</u></b> Chapter P (Prerequisite chapter)	
<b><u>Big Idea:</u></b> Revisit skills necessary for success in Algebra 3/Trigonometry	
<b><u>PA Content Standards:</u></b> A2.1.2.1 Use exponents, roots, and/or absolute values to represent equivalent forms or to solve problems. A2.1.2.2 Simplify expressions involving polynomials. A2.1.3.1 Write and/or solve nonlinear equations using various methods.	<b><u>PA Core Standards:</u></b> CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents. 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 to polynomials. CC.2.2.HS.D.4 Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs. 13.1.11.A: Relate careers to individual interests, abilities and aptitudes.

<p><b><u>Essential Questions:</u></b></p> <ol style="list-style-type: none"> <li>1a. How do we evaluate expressions?</li> <li>2a. How do we solve polynomial equations by factoring?</li> <li>3a. How do we simplify polynomial expressions?</li> <li>4a. How do we factor expressions?</li> <li>5a. How do we solve equations by factoring?</li> <li>6a. How do we simplify rational polynomials?</li> </ol>	<p><b><u>Understandings (SWKT...):</u></b></p> <ol style="list-style-type: none"> <li>1b. Evaluate expressions</li> <li>2b. Find the distance between pairs of numbers</li> <li>3b. Simplify expressions</li> <li>4b. Factor expressions</li> <li>5b. Solve equations</li> <li>6b. Simplify polynomials and find restrictions on the domain</li> </ol>
<p><b><u>Vocabulary:</u></b> Greatest Common Factor, Distribute, Variable, Exponent, Like Terms, Polynomial, Rational</p>	<p><b><u>Skills (SWBAT...):</u></b></p> <ol style="list-style-type: none"> <li>1c. Use order of operations to simplify expressions</li> <li>2c. Subtract 2 numbers, take the absolute value of a number</li> <li>3c. Add/subtract/multiply polynomials</li> <li>4c. Factor out the GCF, factor the sum and difference of cubes, factor trinomials, factor by grouping</li> <li>5c. Factor, use the zero product property</li> <li>6c. Factor, multiply/divide rational polynomials</li> </ol>
<p><b><u>Assessments:</u></b></p> <p>Unit test  Quizzes  Teacher-created Schoology assessments</p>	<p><b><u>Resources:</u></b></p> <p>Common Core Standards  Chromebook  Internet  Calculator  Algebra and Trigonometry textbook  Teacher-created resources</p>

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<p><b><u>Strand (Unit):</u> Chapter 11</b></p>	
<p><b><u>Big Idea:</u> Sequences and Series, Probability and Statistics</b></p>	
<p><b><u>PA Content Standards:</u></b>  A2.2.1.1 Analyze and/or use patterns or relations.</p>	<p><b><u>PA Core Standards:</u></b></p> <p>CC.2.2.HS.C.1 Use the concept and notation of functions to interpret and apply them in terms of their context.</p> <p>CC.2.2.HS.C.3 Write functions or sequences that model relationships between two quantities.</p> <p>13.2.11.E: Demonstrate, in career acquisition process, the application of essential workplace skills/knowledge.</p> <p>13.1.11.A: Relate careers to individual interests, abilities and aptitudes.</p> <p>13.1.11.B: Analyze career options based on personal interests, abilities, aptitudes, achievements and goals.</p>
<p><b><u>Essential Questions:</u></b></p> <p>1a. What is an arithmetic sequence?  2a. What is a geometric sequence?  3a. What is the Binomial Theorem?  4a. What is a combination vs. permutation?  5a. How do we determine various types of probabilities?</p>	<p><b><u>Understandings (SWKT...):</u></b></p> <p>1bi. How to determine whether or not a sequence is arithmetic.  1bii. How to evaluate arithmetic summations.  2bi. How to determine whether or not a sequence is geometric.  2bii. How to evaluate geometric summations.  3b. How to expand binomials using the Binomial Theorem.</p>

	<p>4b. How to determine combinations/permutations given word problems.</p> <p>5b. How to find various types of probabilities</p>
<p><b><u>Vocabulary:</u></b>  Infinite  Finite  Alternating Sequence  Arithmetic Sequence  Geometric Sequence  Combinations  Permutations  Probability</p>	<p><b><u>Skills (SWBAT...):</u></b></p> <p>1ci. Find the common difference of an arithmetic sequence/series.</p> <p>1cii. Write general terms and use general terms to find certain terms of an arithmetic sequence.</p> <p>1ciii. Evaluate arithmetic summations.</p> <p>2c Find the common ratio of a geometric sequence/series.</p> <p>2cii. Write general terms and use general terms to find certain terms of a geometric sequence.</p> <p>2ciii. Evaluate geometric summations.</p> <p>3c. Use combinations/Pascal's Triangle and the Binomial Theorem to expand binomials.</p> <p>4c. Use Fundamental Counting Principle, combinations and permutations to find solutions to word problems involving enumeration.</p> <p>5c. Find simple probabilities, compound probabilities, conditional probabilities</p>
<p><b><u>Assessments:</u></b>  Unit test  Quizzes  Teacher-created Schoology assessments</p>	<p><b><u>Resources:</u></b></p> <p>Common Core Standards</p> <p>Chromebook</p> <p>Internet</p> <p>Calculator</p> <p>Algebra and Trigonometry textbook</p> <p>Teacher-created resources</p>

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<b><u>Grade, Subject:</u> 9, 10, 11, 12; Algebra III/Trigonometry</b>	
<b><u>Strand (Unit):</u> Chapter 6</b>	
<b><u>Big Idea:</u> Trigonometry</b>	
<b><u>PA Content Standards:</u> G.2.1.1 Solve problems involving right triangles. G.2.2.1 Use and/or compare measurements of angles.</b>	<b><u>PA Core Standards:</u>  CC.2.3.HS.A.7 Apply trigonometric ratios to solve problems involving right triangles.  CC.2.3.8.A.3 Understand and apply the Pythagorean theorem to solve problems.  CC.2.3.HS.A.14 Apply geometric concepts to model and solve real-world problems.  13.1.11.A: Relate careers to individual interests, abilities and aptitudes.  13.1.11.B: Analyze career options based on personal interests, abilities, aptitudes, achievements and goals.</b>

<p><b><u>Essential Questions:</u></b></p> <p>1a. What are important concepts regarding angles and their measure?</p> <p>2a. How do we use right triangle trigonometry to set up the 6 trigonometric ratios?</p> <p>3a. How do we evaluate trigonometric functions of any angle?</p> <p>4a. How do we graph the basic sine and cosine functions and the transformations of the sine and cosine functions?</p> <p>5a. How do we evaluate the inverse sine and cosine functions?</p> <p>6a. How do we solve real-life problems involving right triangles?</p>	<p><b><u>Understandings (SWKT...):</u></b></p> <p>1b. How to use angles.</p> <p>2b. Express trig ratios of right triangles using the 6 trig functions.</p> <p>3bi. Determine the quadrant the terminal side of an angle is located given constraints.</p> <p>4b. Graph sine and cosine functions and graphs where period, amplitude and vertical shift are transformed.</p> <p>5a. That inverse sine, cosine and tangent are used to find angle measures.</p> <p>6a. How to set up and solve trig equations to solve real-life problems.</p>
<p><b><u>Vocabulary:</u></b></p> <p>Angle</p> <p>Initial side</p> <p>Terminal side</p> <p>Complement of an angle</p> <p>Supplement of an angle</p> <p>Rotation</p> <p>Coterminal angle</p> <p>Hypotenuse</p> <p>Adjacent</p> <p>Opposite</p> <p>Sine, cosine, tangent, cosecant, secant, cotangent</p> <p>Quadrant</p> <p>Reciprocal</p> <p>Undefined</p> <p>Degrees and radians</p>	<p><b><u>Skills (SWBAT...):</u></b></p> <p>1ci. Use radian measure.</p> <p>1cii. Use degree measure.</p> <p>1ciii. Convert from radian measure to degree measure.</p> <p>1civ. Find coterminal angles in both degrees and radians.</p> <p>2ci. Find the third side of a right triangle using Pythagorean Theorem.</p> <p>2cii. Use SOHCAHTOA to express all 6 trig ratios for an angle in a right triangle.</p> <p>3c. Use angle measures in each quadrant to determine where the terminal side of an angle is located.</p> <p>4c. Find the amplitude, period and midline and use it to graph sine and cosine wave transformations.</p> <p>5c. Use their calculator or special right triangles to find inverse functions.</p> <p>6c. Use SOHCAHTOA to set up trig equations to find lengths or angle measures.</p>

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<p><b><u>Strand (Unit): Chapter 8: Additional Topics in Trigonometry</u></b></p>	
<p><b><u>Big Idea: Law of Sines, Law of Cosines</u></b></p>	
<p><b><u>PA Content Standards:</u></b></p>	<p><b><u>PA Core Standards:</u></b></p>
<p><b><u>Essential Questions:</u></b>  1a. What is the Law of Sines?  2a. What is the Law of Cosines?</p>	<p><b><u>Understandings (SWKT...):</u></b>  1bi. How to use the Law of Sines to solve oblique triangles  1bii. How to find the area of oblique triangles given 2 sides and an included angle  2bi. How to use the Law of Cosines to solve oblique triangles</p>

	<p>2bii. How to find the area of oblique triangles given 3 sides of a triangle</p>
<p><b><u>Vocabulary:</u></b> Oblique triangle</p>	<p><b><u>Skills (SWBAT...):</u></b>  1ci. Use the Law of Sines to set up and solve proportions in order to solve triangles.  1cii. Determine which formula for the area of a triangle to use and use it to find the area of a triangle given two sides and an included angle.  2ci. Use the Law of Cosines to set up and solve proportions in order to solve triangles.  2cii. Determine which formula for the area of a triangle to use and use it to find the area of a triangle given three sides of a triangle.</p>
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