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**Algebra II/Trigonometry**

**Guiding Principle**

*A student at the proficient level in Algebra II/Trigonometry will be able to demonstrate understanding of high school mathematics by solving problems, reasoning, communicating, representing, making connections and solving word problems based on the following indicators:*

<b>Benchmark/Topics</b>	<b>As a result of studying Algebra II/Trigonometry, I will be able to:</b>
(1) Functions <ul style="list-style-type: none"> <li>• Solving</li> <li>• Graphing</li> <li>• Composite</li> <li>• Inverse</li> <li>• Curve Fitting</li> </ul>	7.1.1 Demonstrate an understanding of functions when I can <ul style="list-style-type: none"> <li><input type="checkbox"/> Solve graphically, numerically and algebraically</li> <li><input type="checkbox"/> Graph any type of function using its characteristics</li> <li><input type="checkbox"/> Compose two or more functions</li> <li><input type="checkbox"/> Determine and graph an inverse</li> <li><input type="checkbox"/> Choose an appropriate function to model a set of data</li> </ul>
(2) Inequalities and Absolute Value <ul style="list-style-type: none"> <li>• Solving</li> <li>• Graphing</li> <li>• Linear Programming</li> </ul>	3.3.2 Utilize algebraic methods to <ul style="list-style-type: none"> <li><input type="checkbox"/> Solve inequalities and absolute value equations/ inequalities</li> <li><input type="checkbox"/> Graph inequalities and absolute value equations/ inequalities</li> <li><input type="checkbox"/> Solve linear programming problems</li> </ul>
(3) Factoring <ul style="list-style-type: none"> <li>• Sum of Cubes</li> <li>• Difference of Cubes</li> <li>• Grouping (more difficult)</li> <li>• Solving polynomial equations of degree 2 and higher</li> </ul>	3.2.3 Apply methods of factoring to <ul style="list-style-type: none"> <li><input type="checkbox"/> Factor polynomials completely using the following methods:               <ul style="list-style-type: none"> <li><input type="checkbox"/> Sum of cubes</li> <li><input type="checkbox"/> Difference of cubes</li> <li><input type="checkbox"/> Grouping (more difficult)</li> </ul> </li> <li><input type="checkbox"/> Solve polynomial equations of degree 2 and higher</li> </ul>
(4) Radicals and Complex Numbers <ul style="list-style-type: none"> <li>• Simplify</li> <li>• Basic Operations</li> <li>• Rationalize</li> <li>• Solving</li> </ul>	2.2.4 Show understanding of radicals and complex numbers when I can <ul style="list-style-type: none"> <li><input type="checkbox"/> Simplify radicals and complex numbers</li> <li><input type="checkbox"/> Perform basic operations with radicals and complex numbers</li> <li><input type="checkbox"/> Rationalize radicals and complex numbers</li> <li><input type="checkbox"/> Solve equations involving radicals and complex numbers</li> </ul>

<p>(5) Quadratic Equations and Inequalities</p> <ul style="list-style-type: none"> <li>• Graphing</li> <li>• Solving</li> <li>• Curve Fitting</li> </ul>	<p>3.3.5 Show understanding of quadratic equations and inequalities when I can</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Graph quadratic equations/inequalities</li> <li><input type="checkbox"/> Solve quadratic equations/inequalities</li> <li><input type="checkbox"/> Use an appropriate method to model data that is quadratic in nature</li> </ul>
<p>(6) Systems of Equations</p> <ul style="list-style-type: none"> <li>• Three equations, three unknowns</li> <li>• Systems of different degrees</li> </ul>	<p>3.4.6 Solve systems of equations including</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Systems with three equations, three unknowns</li> <li><input type="checkbox"/> Systems of different degrees (e.g. linear and quadratic)</li> </ul>
<p>(7) Integral and Fractional Exponents</p> <ul style="list-style-type: none"> <li>• Rules of exponents</li> <li>• Simplifying</li> <li>• Graphing</li> <li>• Solving</li> <li>• Curve Fitting</li> </ul>	<p>2.1.7 Demonstrate my understanding of integral and fractional exponents when I can</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Apply the rules of exponents</li> <li><input type="checkbox"/> Simplify expressions containing integral and fractional exponents</li> <li><input type="checkbox"/> Graph equations containing integral and fractional exponents</li> <li><input type="checkbox"/> Solve equations containing integral and fractional exponents</li> <li><input type="checkbox"/> Use an appropriate method to model data that is exponential in nature</li> </ul>
<p>(8) Rational Expressions, Equations and Inequalities</p> <ul style="list-style-type: none"> <li>▪ Simplify</li> <li>▪ Solve</li> </ul>	<p>3.3.8 Show understanding of rational expressions, equations and inequalities when I can</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Simplify rational expressions</li> <li><input type="checkbox"/> Solve equations and inequalities that contain rational expressions</li> </ul>
<p>(9) Introduction to Logarithms</p> <ul style="list-style-type: none"> <li>• Exponential form to Logarithmic form</li> <li>• Rules of Logarithms</li> <li>• Solving</li> </ul>	<p>3.3.9 Demonstrate understanding of logarithms when I can</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Write an expression in exponential form given logarithmic form</li> <li><input type="checkbox"/> Write an expression in logarithmic form given exponential form</li> <li><input type="checkbox"/> Apply the rules of logarithms to simplify and solve expressions/equations</li> </ul>
<p>(10) Introduction to Trigonometry</p> <ul style="list-style-type: none"> <li>• Vocabulary</li> <li>• Trig ratios</li> <li>• Converting degrees to radians and vice versa</li> <li>• Unit circle</li> </ul>	<p>4.5.10 Show understanding of trigonometric concepts when I can</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Use appropriate vocabulary</li> <li><input type="checkbox"/> Apply trigonometry ratios to problem situations involving triangles</li> <li><input type="checkbox"/> Convert degrees to radians</li> <li><input type="checkbox"/> Convert radians to degrees</li> <li><input type="checkbox"/> Identify relationships of the unit circle</li> </ul>
<p>(11) Right Triangle Trig</p> <ul style="list-style-type: none"> <li>• Solve right triangles</li> </ul>	<p>4.5.11 Use the relationships of right triangle trigonometry to</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Solve right triangles</li> </ul>
<p>(12) Law of Sines and Cosines</p> <ul style="list-style-type: none"> <li>• Solving triangles</li> <li>• Ambiguous case</li> </ul>	<p>4.5.12 Use the law of sines and law of cosines to</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Solve triangles</li> <li><input type="checkbox"/> Solve triangles involving the ambiguous case</li> </ul>

<p>(13) Identities- Basic Eight, Sums and Differences, Doubles and Halves</p> <ul style="list-style-type: none"> <li>• Simplifying</li> <li>• Verifying</li> <li>• Solving</li> </ul>	<p>7.0.13 Demonstrate understanding of trigonometric identities when I can</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Simplify using trigonometric identities</li> <li><input type="checkbox"/> Solve using trigonometric identities</li> <li><input type="checkbox"/> Verify using trigonometric identities</li> </ul>
<p>(14) Graphing</p> <ul style="list-style-type: none"> <li>▪ Sine, Cosine, Tangent</li> <li>▪ Amplitude, Period, Phase Shift (vertical and horizontal)</li> <li>▪ Curve fitting</li> </ul>	<p>7.2.14 Demonstrate knowledge of periodic functions when I can</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Graph families of sine, cosine and tangent functions</li> <li><input type="checkbox"/> Identify amplitude, period and phase shift</li> <li><input type="checkbox"/> Use an appropriate method to model data that is periodic in nature</li> </ul>

\*Benchmark Key – State Content Standard . State Benchmark . District Benchmark