

## Algebra II Scope and Sequence 1st Semester

Recommended Time	1st Grading Period (9 weeks)	Recommended Time	2nd Grading Period (9 weeks)
<b>3 Weeks</b>	<b>Tools of Algebra</b> <ul style="list-style-type: none"> <li>• First day-“Staking Cup” lab</li> <li>• Algebraic expression ( 2A.1E, 2A.1F)</li> <li>• Classifying and Properties of real #s ( 2A.1B, 2A.1D)</li> <li>• Solving equations-multi step to include no solutions and all real numbers, transforming equations (more than one variable) ( 2A.1A, 2A.1E)</li> <li>• Solving inequalities, compound and special cases ( 2A.3F, 2A.3G)</li> <li>• Solving absolute value equations and inequalities (extraneous solutions) (2A.6D, 2A.6E, 2A.6F)</li> </ul>	<b>4 Weeks</b>	<b>Systems of linear equations, Matrices and inequalities:</b> <ul style="list-style-type: none"> <li>• Solve a system of 2 variable-2 equation algebraically and graphically (2A.3A, 2A.1A, 2A.1G)</li> <li>• Systems of inequalities ( 2A.3E, 2A.3F, 2A.1B, 2A.1F)</li> <li>• linear programming (feasible region) (PAP only) ( 2A.3E, 2A.3G, 2A.1A)</li> <li>• Matrices- add/subtract, multiply ( 2A.1A, 2A.1B, 2A.1C, 2A.1E, 2A.1F)</li> <li>• Determinants 2x2 &amp; 3x3, inverses</li> <li>• Solve a 2 equat/2 variable system with matrices (inverses by hand and calculator, cramers rule) ( 2A.3A, 2A.3B)</li> <li>• Solve 3 equation/3 variable with matrices on calculator ( 2A.3A, 2A.3B, ) PAP Augmented matrices (2A.3B)</li> <li>• Real world problems, reasonableness</li> </ul>
<b>3 Weeks</b>	<b>Linear Functions, equations and graphs</b> <ul style="list-style-type: none"> <li>• Relations vs. Functions ( 2A.1E, 2A.1G, 2A.7I)</li> <li>• Linear equations, direct variation, all 3 forms of linear, parallel, perpendicular, vertical, horizontal, models from word problems ( 2A.1A, 2A.1B, 2A.1C, 2A.1D, 2A.1E, 2A.1F, 2A.1G, 2A.7I, 2A.8B, 2A.8C)</li> <li>• Scatter Plot-Technology</li> <li>• Graph 2 variable linear inequalities, solutions</li> </ul>	<b>4 Weeks</b>	<b>Quadratic functions and equations:</b> <ul style="list-style-type: none"> <li>• Models (sets of data) linear vs quadratic ( 2A.8B)</li> <li>• Attributes of parabolas, vertex, axis of symmetry, x-int, y-int , (graph by hand) <math>y=ax^2+bx+c</math> ( 2A.7I, 2A.1A, 2A.1B, 2A.4F, 2A.1E)</li> <li>• focus, directrix</li> <li>• Transform standard form into vertex form and back</li> <li>• Given the vertex and a point calculate the quadratic equation</li> <li>• Given 3 points calculate the quadratic equation</li> <li>• Complex numbers ( 2A.7A, 2A.1D, 2A.1G)</li> <li>• Solve quadratic equations---factoring, quadratic formula and completing the square (2A.4F, 2A.1A-F)</li> <li>• Quadratic Inequalities (solving) ( 2A.4H)</li> <li>• Systems with a Quadratic and a linear</li> </ul>
<b>3 Weeks</b>	<b>Unit Title: Family of functions</b> <ul style="list-style-type: none"> <li>• Transformations of parent functions <math>F(x+c)</math>, <math>f(x)+d</math>, <math>f(bx)</math>, <math>af(x)</math> and all combinations of...</li> <li>• Domain and range on each (2A.7I)</li> <li>• Transformations on any <math>F(x)</math> function</li> <li>• Function operations <math>f(x)</math>, <math>g(x)</math> add/subtract, <math>f(g(x))</math>...</li> <li>• (2A.1A, 2A.1B, 2A.1C, 2A.1D, 2A.1E, 2A.1F, 2A.1G, 2A.2A, 2A.4C, 2A.6C, 2A.7I)</li> </ul>		

*Algebra 2 uses Carter, John. Algebra 2.Columbus: McGraw Hill Education:2016. Print.*

*This Scope and Sequence was last updated by the Alamo Heights High School Mathematics Department on April 2017*

## Algebra II Scope and Sequence 2nd Semester

Recommended Time	3rd Grading Period (9 weeks)	Recommended Time	4th Grading Period (9 weeks)
4 Weeks	<b>Polynomials and Poly functions (higher degree..):</b> <ul style="list-style-type: none"> <li>• Naming and degree, simplify ( <math>\pm/x</math>) (2A.7B, 2A.1F-G)</li> <li>• Transform from factored form to standard form, graph a poly funct in factored form from intercepts (relative max/min), multiplicity ( 2A.1E-F)</li> <li>• Long and synthetic division, remainder thm. ( 2A.7C, 2A.7D)</li> <li>• Rational root thm (PAP only) (2A.7E)</li> <li>• Factor using sums and differences of cubes, and grouping</li> </ul> Solve poly equations ( 2A.7D, 2A.7E)	4 Weeks	<b>Exponential and Log funct:</b> <ul style="list-style-type: none"> <li>• Exploring exponential models ( write equations from data) Properties of exponential functions( 2A.2A, 2A.5A)</li> <li>• Solve exponential equations (common base) ( 2A.5B, 2A.5D)</li> <li>• Inverse is the log funct, its properties ( 2A.2C, 2A.5C, 2A.5A)</li> <li>• Properties of logs and natural log (Rules)</li> </ul> Exponential and log/natural log equations (2A.5B, 2A.5C, 2A.5D, 2A.5E) <ul style="list-style-type: none"> <li>• Word problems ( 2A.5B)</li> </ul>
4 Weeks	<b>Radical Functions and rational exponents:</b> <ul style="list-style-type: none"> <li>• Alg I exponent rules</li> </ul> Simplify root and radical expressions w/variables ( 2A.7G) <ul style="list-style-type: none"> <li>• Add/subtract radical expressions ( 2A.7G)</li> </ul> Multi/divide radical expressions ( 2A.7G)           Binomial radical expressions ( 2A.7G) <ul style="list-style-type: none"> <li>• Rational exponents ( 2A.7H)</li> <li>• Solving square root and other radical equations (to include rational exponents) ( 2A.2C, 2A.4F, 2A.4G)</li> <li>• Composition of functions ( 2A.1D-E)</li> </ul> Functions and their inverses ( 2A.2B, 2A.2D)	4 Weeks	<b>Rational Functions:</b> <ul style="list-style-type: none"> <li>• Inverse variation (review) ( 2A.6L)</li> <li>• Reciprocal funct family-graph using asymptotes(transformations) ( 2A.2A, 2A.6G, 2A.6K)</li> <li>• Rational funct and its graphs—points of discontinuity (2A.2A, 2A.6G, 2A.6K)</li> <li>• Rational expressions ( add, subtract, multiply &amp; divide) ( 2A.7F)</li> <li>• Solving rational equations( 2A.6H, 2A.6I, 2A.6J)</li> </ul>

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