Fairview High School

Algebra 2 Curriculum Map

Unit/Time Frame	Standards	Content	Skills	Assessment	Resources

Essential Questions for Chapters 1 and 2:

1. What Algebra I skills are required to be successful in this course?
2. How can equations and inequalities be used to model real world situations?
3. How would you determine which representation would be appropriate for a given event?
4. When are inequalities more appropriate than equations in describing a situation?
5. What makes an answer reasonable?

Chapter 1: Expressions, Equations, and Inequalities 1.1 Patterns and Expressions 1.2 Properties of Real Numbers 1.3 Algebraic Expressions 1.* Order of Operations 1.4 Solving Equations 1.* Problem Solving Unit 1.* Proportional Reasoning (2.2, 2011 Edition from Holt) 1.5 Solving Inequalities-Part 1 Compound Inequalities-Part 2 1.6 Absolute Value Equations-Part 1 Absolute Value Inequalities-Part 2	**Common Core Standards** CC.9-12.A.CED.1 CC.9-12.A.CED.2 CC.9-12.A.CED.3 CC.9-12.A.CED.4 CC.9-12.A.REI.1 CC.9-12.A.REI.3 CC.9-12.A.REI.12 CC.9-12.F.IF.1 CC.9-12.F.IF.2 CC.9-12.F.IF.5 CC.9-12.F.IF.6 CC.9-12.F.IF.9	Variables Solving Equations and Inequalities Absolute Values Functions Linear Models Transformations	• To identify and describe patterns • To identify and order real numbers • To identify properties of real numbers • To evaluate and simplify expressions • To employ order of operations • To solve equations • To solve problems by writing equations • To solve proportional equations • To solve and graph inequalities • To write and solve compound inequalities • To write and solve equations and inequalities involving absolute values • To graph relations • To identify functions • To write and evaluate functions	Textbook Assignments Worksheet Assignments Notebooks Section Quizzes Quizzes Tests Oral Responses Observations **(same for following units)**	Passing the Algebra 2 EOC Assessment Prep Book Textbook Prentice-Hall Algebra II Foundation Series 2011 Ed. TI-84 Series Graphing Calculators **(same for following units)**

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Chapter 2: Functions, Equations, and Graphs 2.1 Relations and Functions-Parts 1 and 2 (Function Notation) 2.2 Direct Variation-Graph by Ordered Pairs 2.3 Linear Functions and Slope-Intercept Form (inc. Graphing) 2.4 More Linear Equations- Part 1 and Part 2 2.5 Using Linear Models 2.7 Absolute Value Functions and Graphs (from Holt 4.6) 2.8 Two Variable Inequalities (Graphing)			• To write and interpret direct variation equations • To write linear functions and equations for lines • To write equations of lines • To graph equations of lines • To write equations of parallel and perpendicular lines • To write linear equations that model real-world data • To make predictions from linear models • To graph absolute value functions • To graph 2-variable inequalities		

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Essential Questions for Chapters 3, 4, and 5: 1. How can simultaneous equations be used to model real world situations? 2. How does equivalence relate to quadratic functions? 3. How can quadratic functions be used to model real world situations? 4. How can the complex number field be related to quadratic equations? 6. How can higher-order polynomials and be used to best describe and help explain real world situations? 7. How can polynomials be combined using operations and transformed by factoring, while applying mathematical properties? 8. How are multiple representations of polynomial functions related? 9. How can exponential and logarithmic functions be used as tools to best describe and best explain real world situations?					
Chapter 3: **Linear Systems** **3.1 Solving Systems Using Tables and Graphs** **3.2 Solving Systems Algebraically** **3.*Problem Solving** **3.3 Systems of Inequalities** **3.4 Linear Programming** **3.5 Systems with Three Variables** **3.6 Solving Systems with Matrices** **Factoring Unit** **Chapter 4:** **Quadratic Functions and Equations**	**CC.9-12:** **N.Q.1** **N.CN.1** **N.CN.2** **N.CN.3** **N.CN.4** **N.CN.5** **N.CN.7** **A.SSE.2** **A.SSE.3** **A.CED.1** **A.CED.2** **A.CED.3** **A.REI.4** **A.REI.5** **A.REI.10** **A.REI.11** **A.REI.12** **F.IF.4** **F.IF.5** **F.IF.7** **F.IF.8**	Solving Systems of Linear Equations Solving Systems of Inequalities Describing and Graphing Quadratic Functions Finding Zeroes of Quadratic Functions Complex Numbers	• To solve linear systems by graphs and tables • To solve linear systems using substitution and elimination • To solve problems involving systems of equations • To solve systems of inequalities • To identify and graph quadratic functions • To graph quadratic functions written in standard form • To find common and binomial factors of quadratic expressions • To factor special quadratic expressions • To solve quadratic equations by factoring and		

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4.1 Quadratic Functions and Transformations **4.2 Standard Form of Quadratic Equations (Part 1 only)** **4.4 Factoring Quadratic Expressions (Part 1 and 2)** **4.* Factoring Quadratic Expressions** **4.5 Solving Quadratic Equations by Factoring (Part 1)** **4.5 Graphing Quadratic Equations (Part 2)** **4.*Zeroes of Functions** **4.5 Simplifying Radicals** **4.6 Solving Quadratic Equations-Taking Square Roots (Part 1)** **4.6 Solving Quadratic equations-Completing the Square (Part 2)** **4.7 Quadratic Formula** **4.8 Complex Numbers**	**F.IF.9** **F.BF.3**		using a table • To solve quadratic equations by hand and graphing • To solve equations by finding square roots • To solve a perfect square trinomial equation • To solve equations by completing the square • To rewrite functions by completing the square • To determine the number of solutions of a quadratic equation by the discriminant • To solve quadratic equations by the quadratic formula • To identify, graph, and perform operations with complex numbers • To find complex number solutions of quadratic equations		

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Chapter 5: Polynomials **5.1 Polynomial Functions** **5.2 Polynomials, Linear Factors, and Zeroes (Both Parts)** **5.3 Solving Polynomial Equations (Both Parts)** **5.4 Dividing Polynomials (Parts 1 and 2)** **5.5 Theorems About Roots of Polynomial Equations** **5.6 The Fundamental Theorem of Algebra** **Chapter 7 Exponential and Logarithmic Functions** **7.1 Exploring Exponential Models** **7.2 Properties of Exponential Functions (Parts 1 and 2)** **7.3 Logarithmic Functions as Inverses**	**CC.9-12.A.N.CN.8** **CC.9-12.a.N.CN.9** **CC.9-12.A.APR.1-7** **CC.9-12.A.REI.2** **CC.9-12.A.F.IF.7** **CC.9-12.A.F.B.F.4** **CC.9-12.A.F.LE.4**	Polynomial Functions Zeroes of Polynomial Functions Writing Polynomial Functions Solving Polynomial Equations Exponential and Logarithmic Models	• To apply exponential properties • To classify polynomials • To graph polynomial functions and describe end behavior • To add and subtract polynomials • To multiply polynomials • To factor cubic polynomials • To analyze polynomials of greater degree • To write a polynomial function from its zeroes • To identify relative maxima and minima • To solve polynomial equations by factoring • To solve polynomial equations by graphing • To divide polynomials using long division • To divide polynomials using synthetic division • To model exponential growth and decay • To explore the properties of the form y=abx • To graph the exponential functions that have base e • To write and evaluate logarithmic expressions		

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			• To graph logarithmic functions		
Essential Questions for Chapters 8 and 6: 1. Are a rational expression and its simplified form equivalent? 2. How are rational expressions and rational equations applied to real world situations? 3. How do we simplify the nth root of an expression? 4. When you square both sides of an equation does it result in an equivalent equation? **5.** How are functions and inverse functions related?					
Chapter 8: **Rational Functions** **8.4 Rational Expressions** **8.5 Adding and Subtracting Rational Expressions** **8.6 Solving Rational Equations** **Chapter 6:** **Radical functions and Rational Exponents** **6.1 Roots and Radical Expressions** **6.2 Multiplying and Dividing Radical Expressions** **6.4 Rational Exponents** **6.5 Solving Square Root and Other Radical Equations**	**CC.9-12.A.APR.1** **CC.9-12.A.APR.6-7** **CC.9-12.A.REI.2** **CC.9-12.A.REI.11**	Simplifying Rational Expressions Solving Rational Equations Radical Expressions Rational Exponents and Radical Equations Graphing Radical Functions	• To simplify rational expressions • To multiply and divide rational expressions • To add and subtract rational expressions • To solve rational equations • To use rational equations to solve problems • To find nth roots • To multiply radical expressions • To divide radical expressions • To use rational exponents • To solve square root and other radical equations • To add subtract, multiply, and divide functions • To find the composition of two functions • To find the inverse of a relation or function • To graph square root and		

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6.6 Trigonometric Operations **6.7 Inverse Relations and Functions** **6.8 Graphing Radical Functions**	**Essential Questions for chapters 9, 11, 12, 13, 14:** 1. How can you represent the terms of a sequence explicitly? How can you represent them recursively? 2. What is the difference between a permutation and a combination? 3. How can you use a matrix to organize data? 4. How can you model periodic behavior? 5. How do the trigonometric functions relate to the trigonometric ratios for a right triangle?		other radical functions		
Chapter 9: Sequences and Series 9.2 Arithmetic Sequences 9.3 Geometric Sequences 9.4 Arithmetic Series 9.5 Geometric Sequences	A.SSE.4 F.IF.3		• To define, identify, and apply arithmetic sequences and series, and geometric sequences and series.		
10.3 Equations of Circles	G.GPE.1		• To write and graph the equation of a circle. • To find the center and radius of a circle and use them to graph the circle.		

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Chapter 11: Probability and Statistics 11.1 Permutations and Combinations 11.2 Probability 11.3 Probability of Multiple Events 11.4 Conditional Probability	S.CP.9 S.IC.2 S.CP.7 S.CP.6		• To count permutations and combinations. • To find the probability of an event using theoretical, experimental, and simulation methods. • To find the probability of the event A and B. • To find the probability of the event A or B.		
Chapter 12: Matrices 12.1 Adding and Subtracting Matrices 12.2 Matrix Multiplication 12.3 Determinants and Inverses	N.VM.8 N.VM.10 N.VM.6 N.VM.7 N.VM.12		• To add, subtract, and multiply matrices. • To find the determinant and discriminant of a matrix.		
Chapter 13: 13.1 Periodic Data 13.2 Angles and the Unit Circles 13.4 The Sine Functions 13.5 The Cosine Functions	F.TF.2 F.TF.5 F.TF.4		• To work with angles in standard position. • To identify properties of the sine and cosine functions.		

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Chapter 14: 14.3 Right Triangle Trig Ratios 14.4 Law of Sines 14.5 Law of Cosines	G.SRT.9 G.SRT.11 G.SRT.10		• To find the area of any triangle. • To use the Law of Sines and the Law of Cosines.		

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