Scope and Sequence

Subject/Title of Unit	Grade	6 Weeks	Estimated Time Frame (# of days)
Algebra 2 *Chapter 4 Quadratic Functions and Factoring	10-12	2nd	17 days

TEKS/Student Expectations	Examples/Specifications:
The student uses properties and attributes of functions and applies functions to problem situations. Following are performance descriptions. 2A.1.B – In solving problems, the student collects data and records results, organizes the data, makes scatterplots, fits the curves to the appropriate parent function, interprets the results, and proceeds to model, predict, and make decisions and critical judgments. *The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations. Following are performance descriptions.* 2A.2.A – The student uses tools including matrices, factoring, and properties of exponents to simplify expressions and transform and solve equations. 2A.2.B – The student uses complex numbers to describe the solutions of quadratic equations. *The student formulates systems of equations and inequalities from problem situations, uses a variety of methods to solve them, and analyzes the solutions in terms of the situations. Following are performance descriptions.* 2A.3.A – The student analyzes situations and formulates systems of equations or inequalities in two or more unknowns to solve problems. 2A.3.B – The student uses algebraic methods, graphs, tables, or matrices, to solve systems of equations or inequalities. *The student connects algebraic and geometric representations of functions. Following are performance descriptions.* 2A.4.A – The student identifies and sketches graphs of parent functions, including linear ($y = x$), quadratic ($y = x^2$), square root ($y = \sqrt{x}$), inverse ($y = 1/x$), exponential ($y = a^x$), and logarithmic ($y = \log_a x$) functions. 2A.4.B – The student extends parent functions with parameters such as m in $y = mx$ and describes parameter changes on the graph of parent functions.	✓ Student will be able to write quadratic functions and models ✓ Student will be able to perform operations with complex numbers ✓ Student will be able to graph quadratic function in standard form ✓ Student will be able to graph quadratic functions in vertex or intercept form

The student knows the relationship between the geometric and algebraic descriptions of conic sections. Following are performance descriptions. 2A.5.E – The student uses the method of completing the square. *The student understands that quadratic functions can be represented in different ways and translates among their various representations. Following are performance descriptions* 2A.6.A – For given contexts, the student determines the reasonable domain and range values of quadratic functions, as well as interprets and determines the reasonableness of solutions to quadratic equations and inequalities. 2A.6.B – The student relates representations of quadratic functions, such as algebraic, tabular, graphical, and verbal descriptions. 2A.6.C - The student determines a quadratic function from its roots or a graph. *The student interprets and describes the effects of changes in the parameters of quadratic functions in applied and mathematical situations. Following are performance descriptions.* 2A.7.A – The student uses characteristics of the quadratic parent function to sketch the related graphs and connects between the $y = ax^2 + bx + c$ and the $y = a(x - h)^2 + k$ symbolic representations of quadratic functions. 2A.7.B – The student uses the parent function to investigate, describe, and predict the effects of changes in a, h, and k on the graphs of $y = a(x - h)^2 + k$ form of a function in applied and purely mathematical situations. *The student formulates equations and inequalities based on quadratic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. Following are performance descriptions.* 2A.8.A – The student analyzes situations involving quadratic functions and formulates quadratic equations or inequalities to solve problems. 2A.8.B – The student analyzes and interprets the solutions of quadratic equations using discriminants and solves quadratic equations using the quadratic formula. 2A.8.C – The student compares and translates between algebraic and graphical solutions of quadratic equations 2A.8.D – The student solves quadratic equations and inequalities. G.5.D, G.8.C	✓ Student will be able to solve $x^2 + bx + c = 0$ by factoring ✓ Student will be able to solve $ax^2 + bx + c = 0$ by factoring ✓ Student will be able to solve quadratic equations by finding square roots ✓ Student will be able to use the quadratic formula and the discriminant

<table>
<tr><th>Process of Instruction/Products:</th><th>Instructional Resources/Textbook Correlations:</th></tr>
<tr><td>Lecture using transparencies and note taking on:
1. Graph Quad Functions in standard form (4.1)
2. Graph Quad Functions in vertex or intercept form (4.2)
3. Solve $x^2 + bx + c = 0$ by Factoring (4.3)
4. Solve $ax^2 + bx + c = 0$ by Factoring (4.4)
5. Solve Quadratic Equations by Finding Square Root (4.5)
6. Perform Operations with Complex Numbers (4.6)
7. Complete the Square (4.7)
8. Use the Quadratic Formula and the Discriminant (4.8)
9. Graph and Solve Quadratic Inequalities (4.9)
10. Write Quadratic Functions and Models (4.10)

White board activity and student directed assignment for test review of concepts</td><td>McDougal Littell/ Larson
Algebra 2

CH 4 pages 234 - 337</td></tr>
<tr><th>Language of Instruction</th><th>Weblinks/Other Resources:</th></tr>
<tr><td>Standard form of a quadratic function root of an equation
Parabola vertex form intercept from
Quadratic equation zero of a function square root
Complex number imaginary number discriminant
quadratic formula best fitting quadratic model</td><td>www.coolmath.com</td></tr>
<tr><th>Evaluation/External Assessment/Local Assessment:</th><th>Best Instruction Timeline:</th></tr>
<tr><td>Daily Homework
In-class work
End of Unit Test
2-5 Quizzes</td><td>Day 1
Day 2
Day 3
Day 4, 5
Day 6
Day 7, 8
Day 9, 10
Day 11
Day 12, 13
Day 14
Day 15
Day 16
Day 17</td></tr>
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