



WEST SHORE SCHOOL DISTRICT
Algebra II Learning Module 3

Title of Module	Quadratic Functions	Grade Level	10-12
Curriculum Area	Algebra II	Time Frame	25 days

Desired Results

Best Practices

- Make sense of the problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct Viable Arguments and critique the reasoning of others
- Model with Mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

Transfer Goals

Students will be able to independently use their learning to...

- Connect old problem solving techniques to new curriculum.
- Connect new material to real world applications.
- Create viable mathematical arguments and use them to critique the arguments of fellow classmates.

Key Learnings/Big Ideas

Students will learn able to evaluate, manipulate, solve, and analyze polynomials of the second degree (Quadratics).

Content, Reading and Writing Standards

CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents.	CC.2.1.HS.F.3 Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.	CC.2.1.HS.F.7 Apply concepts of complex numbers in polynomial identities and quadratic equations to solve problems.	CC.2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.	CC.2.2.HS.D.9 Use reasoning to solve equations and justify the solution method.
CC.2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers.	CC.2.2.HS.D.4 Understand the relationship between zeros and factors of polynomials to make generalizations	CC.2.2.HS.D.10 Represent, solve, and interpret equations/	CC.2.2.HS.C.5 Construct and compare quadratic models to solve problems.	

<p>CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials.</p>	<p>about functions and their graphs.</p> <p>CC.2.2.HS.C.4 Interpret the effects transformations have on functions</p>			
<p>Essential Questions</p>		<p>Vocabulary (Best Practices) Utilize concepts & competencies to add to vocabulary</p>		
<p>Unit EQ: How do Second Degree Polynomials (Quadratics) behave and how are they solved? LEQs</p> <ol style="list-style-type: none"> Using basic evaluation, describe the graphical difference between lines and parabolas. What are the differences and similarities between standard and vertex form with respect to graphing parabolas? How are Quadratic Transformations performed? How are Quadratic Expressions factored? What does it mean to solve a Quadratic Equation and what are the different methods for solving? What is an imaginary numbers and how do they dictate the properties of complex numbers? Why does the Discriminant always give the number of solutions for a Parabola? 		<p>Polynomial Expression Evaluate Parabola X-Intercepts Solutions, Roots, Zeros Factor Perfect Square Radical (Square Root) Radicand Quadratic Formula Discriminant Imaginary Unit Complex Numbers</p>		
<p>Concepts Students will know...</p>		<p>Skills/Competencies (I Can...) Based on LEQs Students will be able to...</p>		
<ol style="list-style-type: none"> The graph of a quadratic equation is a parabola Quadratic Equations can be represented in both standard and vertex form The x-intercepts of a parabola are the solutions to the equations A Quadratic equation will either have 2 real solutions, 1 real solutions, or 2 imaginary solutions Quadratic equations can be solved algebraically using the square-root method, factoring, quadratic formula, or completing the square Find imaginary solutions and write them in 		<ol style="list-style-type: none"> I can sketch a parabola by evaluating a quadratic function at multiple points I can use standard and vertex form to graph parabolas. I can solve quadratic equations using several different algebraic methods I can use imaginary and complex numbers 		

simplest radical form	
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Assessment Evidence

Formative Assessment

Think-Pair-Share, Organized Guided Notes and Checkpoints, Mini-Whiteboards

Summative Assessment

Common Assessments

Best Instructional Practices

- [Activating Strategies](#)
- [Extended Thinking](#)
- [Summarizing](#)
- [Vocabulary in Context](#)
- [Advance Organizers](#)
- [Non-verbal Representation](#)
- [Integration of Webb's Depth](#)
- [Integration of 21st Century Skills](#)
- [Reading and writing across disciplines](#)
- [Rigor and Relevance](#)

21 Century Skills

Learning and Innovation Skills

Information, Media, and Technology Skills

Life and Career Skills

Resources

Student	Teacher

Adapted from Wiggins, Grant and J. Mc Tighe. (1998). *Understanding by Design*, Association for Supervision and Curriculum Development, ISBN # 0-87120-313-8 (ppk)