

Franklin-Simpson High School

Course Name: *Algebra II*

Unit Name: *Quadratic Functions, Equations and Inequalities*

Quality Core Objective

Unit 5 Quadratic Equations, Inequalities, and Functions	
B.1. Mathematical Processes	a. Apply problem-solving skills (e.g., identifying irrelevant or missing information, making conjectures, extracting mathematical meaning, recognizing and performing multiple steps when needed, verifying results in the context of the problem) to the solution of real-world problems
	b. Use a variety of strategies to set up and solve increasingly complex problems
	c. Represent data, real-world situations, and solutions in increasingly complex contexts (e.g., expressions, formulas, tables, charts, graphs, relations, functions) and understand the relationships
	d. Use the language of mathematics to communicate increasingly complex ideas orally and in writing, using symbols and notations correctly
	e. Make appropriate use of estimation and mental mathematics in computations and to determine the reasonableness of solutions to increasingly complex problems
	f. Make mathematical connections among concepts, across disciplines, and in everyday experiences
	g. Demonstrate the appropriate role of technology (e.g., calculators, software programs) in mathematics (e.g., organize data, develop concepts, explore relationships, decrease time spent on computations after a skill has been established)
	h. Apply previously learned algebraic and geometric concepts to more advanced problems
C.1. Foundations	a. Identify complex numbers and write their conjugates
	b. Add, subtract, and multiply complex numbers
	c. Simplify quotients of complex numbers
E.1. Equations and Inequalities	a. Solve quadratic equations and inequalities using various techniques, including completing the square and using the quadratic formula
	b. Use the discriminant to determine the number and type of roots for a given quadratic equation
	c. Solve quadratic equations with complex number solutions
	d. Solve quadratic systems graphically and algebraically with and without technology
E.2. Graphs, Relations and Functions	b. Use transformations (e.g., translation, reflection) to draw the graph of a relation and determine a relation that fits a graph
	c. Graph a system of quadratic inequalities with and without technology to find the solution set to the system

Purpose: *Use quadratic functions to model and solve problems encountered in the world*

Prerequisites: *Students should have mastered the following:*

- *Solving linear equations*
- *Solving absolute value equations*
- *Writing and graphing linear equations in slope-intercept form*
- *Solving systems of equations*

Content Standards: (categories)

Numbers and Quantity

- *complex numbers*

Functions

- *interpreting and building functions*

Algebra

- *structure in expressions,*
- *arithmetic with polynomials and rational expressions*
- *creating equations*
- *reasoning with equations and inequalities*

9/10	<i>solve quadratic equations by factoring and graphing</i>				
(4.5)	A.CED.1, A.APR.3, A.SSE.1.a				
11/12	<i>solve quadratic equations by completing the square</i>				
(4.6)	A.REI.4.b				
13/14	<i>Solve quadratics using quadratic equation and determine number of solutions by using the discriminant</i>				
(4.7)	A.REI.4.b				
15/16	<i>Find complex number solutions of quadratic equations</i>				
(4.8)	N.CN.1, N.CN.2, N.CN.7, N.CN.8				

<p>17/18</p> <p>(4.9)</p>	<p><i>Solve and graph systems of linear and quadratic equations and inequalities</i></p> <p>A.CED.3, A.REI.7, A.REI.11</p>				
<p>19</p>	<p><i>Review</i></p>				
<p>20</p>	<p><i>Summative assessment</i></p>				