


Algebra Curriculum Bundle # 8

Title		Suggested Dates
Solving Quadratic Equations		February 1– February 19 (13 days)

Big Idea/Enduring Understanding	Guiding Questions
Quadratic equations can be used to model real world situations and can be solved using multiple strategies.	<ol style="list-style-type: none"> 1. How many ways can you solve a quadratic equations and how do you choose the best way to solve a particular quadratic equation? 2. If a quadratic equation doesn't factor easily, does that mean it doesn't have solutions? 3. Where does the quadratic formula come from?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the District Curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)	
PSAT online score report - one day has been planned in this bundle to go to computer lab to see report and SAT study plans with students in 10th and 11th grade only.			
<p>A.11 The student understands there are situations modeled by functions that are neither linear nor quadratic and models the situations.</p> <p>A.11A The student uses patterns to generate the laws of exponents and applies them in problem-solving situations.</p> <p><u>Note:</u> Focus on adding, subtracting, multiplying and dividing polynomials. Multiplying, dividing, adding, and subtracting monomials was covered in bundle 7.</p>	<ul style="list-style-type: none"> • Use iteration, repeated multiplication and division, tables, and/or models to generate laws of exponents. • Use laws of exponents to find area, given length & width. • Use laws of exponents to find length or width given area. • Examples: <ul style="list-style-type: none"> ○ Given length = $2x^2y$ and width = $4x^3y$, find area. ○ Area = $525x^5y^8$ and length = $25x^2y^4$, find width 	<p>Holt: Section 7.3 – 7.8, 7.3 lab, 7.6 lab, 7.7 lab</p> <p>Discovering: Section 6.3, 6.5, 6.6</p>	<p>Dana Center Window Panes</p> <p>A&M: Spring Section 2.1 – 2.6</p>

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<p>A.4 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.</p> <p>A.4A The student finds specific function values, simplifies polynomial expressions, transforms and solves equations, and factors as necessary in problem situations.</p> <p>Note: Continued into next bundle to provide additional time</p>	<ul style="list-style-type: none"> • Investigations with and without a graphing calculator • Combine like terms to simplify expressions. • Focus on conceptual understanding rather than computation skills. • Evaluate a function at a particular given value for x. • Simplify polynomial expressions. • Factor to solve • Understand the relationship between factoring and the roots on a table and/or graph 	<p>Holt: Section: 7.5 – 7.8, 9.5 – 9.7, 9.9</p> <p>Discovering: Section 9.3 – 9.5, 9.7</p>	<p>A&M: Spring Section 2.1 – 2.6</p>
<p>A.10 The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods.</p> <p>A.10A The student solves quadratic equations using concrete models, tables, graphs, and algebraic methods.</p> <p>Note: Continued into next bundle to provide additional time</p>	<ul style="list-style-type: none"> • Determining an appropriate method for solving a quadratic equation based upon the parameters. • Relate the different methods of solving quadratic equations (graphical, tabular, factoring, quadratic formula) to each other. • With and without a graphing calculator 	<p>Holt: Section: 8.2 – 8.6, 8.2 lab, 8.3 lab, 8.4 lab</p> <p>Discovering: Section 9.6</p>	<p>Dana Center Fireworks Celebration Golfing How Much Paint? Insects in the Water Sky Diving Supply and Demand Calculating Costs</p> <p>A&M: Spring Section 5.1 – 5.5, 6.3</p>
<p>A.10 The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods.</p> <p>A.10B The student makes connections among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts (x-intercepts) of the graph of the function.</p> <p>Note: Continued into next bundle to provide additional time; focus on solving by factoring; solve by graphing in bundle 9.</p> <p>Prior to teaching solving quadratic equations using square roots, it might be necessary to review square roots and real numbers (seen in Holt 1.5)</p>	<ul style="list-style-type: none"> • Understand that roots, solutions, x-intercepts, and zeros are related in a function and use each appropriately • Determine the solutions from each of different representations of a quadratic function 	<p>Holt: Section: 9.5 – 9.7, 9.9</p> <p>Discovering: Section 9.2, 9.4, 9.7</p>	<p>Dana Center Block That Kick BRRR!</p> <p>LTF: Another Way to Look at Factoring</p>

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<p>A.1 The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</p> <p>A.1D The student represents relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities.</p>	<ul style="list-style-type: none"> • Make connections between various representations, including how an ordered pair in the table matches a point on the graph and how it relates to the equation. • Describe and/or generate various views of a function from another view of that function. • Match one representation (ex. Table) of a function with other representations (ex. Graph) for the same function. • Relate domain (x) to horizontal axis and range (y) to vertical axis. 	<p>Incorporate into other resources</p>	
<p>A.4 Foundations for Functions. 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.</p> <p>A.4C The student connects equation notation with function notation, such as $y = x + 1$ and $f(x) = x + 1$</p>	<ul style="list-style-type: none"> • Compare advantages/disadvantages of both notations and when to use them. 	<p>Incorporate into other resources</p>	