



Curriculum and Instruction – Mathematics

Quarter 1

Algebra II

Algebra II: Year at a Glance

Quarter 1		Quarter 2			Quarter 3		Quarter 4	
Expressions, Equations, Inequalities Various Functions, Equations & Their Graphs, Linear Systems, Quadratic Functions & Equations		Polynomials, Radicals, Inverses, Logarithms, Exponential Functions			Rational Expressions and Equations, Arithmetic and Geometric Sequences and Series, Probability		Trigonometric Functions, Pythagorean Identities, Unit Circle <i>TNReady April 13- May 8</i>	
August 12, 2019 – October 11, 2019		October 21, 2019 – December 20, 2019			January 6, 2020 – March 13, 2020		March 23, 2020 – May 22, 2020	
A2.A.REI. D.6	A2.A.REI. B.3	A2.A.APR. A.1	A2. F.IF. A.1	A2. F.IF. B.5	A2.A.REI. A.1	A2. S.CP. A.2	A2. F.TF.A.1	
A2.F.BF. A.1	A2.A.REI. B.3a	A2.A.APR. A.2	A2. F.IF. A.2	A2. F.LE. A.1	A2.A.REI. A.2	A2. S.CP.A.3	A2. F.TF.A.1a	
A2.F.BF. A.1a	A2. S.ID. B.2	A2.A.REI. A.1	A2. A. CED.A.1	A2. F.LE. A.2	A2.A.REI. D.6	A2. S.CP.A.4	A2. F.TF.A.1b	
A2.F.BF. A.1b	A2. A.N.Q.A.1	A2.A.REI. A.2	A2. A. CED.A.2	A2. S.ID. B.2	A2.A.SSE. B.3	A2. S.CP.B.5	A2. F.TF.A.2	
A2. A. CED.A.1	A2. F.IF.B.3a	A2.A.REI. D.6	A2.N.RN. A.1	A2. A.N.Q.A.1	A2.F.BF. A.1a	A2. S.CP.B.6	A2. F.TF.B.3	
A2. A. CED.A.2		A2.A.SSE. A.1	A2.N.RN. A.2	A2. F.BF.B.3	A2.F.BF. A.1b	A2. S.ID. A.1	A2. F.TF.B.3a	
A2.A.REI. C.4		A2.A.SSE. B.2/2a	A2.A.APR. B.3	A2. F.BF.B.4	A2.F.BF. A.2	A2. A. APR.C.4	A2. F.TF.B.3b	
A2.REI. C.5		A2.A.SSE. B.3	A2. F.IF. B.3a	A2. F.LE. B.3	A2. S.IC.A.1	A2. F.BF.B.4	A2. A.N.Q.A.1	
A2. N.C.N. A.1		A2.F.BF. A.1/1a	A2. F.IF. B.3b	A2.A.APR. B.3	A2. S.IC.A.2	A2. A.N.Q.A.1		
A2. N.C.N. A.2		A2.F.BF. A.1b	A2. F.IF. B.3c		A2. F. IF.A.1	A2. F. IF.B.3		
A2. N.C.N. B. 3		A2.A.APR. C.4	A2. F.IF.B.4		A2. S.CP. A.1	A2.F.LE. A.1		

■ Major Content

➤ Supporting Content

★(star) Modeling Standard/Domain



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Introduction

Destination 2025, Shelby County Schools' 10-year strategic plan, is designed not only to improve the quality of public education, but also to create a more knowledgeable, productive workforce and ultimately benefit our entire community.

What will success look like?



In order to achieve these ambitious goals, we must collectively work to provide our students with high quality, college and career ready aligned instruction. The Tennessee State Standards provide a common set of expectations for what students will know and be able to do at the end of a grade. The State of Tennessee provides two sets of standards, which include the Standards for Mathematical Content and The Standards for Mathematical Practice. The Content Standards set high expectations for all students to ensure that Tennessee graduates are prepared to meet the rigorous demands of mathematical understanding for college and career. The eight Standards for Mathematical Practice describe the varieties of expertise, habits of mind, and productive dispositions that educators seek to develop in all students. The Tennessee State Standards also represent three fundamental shifts in mathematics instruction: **focus, coherence and rigor**.

Instructional Shifts for Mathematics



Throughout this curriculum map, you will see resources as well as links to tasks that will support you in ensuring that students are able to reach the demands of the standards in your classroom. In addition to the resources embedded in the map, there are some high-leverage resources around the content standards and mathematical practice standards that teachers should consistently access. For a full description of each, click on the links below.



■ Major Content

➤ Supporting Content

★(star) Modeling Standard/Domain



How to Use the Maps

Overview

An overview is provided for each quarter and includes the topics, focus standards, intended rigor of the standards and foundational skills needed for success of those standards.

Your curriculum map contains four columns that each highlight specific instructional components. Use the details below as a guide for information included in each column.

Tennessee State Standards

TN State Standards are located in the left column. Each content standard is identified as Major Content or Supporting Content (for Algebra I, Algebra II & Geometry only). A key can be found at the bottom of the map.

Content

This section contains learning objectives based upon the TN State Standards. Best practices tell us that clearly communicating measurable objectives lead to greater student understanding. Additionally, essential questions are provided to guide student exploration and inquiry.

Instructional Support & Resources

District and web-based resources have been provided in the Instructional Support & Resources columns. You will find a variety of instructional resources that align with the content standards. The additional resources provided should be used as needed for content support and scaffolding. The inclusion of vocabulary serves as a resource for teacher planning and for building a common language across K-12 mathematics. One of the goals for Tennessee State Standards is to create a common language, and the expectation is that teachers will embed this language throughout their daily lessons.

Instructional Calendar

As a support to teachers and leaders, an instructional calendar is provided **as a guide**. Teachers should use this calendar for effective planning and pacing, and leaders should use this calendar to provide *support* for teachers. Due to variances in class schedules and differentiated support that may be needed for students, adjustment to the calendar may be required.



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Topics Addressed in Quarter

Create and Solve Equations and Inequalities
Write and Solve Systems of Linear Equations
Solve quadratic equations in One Variable

Solve Quadratic Equations with Real Coefficients that have Complex Solutions
Perform Arithmetic Operations with Complex Numbers
Solve a System of a Linear and a Quadratic equation in Two Variables

Overview

In quarter 1 students build upon the reasoning used to solve equations and their fluency in factoring polynomial expressions. They will build functions that model a relationship between two quantities, represent and solve equations and inequalities graphically. Later in the quarter students will solve systems of linear and nonlinear equations to which no real solutions exist and then relate this to the possibility of quadratic equations with no real solutions. Students will then discover that complex numbers can be used in finding real solutions of polynomial equations. To reach this goal, students will work with properties and operations of complex numbers and then apply that facility to factor polynomials with complex zeros.

Content Standard	Type of Rigor
A2.CED.A.1	Procedural Fluency, Application, Conceptual Understanding
A2.CED.A.2	Procedural Fluency, Application, Conceptual Understanding
A2.A.N.Q.A.1	Procedural Fluency, Application, Conceptual Understanding
A2.F.BF.A.1	Conceptual Understanding & Application
A2.F.BF.A.1a	Conceptual Understanding & Application
A2.F.BF.A.1b	Procedural Fluency, Application, Conceptual Understanding
A2.S.ID.B.2	Procedural Fluency, Application, Conceptual Understanding
A2.A.REI.B.3	Procedural Fluency
A2.A.REI.B.3a	Procedural Fluency, Conceptual Understanding
A2.A.REI.C.4	Procedural Fluency, Conceptual Understanding
A2.A.REI.C.5	Procedural Fluency
A2.A.REI.D.6	Conceptual Understanding & Procedural Fluency
A2.F.IF.B.3a	Procedural Fluency, Conceptual Understanding
A2.N.CN.A.1	Conceptual Understanding
A2.N.CN.A.2	Procedural Fluency, Conceptual Understanding
A2.N.CN.B.3	Procedural Fluency
 indicates a Power Standard based on the 2017-18 TN Ready Assessment	
Instructional Focus Document (Algebra II)	



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Expressions, Equations, and Inequalities <i>(Allow approximately 1 week for instruction, review, and assessment.)</i>			
<p>Domain: Creating Equations Cluster: Create equations that describe number relationships.</p> <p>■ A2.A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems. ★ <i>Include equations arising from linear and quadratic functions, and rational and exponential functions.</i> <i>Tasks have a real-world context.</i></p> <p>■ A2.A.CED.A.2 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. <i>i) Tasks are limited to square root, cube root, polynomial, rational, and logarithmic functions.</i> <i>ii) Tasks have a real-world context.</i></p> <p>Domain: Quantities Cluster: Reason quantitatively and use units to solve problems</p> <p>➤ A2.A.N.Q.A.1 Identify, interpret, and justify appropriate quantities for the purpose of descriptive modeling. ★</p>	<p>Essential Question(s):</p> <ul style="list-style-type: none"> How do you use patterns to understand mathematics and model situations? How can a problem be solved and why is one method chosen over another? <p>Objective(s):</p> <ul style="list-style-type: none"> Students will write and solve equations and justify the solution path chosen. (A2.A.CED.A.1, A2.A.CED.A.2, A2.A.N.Q.A.1) Students will write, solve and graph inequalities and justify the solution path chosen. (A2.A.CED.A.1, A2.A.N.Q.A.1) 	<p><i>Use the textbook resources to address procedural fluency.</i></p> <p>Pearson 1-4 Solving Equations 1-5 Solving Inequalities</p> <p>Glencoe 1-3 Solving Equations 1-5 Solving Inequalities</p> <p><i>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</i></p> <p>Additional Resource(s) Optional Algebra Review Through eMathInstruction (Algebra 2 Unit 1) Edutoolbox: Algebra I-Buddy Bags Edutoolbox: Algebra I - Paulie's Pen Edutoolbox: Algebra I - Disc Jockey (expressions) Open Middle</p> <ul style="list-style-type: none"> solve-eqns-w/ an x both sides inequality-given-a-soln-set Eqn soln closest to zero Multi-Step Eqns <p>Math Shell: Equations and Identities* Math Shell: Reasoning with Equations and Inequalities* <small>* Not accessible via SCS server</small></p> <p>HS Flip Book with examples of each Standard</p>	<p>Vocabulary: Equation, solution of an equation, inverse operations, identity, literal equation Compound inequalities</p> <p>Writing in Math / Discussion:</p> <ul style="list-style-type: none"> You solve an equation and find that your school needs 4.3 buses for a class trip. Explain how to interpret this solution. What is the difference between solutions to a compound inequality joined by <i>and</i> compared to those joined by <i>or</i>?



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Functions, Equations, and Graphs (Allow approximately 2 weeks for instruction, review, and assessment.)			
<p>Domain: Building Functions Cluster: Build a function that models a relationship between two quantities.</p> <p>■ A2. F.BF.A.1 Write a function that describes a relationship between two quantities. ★ a. Determine an explicit expression, a recursive process, or steps for calculation from a context.</p> <p><i>For example, given cost and revenue functions, create a profit function.</i> <i>For A2. F.BF.A.1a:</i> i) Tasks have a real-world context. ii) Tasks may involve linear functions, quadratic functions, and exponential functions.</p>	<p>Essential Question(s): What is a relation and when is a relation a function?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> Students will identify, interpret, and graph relations and functions. (A2. F.BF.A.1) 	<p>Use the textbook resources to address procedural fluency.</p> <p>Pearson 2-1 Relations and Functions</p> <p>Glencoe 2-1 Relations and Functions</p> <p>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</p> <p>Additional Resource(s): e Math Instruction: Unit 2 HS Flip Book with examples of each Standard Math Shell: Interpreting Distance & Time Graphs* * Not accessible via SCS server</p>	
<p>Domain: Building Functions Cluster: Build a function that models a relationship between two quantities.</p> <p>■ A2.F.BF.A.1 Write a function that describes a relationship between two quantities. ■ A2.F.BF.A.1a Determine an explicit expression, a recursive process, or steps for calculation from a context. ■ A2.F.BF.A.1b Combine standard function types using arithmetic operations.</p> <p><i>For example, given cost and revenue</i></p>	<p>Essential Question(s): How can the relationship between quantities best be represented?</p> <p>Objective(s): Students will graph and write linear equations and calculate and interpret the rate of change of a function and real world problems. (A2.F.BF.A.1, A2.F.BF.A.1a, A2.F.BF.A.1b)</p>	<p>Use the textbook resources to address procedural fluency.</p> <p>Pearson 2-3 Linear Functions and Slope-Intercept Form</p> <p>Glencoe 2-3 Rate of Change and Slope</p> <p>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</p> <p>Additional Resources</p>	
		<p>Vocabulary: Relation, domain, range, function, vertical-line test, function rule, function notation, independent variable, dependent variable</p> <p>Resources in the Pearson textbook: "Solve it," Think About a Plan, Find the Errors, Multiple word problems, Reasoning question, Compare/contrast question, Open-ended questions, and Connections to other real world topics and/or other subjects</p>	<p>Vocabulary Slope, linear function, linear equations, x-intercept, y-intercept, slope-intercept</p> <p>Writing in Math Describe the process of finding the rate of change for each of the following: a. a table of values b. a graph c. an equation</p>



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<p>functions, create a profit function. For A2. F.BF.A.1a: i) Tasks have a real-world context. ii) Tasks may involve linear functions, quadratic functions, and exponential functions.</p>		<p>Edutoolbox Task Arc: Creating & Interpreting Functions</p> <ul style="list-style-type: none"> Task 1 – Joe's on the Beach Ice Cream Task 2 - Jose's Surfboard Task 3 - Ocoee Sand Dunes Task 4 - More Sand Dunes Task 5- Swimming Pool Depth <p>Oil spills on land 100x100 In & Out Burger (3 Acts Math) Stacking Cups*(3 Acts Math) WaterTank*(3 Acts Math) * Not accessible via SCS server</p> <p>HS Flip Book with examples of each Standard</p>	
<p>Domain: Interpreting Categorical and Quantitative Data</p> <p>Cluster: Summarize, represent, and interpret data on two categorical and quantitative variables.</p> <p>➤ A2.S.ID.B.2 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.</p> <p>a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data.</p>	<p>Essential Question(s): How can you model data with a linear function?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> Students will write linear equations that model real-world data (A2.S.ID.B.2) Students will make predictions from linear models based upon the data. (A2.S.ID.B.2) 	<p>Use the textbook resources to address procedural fluency.</p> <p>Pearson 2-5 Using Linear Models</p> <p>Glencoe 2-5 Scatter Plots and Lines of Regression and Correlation</p> <p>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</p> <p>Additional Resource(s): e Math Instruction: Unit 3 How to Weigh an Alligator NCTM Illuminations: Line of Best Fit Math Shell: Bird Eggs * * Not accessible via SCS server</p>	



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<p>Domain: Reasoning with Equations and Inequalities</p> <p>Cluster: Represent and solve equations graphically.</p> <p>■ A2.A.REI.D.6 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the approximate solutions using technology. ★ <i>Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.</i></p> <p>A2.F.IF.B.3 Graph functions expressed symbolically and show key features of the graph, by hand and using technology. ★</p> <p>a. Graph square root, cube root, and piecewise defined functions, including step functions and absolute value functions</p>	<p>Essential Question(s):</p> <ul style="list-style-type: none"> • What is an absolute value function? • Why is there more than one solution for an absolute value? • How can I solve an equation involving absolute values? <p>Objective(s):</p> <ul style="list-style-type: none"> • Students will graph and find solutions of absolute value functions using a variety of strategies. (A2.A.REI.D.6) • The students will apply translations, stretches, compressions, and reflections to the absolute value function. (A2.F.IF.B.3) 	<p>HS Flip Book with examples of each Standard</p> <p><i>Use the textbook resources to address procedural fluency.</i></p> <p>Pearson 2-7 Absolute Value Functions and Graphs</p> <p>Glencoe 2-7 Parent Functions and Transformations</p> <p><i>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</i></p> <p>Additional Resources: Absolute Value Functions Lesson & resources</p>	
<p>Linear Systems (Allow approximately 1.5 weeks for instruction, review, and assessment.)</p>			
<p>Domain: Reasoning with Equations and Inequalities</p> <p>Cluster: Solve systems of equations.</p> <p>➤ A2.A.REI.C.4 Write and solve a system of linear equations in context.</p> <p>Cluster: Represent and solve equations graphically.</p>	<p>Essential Question(s):</p> <ul style="list-style-type: none"> • How does representing functions graphically help you solve systems of equations? • When can you use substitution to solve a system? • When can you use elimination to solve a system of linear equations? • Why is it helpful to use matrices to solve 	<p><i>Use the textbook resources to address procedural fluency.</i></p> <p>Pearson 3-1 Solving Systems Using Tables and Graphs 3-2 Solving Systems Algebraically 3-6 Solving Systems Using Matrices</p> <p>Glencoe</p>	



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<p>■ A2.A.REI.D.6 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the approximate solutions using technology. ★</p> <p><i>Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.</i></p>	<p>systems of linear equations?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> Students will solve a linear system using a graph or a table. (A2.A.REI.C.4) Students will solve a linear system using substitution. (A2.A.REI.C.4) Students will solve a linear system using elimination. (A2.A.REI.C.4) Students will represent a system of linear equations with a matrix. (A2.A.REI.C.4) Students will solve a system of linear equations with matrices. (A2.A.REI.C.4) 	<p>3-1 Solving Systems of Equations by Graphing 3-2 Solving Systems of Equations Algebraically 4-6 Augmented Matrices</p> <p>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</p> <p>Eureka Math Algebra 2 Module 1 Topic C, Lesson 30</p> <p>Additional Resources: Edutoolbox: Amusement Park Edutoolbox: Gorp Task Edutoolbox: Delivery Truck Edutoolbox: Knitting Knots Math Shell: Printing Tickets * Cycling Situations Math Shell: Best Buy Tickets * Math Shell: Cash Registers * System of Equations and Inequalities Flying Through the St Louis Gateway Arch HS Flip Book with examples of each Standard</p> <p><small>*Not accessible via SCS server</small></p>	<ul style="list-style-type: none"> Why might you use different methods for solving a system of equations? <p>Resources in the Pearson textbook: "Solve it," Think About a Plan, Find the Errors, Multiple word problems, Reasoning question, Compare/contrast question, Open-ended questions, and Connections to other real world topics and/or other subjects</p>
<p>Quadratic Functions and Equations Allow approximately 4.5 weeks for instruction, review, and assessment.)</p>			
<p>Domain: Reasoning with Equations and Inequalities</p> <p>Cluster: Represent and solve equations and inequalities graphically.</p> <p>■ A2.A.REI.D.6 Explain why the x-</p>	<p>Essential Questions: How can you use the system of equations/inequalities to model and solve contextual problems?</p>	<p>Use the textbook resources to address procedural fluency.</p> <p>Pearson 4-1 Quadratic Functions and Transformations</p>	<p>Vocabulary Quadratic function, quadratic equation, roots, maximum, minimum, standard form</p> <p>Writing in Math</p>



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<p>coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the approximate solutions using technology. ★</p> <p><i>Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.</i></p> <p>Domain: Building Functions Cluster: Build a function that models a relationship between two quantities.</p> <ul style="list-style-type: none"> ■ A2.F.BF.A.1 Write a function that describes a relationship between two quantities. ■ A2.F.BF.A.1a Determine an explicit expression, a recursive process, or steps for calculation from a context. ■ A2.F.BF.A.1b Combine standard function types using arithmetic operations. <i>For example, given cost and revenue functions, create a profit function. For A2. F.BF.A.1a:</i> <ol style="list-style-type: none"> i) Tasks have a real-world context. ii) Tasks may involve linear functions, quadratic functions, and exponential functions. 	<p>Objective(s):</p> <ul style="list-style-type: none"> • Students will identify, compare, and graph quadratic functions. (A2.F.IF.B.3). • Students will solve and graph systems of linear quadratic equations and inequalities. (A2.F.BF.A.1b) • Students will describe approximate solutions in the context of the real-world scenario (A2.F.BF.A.1, A2.F.BF.A.1a) 	<p>4-2 Standard Form of a Quadratic Function</p> <p>Glencoe 5-1 Graphing Quadratic Functions</p> <p>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</p> <p>Additional Resource(s) e Math instruction: Unit 6 Illustrative Math: Introduction to Polynomials Illustrative Math: Two Squares are Equal TN Alg Task Arc: Developing an Understanding of Quadratics Edutoolbox: Forms of a Function Edutoolbox: Vegetable Garden Edutoolbox Assessment Resources Gr. 11-12: Bottle Rocket & One Rocket Three Equations Graphing Families of Quadratic Functions (Texas Instruments) HS Flip Book with examples of each Standard</p>	<ul style="list-style-type: none"> • Describe how you determine whether a function is quadratic and if it has a maximum or minimum value. • Is standard form or vertex form the best way to write a quadratic equation? • What are different methods of solving systems of equations and what are the advantages and disadvantages of each? <p>Resources in the Pearson textbook: " Solve it," Think About a Plan, Find the Errors, Multiple word problems, Reasoning question, Compare/contrast question, Open-ended questions, and Connections to other real world topics and/or other subjects</p>
<p>Domain: Creating Equations Cluster: Create equations that describe numbers or relationships.</p> <ul style="list-style-type: none"> ■ A2.A.CED.A.1 Create equations and inequalities in one variable and use them to 	<p>Essential Question(s): How can you write the equation of a parabola without knowing the vertex?</p>	<p>Use the textbook resources to address procedural fluency.</p> <p>Pearson 4-3 Modeling with Quadratic Functions</p>	<p>Vocabulary Standard form</p>



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<p>solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i></p> <p><i>Include equations arising from linear and quadratic functions, and rational and exponential functions.</i></p> <p><i>Tasks have a real-world context.</i></p> <p>Domain: Interpreting Categorical and Quantitative data</p> <p>Cluster: Summarize, represent, and interpret data on two categorical and quantitative variables.</p> <p>➤ A2.S.ID.B.2 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data.</p>	<p>Objective(s):</p> <ul style="list-style-type: none"> Students will model data with quadratic functions. (A2.A.CED.A.1, A2.S.ID.B.2) 	<p>Glencoe 5.8 Quadratic Inequalities</p> <p><i>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</i></p> <p>Additional Resource(s): e Math instruction: Unit 6 Edutoolbox Assessment Resources Gr. 11-12: Root of the Problem; Food to Go; TN Alg Task Arc: Developing an Understanding of Quadratics- Circus Acts Illustrative Math: Buying a Car Illustrative Math: Planes and Wheat Ball Bounce (Texas Instruments) HS Flip Book with examples of each Standard</p>		<p>Writing in Math Name two real world situations that need the quadratic function and explain your reasoning.</p>
<p>Domain: The Complex Number System</p> <p>Cluster: Use complex numbers in polynomial identities and equations.</p> <p>➤ A2.N.CN.B.3 Solve quadratic equations with real coefficients that have complex solutions.</p> <p>Domain: Reasoning with Equations and Inequalities</p> <p>Cluster: Solve equations and inequalities in one variable</p> <p>➤ A2.A.REI.B.3 Solve quadratic equations and inequalities in one variable. a. Solve quadratic equations by inspection (e.g., for $x^2 = 49$),</p>	<p>Essential Question(s): How can features of polynomial functions such as the equation, solutions, axis of symmetry, vertex, etc. be represented in tables, equations, and in “real world” contexts?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> Students will solve quadratic equations by factoring, by using a table, and by graphing. (A2.N.CN.B.3, A2.A.REI.B.3) Students will identify the zeros of a polynomial where appropriate and graph the function defined by the polynomial 	<p><i>Use the textbook resources to address procedural fluency.</i></p> <p>Pearson 4-5 Quadratic Equations</p> <p>Glencoe 5-2 Solving Quadratic Equations by Graphing</p> <p><i>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</i></p> <p>Eureka Math Module 1 Topic D Lesson 36</p>		<p>Vocabulary Factored form, Zero of the function, Zero-Product Property</p> <p>Writing in Math Explain how to solve a quadratic equation by graphing its related quadratic function.</p> <p>Resources in the Pearson textbook: " Solve it," Think About a Plan, Find the Errors, Multiple word problems, Reasoning question, Compare/contrast question, Open-ended</p>



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<p>taking square roots, completing the square, knowing and applying the quadratic formula, and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.</p>	<p>(A2.N.CN.B.3, A2.A.REI.B.3)</p>	<p>Additional Resources TN Task, Alg. 2- Boxed In TN Task, Alg. 1 - Cliffhanger TN Task, Alg. 1 - Fencing for Josephine's garden (linear and quadratic) HS Flip Book with examples of each Standard</p>	<p>questions, and Connections to other real world topics and/or other subjects</p>
<p>Domain: Reasoning with Equations and Inequalities Cluster: Solve systems of equations.</p> <p>➤ A2.A.REI.B.3 Solve quadratic equations in one variable. Scope & Clarifications: In the case of equations that have roots with nonzero imaginary parts, students write the solutions as $a \pm bi$ for real numbers a and b.</p> <p>a. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, applying the quadratic formula, and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.</p> <p>Domain: The real number system Cluster: Perform Arithmetic operations with complex numbers</p> <p>➤ A2.N.CN.B.3 Solve quadratic equations with real coefficients that have complex solutions.</p>	<p>Essential Question(s):</p> <ul style="list-style-type: none"> Why structure expressions in different ways? Why is the Quadratic Formula important? <p>Objective(s):</p> <ul style="list-style-type: none"> Students will find common and binomial factors of quadratic expressions. (A2.A.REI.B.3) Students will solve equations, and solve problems involving functions by completing the square. (A2.A.REI.B.3, A2.N.CN.B.3) Students will solve quadratic equations using the Quadratic Formula. (A2.A.REI.B.3, A2.N.CN.B.3) Students will determine the number of solutions by using the discriminant. (A2.N.CN.B.3) 	<p>Use the textbook resources to address procedural fluency.</p> <p>Pearson 4-6 Completing the Square 4-7 The Quadratic Formula</p> <p>Glencoe 5-5 Completing the Square 5.6 Quadratic Formula and the Discriminant</p> <p>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</p> <p>Additional Resource(s): e Math instruction: Unit 6 Illustrative Math: Braking Distance Illustrative Math: Zero Product Property 4 Illustrative Math: Completing the Square HS Flip Book with examples of each Standard Quadratic Equations Part I Quadratic Equations Part II *Not accessible via SCS server</p>	<p>Vocabulary Completing the square Quadratic Formula, discriminant</p> <p>Writing in Math Explain what it means to complete the square. Describe each step.</p> <p>Describe four different ways to solve $x^2 - 2x - 15 = 0$. Which method do you prefer and why?</p>



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<p>Domain: The Complex Number System Cluster: Perform arithmetic operations with complex numbers.</p> <ul style="list-style-type: none"> ➤ A2.N.CN.A.1 Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real. ➤ A2.N.CN.A.2 Know and use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. 	<p>Essential Question(s): What are complex numbers?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • Students will identify, graph, and perform operations with complex numbers. (A2.N.CN.A.1, A2.N.CN.A.2) • Students will determine the number of solutions by using the discriminant. (A2.N.CN.B.3) 	<p><i>Use the textbook resources to address procedural fluency.</i></p> <p>Pearson 4-8 Complex Numbers</p> <p>Glencoe 5.4 Complex Numbers and the Complex Plane</p> <p><i>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</i></p> <p>Additional Resource(s): e Math instruction: Unit 9 Illustrative Math: Complex Number Patterns Illustrative Math: Powers of a Complex Number Classifying Complex Numbers</p>	<p>Vocabulary Imaginary unit, imaginary number, complex number, pure imaginary number, complex number plane, absolute value of a complex number, complex conjugates</p> <p>Writing in Math Explain how complex numbers are related to quadratic equations? When a quadratic equation has no linear term, what are the possible solutions?</p>
<p>Domain: Reasoning with Equations and Inequalities Cluster: Solve systems of equations.</p> <ul style="list-style-type: none"> ➤ A2.A.REI.C.5 Solve a system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. ■ A2.A.REI.D.6 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the approximate solutions using technology. ★ 	<p>Essential Question(s): What are the various methods that one can use to solve quadratic inequalities?</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • Students will solve and graph systems of linear and quadratic equations. (A2.A.REI.C.5, A2.A.REI.D.6) • Students will find the point(s) of intersection of a linear function and a quadratic function. (A2.A.REI.C.5, A2.A.REI.D.6) • Students will solve a system consisting of a linear equation and a quadratic equation algebraically. (A2.A.REI.C.5, A2.A.REI.D.6) 	<p><i>Use the textbook resources to address procedural fluency.</i></p> <p>Pearson 4.9 Quadratic Systems</p> <p>Glencoe 10.7 Solving Linear-Nonlinear Systems</p> <p><i>Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.</i></p> <p>Eureka Math Module 1 Lessons 31-32</p>	<p>Vocabulary: No new vocabulary</p> <p>Writing in Math: Describe how the methods used to solve systems of linear equations are similar to the methods used to solve a quadratic system.</p>



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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
<i>Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.</i>	<ul style="list-style-type: none">Manipulate with graphing calculator to analyze set of solutions of systems of equations/inequalities in two variables. (A2.A.REI.C.5, A2.A.REI.D.6)	Additional Resource(s): Illustrative Math: Pythagorean Triples Illustrative Math: The Circle and the Line Graphing Calculator Investigation HS Flip Book with examples of each Standard	

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RESOURCE TOOLKIT

<p>Textbook Resources</p> <p>Pearson: http://www.pearsonsuccessnet.com</p> <p>Online Tools</p> <p>Homework Video Tutors Lesson Quizzes</p>	<p>Glencoe: https://connected.mcgraw-hill.com/connected/login.do</p> <p>Online Tools</p> <p>Chapter Animation Chapter Quizzes & Tests Editable Worksheets Anticipation Guides Personal Tutors Lesson PowerPoints Enrichment Masters Graphing Calculator Activities</p>	<p>Standards</p> <p>Common Core Standards - Mathematics Common Core Standards - Mathematics Appendix A Edutoolbox (formerly TNCore) The Mathematics Common Core Toolbox PARCC Blueprints and Test Specifications FAQ CCSS Toolbox PARCC High School Math Tasks TICommonCore.com TN Department of Education Math Standards PARCC Practice Test HS Flip Book with Examples of each Standard JMAP Instructional Focus Document (Algebra II) TN Department of Education Assessment Live Binder Achieve the Core Coherence Map</p>	<p>Videos</p> <p>Brightstorm Teacher Tube The Futures Channel Khan Academy Math TV Lamar University Tutorial e Math instruction</p>
<p>Additional Sites</p> <p>TN Dept. of Education Assessment Live Binder UT Dana Center Mars/Math Shell Tasks* (Not accessible via SCS server) Plus.Maths.org- (Not accessible via SCS server) Quadratic Equations Part I Quadratic Equations Part II Inside Math Tasks Math Vision Project Tasks Better Lesson Dana Center Algebra 2 Assessments University of Idaho Literacy Strategies</p>		<p>Interactive Manipulatives</p> <p>Illuminations (NCTM) National Math Resources NASA Space Math Math Vision Project Purple Math</p> <p>ACT & SAT</p> <p>TN ACT Information & Resources ACT College & Career Readiness Mathematics Standards ACT Academy SAT Connections SAT Practice from Khan Academy</p>	<p>Calculator</p> <p>Math Nspired Texas Instrument Resources Casio Activities Desmos</p> <p>SEL Resources</p> <p>SEL Connections with Math Practices SEL Core Competencies The Collaborative for Academic, Social, and Emotional Learning (CASEL)</p>



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August 2019

Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
				1	2	<i>Please use this suggested pacing as a guide. It is understood that teachers may be up to 1 week ahead or 1 week behind depending on their individual class needs.</i>
	5	6	7	8	9	
	12	13	14	15	16	
Use this time to establish routines, procedures, and build positive classroom culture. Additional SEL resources: SEL Connections and SEL Competencies						
	1 st Quarter Begins					
Pearson 1.4, 1.5, 2.1, 2.3; emathInstruction Unit 2; Selected Tasks	19	20	21	22	23	



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Pearson 2.5, 2.7; emathInstruction Unit 3; Absolute Value Function Lessons Selected Tasks	26	27	28	29	30
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September 2019

Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
Pearson 3.1, 3.2, 3.6; EM: M1, Lesson 30 Selected Tasks: Edutoolbox; Mathshell	2 <i>Labor Day</i>	3	4	5	6	<i>Please use this suggested pacing as a guide. It is understood that teachers may be up to 1 week ahead or 1 week behind depending on their individual class needs.</i>
Continued; Pearson 4.1	9	10	11	12	13	
Pearson 4.2, 4.3, 4.5, emathInstruction - Unit 6 EM: Module 1 Topic D Lesson 36 Selected Tasks: IM; Edutoolbox; TN Tasks	16	17	18	19 <i>Parent Teacher Conferences</i>	20 <i>½ day students</i>	
	23	24	25	26	27	

■ Major Content

➤ Supporting Content

★(star) Modeling Standard/Domain



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	30	1	2	3	4	
October 2019						
Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
Pearson 4.6, 4.7 emathInstruction- Unit 6 Selected Tasks: IM; TN Tasks	30	1	2	3	4	<i>Please use this suggested pacing as a guide. It is understood that teachers may be up to 1 week ahead or 1 week behind depending on their individual class needs.</i>
Pearson 4.8. 4.9 emathInstruction – Unit 9 Selected Tasks: IM; TN Tasks Remediation, Review & Assessment	7	8	9	10	11 <i>½ day students</i> <i>End of 1st Quarter</i>	
	14	15	16	17	18	
<i>Fall Break</i>						
	21 <i>2nd Quarter Begins</i>	22	23	24	25	



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	28	29	30	31	1	
				Halloween		

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■ Major Content

➤ Supporting Content

★(star) Modeling Standard/Domain