| Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 |
|---|---|---|---|
| Properties of Exponents, Expressions, Equations, and Inequalities, Linear Systems, Various Functions & Their Graphs, Rational and Irrational Expressions | Polynomials, Quadratic Functions and Equations | Basic Geometry, Similar Triangles, Measurement | Right Triangles, Probability and Statistics, Distance and Midpoint Formulas, Operations on Functions, Exponential Functions |
| August 6, 2018 – October 5, 2018 | October 15, 2018 – December 19, 2018 | January 7, 2019 – March 8, 2019 | March 18, 2019 – May 24, 2019 |
| B.A.CED.A.1 | B.A.APR.A.1 | B.A.REI.A.1 | B.A.REI.D.4 |
| B.A.CED.A.2 | B.A.APR.B.2 | B.A.SSE.A.2 | B.F.IF.C.6 |
| B.A.CED.A.3 | B.A.REI.B.2 | B.G.C.A.1 | B.G.SRT.B.2 |
| B.A.SSE.A.1 | B.F.IF.A.2 | B.G.GMD.A.1 | B.G.SRT.B.3 |
| B.A.REI.C.3 | B.F.IF.C.4 | B.G.GMD.A.2 | B.G.SRT.B.4 |
| B.A.REI.D.5 | B.N.CN.A.1 | B.G.GMD.A.3 | B.S.CP.A.1 |
| B.F.IF.A.1 | B.N.CN.A.2 | B.G.MG.A.1 | B.S.CP.A.2 |
| B.F.IF.B.3 | B.N.Q.A.1 | B.G.MG.A.2 | B.S.CP.A.3 |
| B.F.IF.C.4 | B.N.Q.A.3 | B.G.SRT.A.1 | B.S.CP.A.4 |
| B.F.IF.C.5 | | B.N.Q.A.2 | B.S.ID.A.1 |
| B.N.RN.A.1 | | | B.S.ID.B.2 |
| B.N.Q.A.1 | | | B.S.ID.B.3 |
| B.N.Q.A.3 | | | |
| B.S.ID.C.4 | | | |

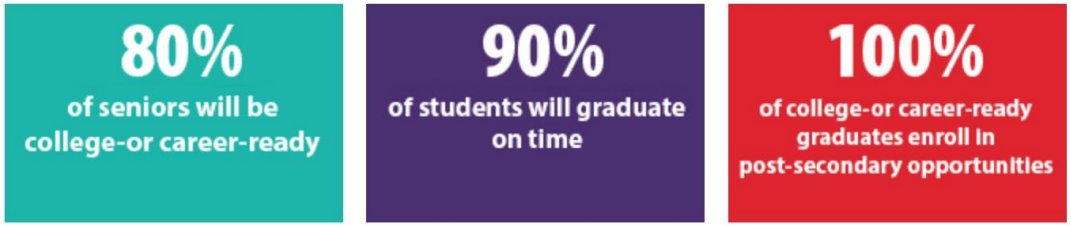


Tennessee Academic Standards for Mathematics

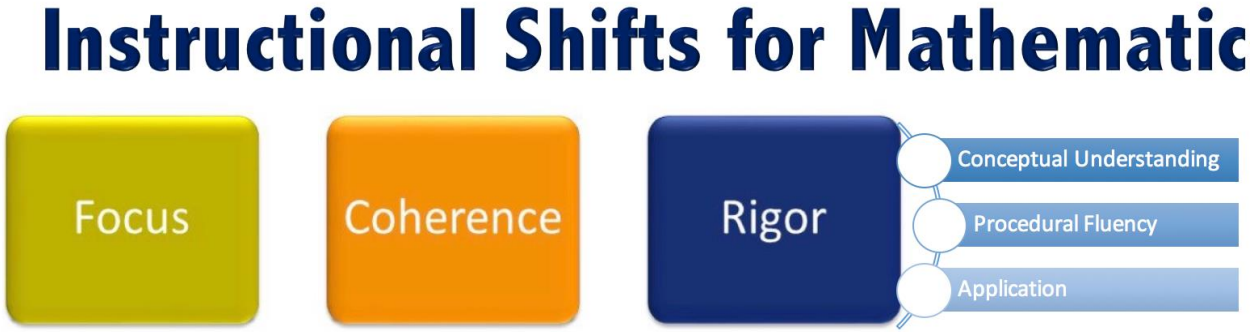
## Introduction

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**.




Tennessee Academic Standards for Mathematics

The **Standards for Mathematical Practice** describe varieties of expertise, habits of minds and productive dispositions that mathematics educators at all levels should seek to develop in their students. These practices rest on important National Council of Teachers of Mathematics (NCTM) "processes and proficiencies" with longstanding importance in mathematics education. Throughout the year, students should continue to develop proficiency with the eight Standards for Mathematical Practice. The following are the eight Standards for Mathematical Practice:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of them.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

This curriculum map is designed to help teachers make effective decisions about what mathematical content to teach so that ultimately our students can reach Destination 2025. 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.

Tennessee Mathematics Content Standards

Standards for Mathematical Practice

Literacy Skills for Mathematical Proficency

Tennessee Academic Standards for Mathematics

## Structure of the Standards

Structure of the TN State Standards include:

- **Content Standards** - Statements of what a student should know, understand, and be able to do.
- **Clusters** - Groups of related standards. Cluster headings may be considered as the big idea(s) that the group of standards they represent are addressing. They are therefore useful as a quick summary of the progression of ideas that the standards in a domain are covering and can help teachers to determine the focus of the standards they are teaching.
- **Domains** - A large category of mathematics that the clusters and their respective content standards delineate and address. For example, Number and Operations – Fractions is a domain under which there are a number of clusters (the big ideas that will be addressed) along with their respective content standards, which give the specifics of what the student should know, understand, and be able to do when working with fractions.
- **Conceptual Categories** – The content standards, clusters, and domains in the 9th-12th grades are further organized under conceptual categories. These are very broad categories of mathematical thought and lend themselves to the organization of high school course work. For example, Algebra is a conceptual category in the high school standards under which are domains such as Seeing Structure in Expressions, Creating Equations, Arithmetic with Polynomials and Rational Expressions, etc.



Tennessee Academic Standards for Mathematics

# 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.



Tennessee Academic Standards for Mathematics

## Topics Addressed in Quarter

- **Properties of Real Numbers**
- **Properties of Exponents**
- **Expressions, Equations and Inequalities**
- **Linear Systems**
- **Various Functions & Their Graphs**
- **Rational and Irrational Expressions**

## Overview

Students begin the quarter learning the definition and properties of real numbers and exponential notation. Students expand the definition of exponential notation to include what it means to raise a nonzero number to a zero power; Students discern the structure of exponents by relating multiplication and division of expressions with the same base to combining like terms using the distributive property, and by relating multiplying three factors using the associative property to raising a power to a power.

Students gradually shift to solving linear equations and inequalities and systems of linear equations and inequalities. Throughout middle school, students practiced the process of solving linear equations (**6.EE.5**, **6.EE.7**, **7.EE.4**, **8.EE.7**) and systems of linear equations (**8.EE.8)**. Now instead of just solving equations, they formalize descriptions of what they learned before (variable, solution sets, etc.) and are able to explain, justify, and evaluate their reasoning as they strategize methods for solving linear equations. Students take their experience solving systems of linear equations further as they prove the validity of the addition, substitution and elimination methods and learn a formal definition for the graph of an equation and use it to explain the reasoning of solving systems graphically, and graphically represent the solution to systems of linear inequalities.

After mastering solving of linear equations and inequalities, students apply related solution techniques and the properties of exponents to the creation and solution of simple exponential expressions and students end the quarter multiplying and dividing expressions that contain radicals to simplify their answers.

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| **Chapter 1 Essential Mathematics (McGraw-Hill Bridge Math)**<br>**Chapter 1- Foundations of Algebra & Chapter 7 Exponents and Exponential Functions (Prentice Hall Algebra I)**<br>**(Allow approximately 1.5 weeks for instruction, review, and assessment)** | | | |
| **Domain:** The Real Number System (N. RN)<br>**Cluster:** Use properties of rational and irrational numbers.<br>**B.N.RN.A.1.** Use rational and irrational numbers in calculations and in real world context. | **Essential Question(s):**<br>• What are the definition, description, and difference of rational and irrational numbers?<br>• Why is it important for students to know the square root of a number?<br><br>**Objective(s):**<br>• Students will develop a thorough understanding of both rational and irrational numbers; make both historical and concrete connections between irrational numbers and the real world.<br>• Students will understand that there are numbers that are not rational numbers, called irrational numbers which together with the rational numbers form the real number system that satisfies the law of exponents.<br>• Students will identify and graph real numbers.<br>• Students will use math symbols to describe sets and describe the relationships among sets and elements of sets. | **McGraw-Hill Bridge Math**<br>1-1The Language of Mathematics<br>1-2 Real Numbers<br>1-3 Union and Intersection of Sets<br><br>**Prentice Hall Algebra 1**<br>1-3 Real Numbers and the Number Line<br><br>**Task(s):**<br>Illustrative Mathematics: Operations with Real Numbers<br><br>**Additional Resources:**<br>Brightstorm Video: Introduction to Real Numbers<br>Brightstorm Video: Set Operations-Intersection<br>Khan Academy: Intersection & Union of Sets | **Vocabulary:** square root, radical, perfect square, finite set, infinite set, subset, element of a set, real number, rational number, irrational number, natural number, integer, whole number, universal set, inequality, union, intersection, complement, Venn diagram<br><br>**Writing in Math:**<br>Have students respond to the following in their math journal or notebook.<br>• What are real numbers?<br>• Are there numbers that aren't real?<br>• Compare and contrast the union of a set and the intersection of a set. |
| **Domain:** Quantities (N.Q)<br>**Cluster:** Reason quantitatively and use units to solve problems.<br>**B.N.Q.A.3** Solve problems involving squares, | **Essential Question(s):**<br>• How do exponential functions model real-world problems and their solutions?<br>• How can you determine if two or more | **McGraw-Hill Bridge Math**<br>1-7 Distributive Property and Properties of Exponents | **Vocabulary:** exponential form, base, exponent, distributive property |

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| square roots of numbers, cubes, and cube roots of number<br><br>**Domain:** Seeing Structure in Expressions (A.SSE)<br>**Cluster:** Write expressions in equivalent forms to solve problems.<br>**B.A.SSE.A.1** Use properties of multiplication and division to solve problems containing scientific notation. | expressions are equivalent? How can you generate equivalent expressions?<br><br>**Objective(s):**<br>• Students will use properties of exponents to evaluate and simplify expressions.<br>• Students will use the distributive property to evaluate and simplify expressions.<br>• Students will apply properties to evaluate and simplify expressions. | **Prentice Hall Algebra 1**<br>1-7 The Distributive Property<br>7-1 Zero and Negative Exponents<br>7-3 Multiplying Powers with the Same Base<br>7-4 More Multiplication Properties of Exponents<br>7-5 Division Properties of Exponents<br><br>**Task(s):**<br>Illustrative Mathematics: Forms of Exponential Expressions<br><br>**Additional Resources:**<br>Khan Academy Video: Distributive Property<br>Learnzillion Video: Division property of exponents<br>Khan Academy Videos: Exponent Property Review | **Writing in Math:**<br>Describe how the distributive property can be used to simplify or expand an expression.<br><br>How does the property for powers of a power apply to positive and negative exponents? |
| **Domain:** Quantities (N.Q)<br>**Cluster:** Reason quantitatively and use units to solve problems.<br>**B.N.Q.A.3** Solve problems involving squares, square roots of numbers, cubes, and cube roots of number<br><br>**Domain:** Seeing Structure in Expressions (A.SSE)<br>**Cluster:** Write expressions in equivalent forms to solve problems.<br>**B. A.SSE.A.1** Use properties of multiplication and division to solve problems containing | **Essential Question(s):**<br>• Why is it important to understand how to write numbers in scientific notation?<br>• How does scientific notation differ from standard notation?<br>• How does multiplying by a power of 10 affect the decimal?<br><br>**Objective(s):**<br>• Students will evaluate variable expressions with negative exponents.<br>• Students will write numbers in scientific notation. | **McGraw-Hill Bridge Math**<br>1-8 Exponents and Scientific Notation<br><br>**Prentice Hall Algebra 1**<br>7-2 Scientific Notation<br><br>**Task(s):**<br>Illustrative Mathematics: Ants vs Humans<br><br>**Additional Resources:**<br>Khan Academy Video: Exponent Properties Involving Products<br>TI-84/Navigator Lesson | **Vocabulary:** scientific notation<br><br>**Writing in Math:**<br>Why and how is scientific notation useful in the real world?<br>Describe what happens to a decimal when it is multiplied by $10^{n}$ and $10^{-n}$. |

Tennessee Academic Standards for Mathematics

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| scientific notation.<br>**Domain:** Interpreting Functions (F.IF)<br>**Cluster:** Analyze functions using different representations.<br>**B.F.IF.C.5** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. | • Students multiply and divide numbers expressed in scientific notation. | | |
| **Chapter 2 Essential Algebra (McGraw-Hill Bridge Math)**<br>**Chapter 1 - Foundations of Algebra, Chapter 2 Solving Equations & Chapter 4 An Introduction to Functions (PH Algebra I)**<br>**(Allow approximately 1.5 weeks for instruction, review, and assessment)** | | | |
| **Domain:** Interpreting Functions (I.IF)<br>**Cluster:** Understand the concept of a function and use function notation.<br>**B.F.IF.A.1.** Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).<br><br>**Domain: I**nterpreting Functions (I.IF)<br>**Cluster:** Interpret functions that arise in applications in terms of context.<br>**B.F.IF.B.3** Recognize functions as mappings of an independent variable into a dependent variable. | **Essential Question(s):**<br>• What are the characteristics of a function and how can you use those characteristics to represent the function in multiple ways?<br><br>**Objective(s):**<br>• Students will determine whether a relation is a function.<br>• Students will identify the domain and range of a relation.<br>• Students will represent mathematical relationships using graphs. | **McGraw-Hill Bridge Math**<br>2-2 The Coordinate Plane, Relations, and Functions<br><br>**Prentice Hall Algebra 1**<br>**Review:** Graphing in the Coordinate Plane p. 60<br>4-1 Using Graphs to Relate Two Quantities<br>4-6 Formalizing Relations and Functions<br><br>**Additional Resource(s):**<br>Functions and Their Graphs (section 3.1) | **Vocabulary:** coordinate plane, quadrant, ordered pair, x-coordinate, y-coordinate, function, independent variable, dependent variable, mapping, relation, domain, range<br><br>**Writing in Math:**<br>• Have students list what they know about linear functions.<br>• With a partner, have the students list what they want to find out about linear functions. Each pair must list at least one thing they want to find out about linear functions. |
| **Domain:** Creating Equations (A.CED)<br>**Cluster:** Create equations that describe numbers or relationships.<br>**A.CED.A.1** Create equations and inequalities in one variable and use them to solve real world problems. | **Essential Question(s):**<br>• Why is the concept of a function important and how do you use function notation to show a variety of situations modeled by functions?<br>• What does it mean for a quantity to | **McGraw-Hill Bridge Math**<br>2-3 Linear Functions<br><br>**Prentice Hall Algebra 1**<br>1-8 An Introduction to Equations<br>**Concept Byte:** Using Tables to Solve | **Vocabulary:** zero pairs, linear function, linear equation, open sentence<br><br>**Writing in Math:**<br>• What are the differences between an expression and an equation? |

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| | change at a constant rate?<br>• In what ways can we manipulate an algebraic equation to find the value of an unknown quantity?<br><br>**Objective(s):**<br>• Students will write an equation symbolically to express a contextual problem.<br>• Students will graph linear functions.<br>• Students will solve linear equations by making a table. | Equation, p.59<br>4-2 Patterns and Linear Functions<br><br>**Task(s):**<br>Illustrative Math: Modeling with a Linear Function<br><br>**Additional Resource(s):**<br>Modeling with a Linear Function | • Does a mathematical expression have a solution? Explain. |
| **Domain:** Creating Equations (A.CED)<br>**Cluster:** Create equations that describe numbers or relationships.<br>**A.CED.A.1** Create equations and inequalities in one variable and use them to solve real world problems. | **Essential Question(s):**<br>How can a formula be rearranged to highlight a quantity of interest using the same reasoning as in solving equations?<br><br>**Objective(s):**<br>• Students will rewrite and use literal equations and formulas<br>• Students will use multiplication properties of equality to solve equations. | **McGraw-Hill Bridge Math**<br>2-5 Solve Multi-Step Equations<br><br>**Prentice Hall Algebra 1**<br>2-2 Solving Two-Step Equations<br>2-3 Solving Multi-Step Equations<br>**Concept Byte:** Modeling Equations with Variables on Both Sides<br>2-4 Solving Equations with Variables on Both Sides<br><br>**Additional Resources:**<br>CCSS Video Lesson: Solve a multi-step equation<br>CCSS Video Lesson: Solve an equation with variables on both sides<br>CCSS Video Lesson: Solving word problems | **Vocabulary:** literal equation, like terms<br><br>**Writing in Math:**<br>Explain the steps used to solve multi-step equations. |
| **Chapter 2 Essential Algebra (*CONTINUED*) & Chapter 6 Linear Systems of Equations**<br>**Chapter 3 Solving Inequalities, Chapter 5 Linear Functions, and Chapter 6 Systems of Equations (PH Algebra I)**<br>**(Allow approximately 1.5 weeks for instruction, review, and assessment)** | | | |
| **Domain**: Creating Equations (A.CED)<br>**Cluster:** Create equations that describe numbers or relationships. | **Essential Question(s):**<br>• How is solving an inequality different from solving an equation? | **McGraw-Hill Bridge Math**<br>2-6 Solve Inequalities in Multiplication and Division | **Vocabulary:** inequality, solution of inequality<br><br>**Writing in Math:** |

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| **B.A.CED.A.1** Create equations and inequalities in one variable and use them to solve real world problems.<br><br>**Domain:** Reasoning with Equations and Inequalities (A.REI)<br>**Cluster:** Represent and solve equations and inequalities graphically.<br>**B.A.REI.D.5** Solve a linear inequality using multiple methods and interpret the solution as it applies to the context. | • Why is the inequality symbol reversed when the inverse operation involves multiplying or dividing by a negative number?<br>• When do you use inequalities? When do you not?<br><br>**Objective(s):**<br>• Students will solve linear inequalities by using multiplication and division.<br>• Students will graph solutions of a linear inequality on a number line. | **Prentice Hall Algebra 1**<br>3-1 Inequalities and Their Graphs<br>3-3 Solving Inequalities Using Multiplication or Division<br><br>**Additional Resource(s):**<br>Solving Inequalities Using Multiplication or Division<br>CCSS Video Lesson: Solving inequalities | Give a step-by-step series of instructions on how to solve inequalities. Give a guide on the common errors found in attempts to solve inequalities. |
| **Domain**: Creating Equations (A.CED)<br>**Cluster:** Create equations that describe numbers or relationships.<br>**B.A.CED.A.1** Create equations and inequalities in one variable and use them to solve real world problems.<br><br>**Domain:** Reasoning with Equations and Inequalities (A.REI)<br>**Cluster:** Represent and solve equations and inequalities graphically.<br>**B.A.REI.D.5** Solve a linear inequality using multiple methods and interpret the solution as it applies to the context. | **Essential Question(s):**<br>• When do you use inequalities? When do you not?<br>• What can we do with a system of inequalities that we cannot do with a single inequality?<br><br>**Objective(s):**<br>• Students will solve an inequality in one or two variables.<br>• Students will graph the solution of a system of linear inequalities.<br>• Students will interpret the solution of a linear inequality. | **McGraw-Hill Bridge Math**<br>2-7 Solve Linear Inequalities<br>**Prentice Hall Algebra 1**<br>3-2 Solving Inequalities Using Addition or Subtraction<br>3-4 Solving Multi-Step Inequalities<br><br>**Task(s):**<br>Graphing the Solution Set of an Inequality from Context (use with Learn Zillion video lessons)<br><br>**Additional Resources:**<br>CCSS Video Lesson: Graphing inequalities on a number line | **Vocabulary:** linear inequality in two variables, boundary, half-plane<br><br>**Writing in Math:**<br>Describe the difference between the solution of a linear inequality in one variable and the solution of a linear inequality in two variables. |
| **Domain**: Interpreting Categorical and Quantitative Data (S.ID)<br>**Cluster:** Interpret linear models.<br>**B.S.ID.C.4** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.<br><br>**Domain:** Interpreting Functions (F.IF) | **Essential Question(s):**<br>• What are the advantages and disadvantages of solving a system of linear equations graphically versus algebraically?<br>• How can systems of equations be used to represent situations and solve problems? | **McGraw-Hill Bridge Math**<br>6-1 Slope of a Line and Slope-intercept Form<br>**Prentice Hall Algebra 1**<br>5-1 Rate of Change and Slope<br>5-3 Slope-Intercept Form<br><br>**Task(s):** | **Vocabulary:** slope, rate of change, parent function<br><br>**Writing in Math:**<br>• Is it true that a line with slope 1 always passes through the origin? Explain your reasoning. |

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| **Cluster:** Analyze functions using different representations.<br>**B.F.IF.C.4** Graph linear, quadratic, absolute value, and piecewise functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated ones.<br><br>**Domain:** Quantities (N.Q)<br>**Cluster:** Reason quantitatively and use units to solve problems.<br>**B.N.Q.A.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. | **Objective(s):**<br>• Students will solve linear equations.<br>• Students will write the slope-intercept form of an equation and graph the equation. | Illustrative Math: Slope<br><br>**Additional Resources:**<br>CCSS Video Lesson: Finding the slope of a line<br>CCSS Video Lesson: Derive y = mx + b<br>CCSS Video Lesson: Graph an equation in y = mx + b form | • Describe two ways to determine whether an equation is linear. |
| **Domain**: Interpreting Categorical and Quantitative Data (S.ID)<br>**Cluster:** Interpret linear models.<br>**B.S.ID.C.4** Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.<br><br>**Domain:** Creating Equations (A.CED)<br>**Cluster:** Create equations that describe numbers or relationships.<br>**B.A.CED.A.3** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. | **Essential Question(s):**<br>What are the key characteristics of a linear function?<br><br>**Objective(s):**<br>Students will write equations for lines in slope-intercept and point-slope forms. | **McGraw-Hill Bridge Math**<br>6-3 Write Equations for Lines<br>**Prentice Hall Algebra 1**<br>5-3 Slope Intercept Form<br>5-4 Point-Slope Form<br><br>**Task(s):**<br>Edutoolbox Task Arc: Creating & Interpreting Functions<br>Task 1 –Joe's on the Beach Ice Cream (new link)<br><br>**Additional Lessons/Resources:**<br>Khan Academy: Slope intercept form | **Vocabulary:** point-slope form<br><br>**Writing in Math/Discussion:**<br>Is the parallelogram a rhombus? Justify your answer. |

Tennessee Academic Standards for Mathematics

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| | | Khan Academy: Point-slope form<br>Better Lesson: From Standard Form to Slope-Intercept Form<br>Better Lesson: Analyzing Linear Functions | |
| **Chapter 6 Linear Systems of Equations (CONTINUED)/Chapter 6 Systems of Equations (PH Algebra I)**<br>**(Allow approximately 3 weeks for instruction, review, and assessment)** | | | |
| **Domain:** Reasoning with Equations and Inequalities (A.REI)<br>**Cluster:** Solve systems of equations.<br>**B.A.REI.C.3** Solve and explain the solutions to a system of equations using a variety of representations including combinations of linear and non-linear equations. | **Essential Question(s):**<br>• How do different linear functions with the same variables interact?<br>• What is the best way to solve a particular system of equations?<br>• What is the significance of the solution to a system of linear equations?<br><br>**Objective(s):**<br>• Students will solve a system of equation by graphing.<br>• Students will analyze a special system of equations | **McGraw-Hill Bridge Math**<br>6-4 Systems of Equations<br>**Prentice Hall Algebra 1**<br>6-1 Solving Systems by Graphing<br>**Concept Byte:** Solving Systems Using Tables and Graphs (use after 6-1)<br><br>**Task(s):**<br>Systems of Equations (Task is embedded in this unit p. 5)<br><br>**Additional Resources:**<br>CCSS Video Lesson: Solve system of equation with graphing | **Vocabulary:** independent system, dependent system, solution of a system of linear equations, consistent system, inconsistent system<br><br>**Writing in Math:**<br>Suppose you graph a system of linear equations. If a point is on only one of the lines, is it a solution of the system? Explain. |
| **Domain:** Reasoning with Equations and Inequalities (A.REI)<br>**Cluster:** Solve systems of equations.<br>**B.A.REI.C.3** Solve and explain the solutions to a system of equations using a variety of representations including combinations of linear and non-linear equations. | **Essential Question(s):**<br>When is the substitution method a better method than graphing for solving a system of linear equations?<br><br>**Objective(s):**<br>Students will solve systems of equations using the substitution method. | **McGraw-Hill Bridge Math**<br>6-5 Solve Systems by Substitution<br>**Prentice Hall Algebra 1**<br>6-2 Solving Systems Using Substitution<br><br>**Task(s):**<br>TN Task, Alg. 2- Boxed In<br><br>**Additional Resources**:<br>CCSS Video Lesson: Solve system of equations using substitution | **Vocabulary:** substitution method<br><br>**Writing in Math:**<br>When is the substitution method a better method than graphing for solving a system of linear equations? |
| **Domain:** Reasoning with Equations and Inequalities (A.REI)<br>**Cluster:** Solve systems of equations.<br>**B.A.REI.C.3** Solve and explain the solutions | **Essential Question(s):**<br>When is it more appropriate to solve a system of linear equations by the elimination method than by graphing or | **McGraw-Hill Bridge Math**<br>6-6 Solve Systems by Adding and Multiplying | **Vocabulary:** elimination method, multiplication and addition method<br><br>**Writing in Math:** |

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| to a system of equations using a variety of representations including combinations of linear and non-linear equations. | by substitution?<br><br>**Objective(s):**<br>Students will solve a system of linear equations by adding or subtracting and multiplying to eliminate a variable. | **Prentice Hall Algebra 1**<br>6-3 Solving Systems Using Elimination<br>**Concept Byte:** Matrices and Solving systems (after 6-3)<br>6-4 Applications of Linear Systems<br><br>**Additional Resources:**<br>CCSS Video Lesson: Solve system of equations using Linear Combination<br>CCSS Video Lesson: Solve system of equations using elimination<br>CCSS Video Lesson: Using systems of equations to solve word problems | How can someone tell when solving by elimination is appropriate and when solving by substitution is appropriate? |
| **Domain**: Creating Equations (A.CED)<br>**Cluster:** Create equations that describe numbers or relationships.<br>**B.A.CED.A.1** Create equations and inequalities in one variable and use them to solve real world problems.<br><br>**Domain:** Reasoning with Equations and Inequalities (A.REI)<br>**Cluster:** Solve systems of equations.<br>**B.A.REI.C.3** Solve and explain the solutions to a system of equations using a variety of representations including combinations of linear and non-linear equations.<br><br>**Domain:** Reasoning with Equations and Inequalities (A.REI)<br>**Cluster:** Represent and solve equations and inequalities graphically.<br>**B.A.REI.D.D.5** Solve a linear inequality using multiple methods and interpret the solution as it applies to the context. | **Essential Question(s):**<br>• How can you determine whether an ordered pair is a solution of a system of linear inequalities?<br><br>**Objective(s):**<br>• Students will model a real-world situation using systems of linear inequalities.<br>• Use graphing to solve a system of linear inequalities. | **McGraw-Hill Bridge Math**<br>6-8 Systems of Inequalities<br>**Prentice Hall Algebra 1**<br>6-5 Linear Inequalities<br>6-6 Systems of Linear Inequalities<br>Concept Byte: Graphing Linear Inequalities (after 6-6)<br><br>**Task(s):**<br>Graphing the Solution Set of an Inequality from Context (use with Learn Zillion video lessons)<br><br>**Additional Resource(s):**<br>Learnzillion Video Lessons | **Vocabulary:** linear inequality, system of linear inequality, solution of system of linear inequality<br><br>**Writing in Math:**<br>Write an inequality that describes the region of the coordinate plane not included in the graph of<br>y< 5x + 1. Explain your reasoning. |

| TN STATE STANDARDS | CONTENT | INSTRUCTIONAL SUPPORT & RESOURCES | |
|---|---|---|---|
| **Radicals, Radicals Expressions, and Radical Equations**<br>***Bridge Math* Chapter 10**<br>***Prentice Hall Algebra I* – Chapter 10**<br>**(Allow approximately 1.5 weeks for instruction, review, and assessment)** | | | |
| **Domain:** The Real Number System (N.RN)<br>**Cluster:** Use properties of rational and irrational numbers.<br>**B.N.RN.A.1.** Use rational and irrational numbers in calculations and in real-world context. | **Essential Question(s):**<br>• How are radical expressions simplified?<br><br>**Objective(s):**<br>• Students will simplify sums, differences, products and quotients of radical expressions.<br>Students will identify extraneous solutions to when solving radical expressions. | **McGraw-Hill Bridge math**<br>10-1 Irrational Numbers<br><br>**Prentice Hall Algebra 1**<br>10-2 Simplifying Radicals<br>10-3 Operations with Radical Expressions<br>10-4 Solving Radical Equations<br><br>**Additional Resources:**<br>Radicals and Radical Expressions (lessons and performance tasks)<br>Simplifying Radicals Worksheet<br>Lesson for Operation with Radical Expressions | **Vocabulary:** radical expression, like radicals, unlike radicals, radicand, extraneous solution<br><br>**Writing in Math:**<br>• Explain how you can tell whether a radical expression is in simplified form.<br>Explain the difference between squaring $\sqrt{x-1}$ and $\sqrt{x}-1$. |



Tennessee Academic Standards for Mathematics

| RESOURCE TOOLBOX | | |
|---|---|---|
| **NWEA MAP Resources: https://teach.mapnwea.org/assist/help_map/ApplicationHelp.htm#UsingTestResults/MAPReportsFinder.htm - Sign in and Click the Learning Continuum Tab – this resources will help as you plan for intervention, and differentiating small group instruction on the skill you are currently teaching. (Four Ways to Impact Teaching with the Learning Continuum)**<br>**https://support.nwea.org/khanrit - These Khan Academy lessons are aligned to RIT scores.** | | |
| **Textbook Resources**<br>http://www.connected.mcgraw-hill.com/<br>http://www.pearsonsuccessnet.com/ | **Standards**<br>Common Core Standards - Mathematics<br>Common Core Standards - Mathematics Appendix A<br>Edutoolbox (formerly TNCore)<br>http://www.ccsstoolbox.org/<br>Common Core Lessons<br>Tennessee State Math Standards<br>HS Flip Book with Examples of each Standard | **Videos**<br>Brightstorm<br>Teacher Tube<br>The Futures Channel<br>Khan Academy<br>Math TV<br>Lamar University Tutorial<br>Shmoop - We Speak Students |
| **Additional Sites**<br>Illuminations (NCTM)<br>Stem Resources<br>www.learnzillion.com | **Interactive Manipulatives & Tasks**<br>National Math Resources<br>MARS Course 2<br>NASA Space Math<br>Math Vision Project<br>UT Dana Center<br>Illustrative Mathematics<br>Inside Math Tasks<br>Math Vision Project Tasks<br>Better Lesson<br>National Math Resources<br>SMARTboard Lessons | **Calculator**<br>Math Nspired<br>Texas Instrument Activities<br>Casio Activities |
| **Literacy**<br>Graphic Organizers (9-12) | **ACT**<br>TN ACT Resources<br>ACT College & Career Readiness Mathematics Standards | |



Tennessee Academic Standards for Mathematics