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** *TNReady April 13- May 8*
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. 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

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?

80% of seniors will be college-or career-ready

90% of students will graduate on time

100% of college-or career-ready graduates enroll in post-secondary opportunities

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

Focus   **Coherence**   **Rigor**
- Conceptual Understanding
- Procedural Fluency
- Application
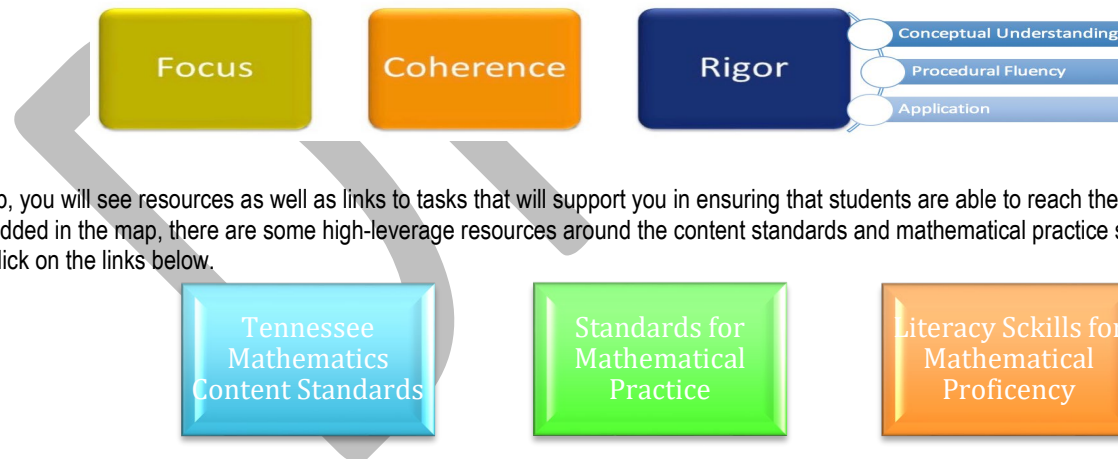
Throughout this curriculum map, you will see resources as well as links to tasks that will support you in ensuring that students are able to reach the demands of the standards in your classroom. In addition to the resources embedded in the map, there are some high-leverage resources around the content 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 Sckills for Mathematical Proficency

■ 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.

Topics Addressed in Quarter
- **Rational Expressions and Equations/Functions**
- **Sequences and Series**
- **Probability and Statistics**

Overview
During this quarter, students will extend their understanding of functions and real numbers and increase their toolset for modeling in the real world. Not only will students begin work with rational exponents, they will deepen their understanding of the concept of function, and apply equation-solving and function concepts to rational functions. They will explore rational functions through graphing, solving, and learning their properties. The field of rational functions is analogous to the rational numbers and these functions will be explored through learning their properties, graphing and solving. Building on their work with linear, quadratic, exponential, and radical functions, in Algebra II students extend their repertoire of functions to include rational functions. Students work closely with the expressions that define the functions and continue to expand and hone their abilities to model and analyze situations that involve polynomial, radical, exponential, and logarithmic equations over the set of real and complex numbers. Students work with sequences and series and apply them to real-world situations. Finally, in this quarter, students see how the visual displays and summary statistics they learned in earlier grades relate to different types of data and to probability distributions. They identify different ways of collecting data— including sample surveys, experiments, and simulations—and the role that randomness and careful design play in the conclusions that can be drawn.

Content Standard	Type of Rigor
A2. A. REI.A.1	Conceptual Understanding
A2. A. REI.A.2	Conceptual Understanding & Procedural Fluency
A2.A.REI.D.6 (formerly A-REI.D.11)	Conceptual Understanding & Procedural Fluency
A2. A. SSE.B.3 (formerly A-SSE.B.4)	Procedural Fluency & Application
A2. F.IF.A.1(formerly F-IF.B.4)	Conceptual Understanding
A2.F.BF. A.1a	Conceptual Understanding & Application
A2.F.BF. A.1b	Conceptual Understanding, Procedural Fluency & Application
A2.F.BF. A.2	Conceptual Understanding, Procedural Fluency & Application
A2. S.IC.A.1	Conceptual Understanding
A2. S.IC.A.2	Procedural Fluency & Application
indicates a Power Standard based on the 2017-18 TN Ready Assessment	
[Instructional Focus Document (Algebra II)](#)	

■Major Content   ➢ Supporting Content   ★(star) Modeling Standard/Domain

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Rational Functions (Allow approximately 4 weeks for instruction, review, and assessment)			
Domain: Building Functions **Cluster:** Build new functions from existing functions. ➢ **A2. F.BF.B.4** Find inverse functions. a. Find the inverse of a function when the given function is one-to-one.	**Essential Question(s):** How is an inverse variation different than a direct variation? **Objective(s):** • Students will recognize and use inverse variation to create equations. (A2. F.BF.B.4) • Students will use joint and other variations to create equations. (A2. F.BF.B.4)	*Use the textbook resources to address procedural fluency.* **Pearson** 8.1 Inverse Variation **Glencoe** 9.5 Variation Functions *Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.* **Additional Resources:** **Be Direct - Oil Spills on Land** **Very Varied - Inverse Variation** **HS Flip Book with examples of each Standard**	**Vocabulary** Inverse variation, combined variation, joint variation **Writing in Math/ Discussion** How do you recognize an inverse variation given data? **Resources in the Pearson Book** 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.
Domain: Building Functions **Cluster:** Build new functions from existing functions. ➢ **A2. F.BF.B.4** Find inverse functions. a. Find the inverse of a function when the given function is one-to-one. **Domain:** Interpreting Functions **Cluster:** Interpret functions that arise in applications in terms of the context. ■ **A2. F.IF.A.1** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a	**Essential Question(s):** How do the *a, h,* and *k* values affect the graph of the reciprocal function? **Objective(s):** • Students will graph reciprocal functions and interpret key features of their graphs. (A2. F.IF.B.3) • Students will graph translations of reciprocal functions and interpret key features. (A2.F.BF.B.3)	*Use the textbook resources to address procedural fluency.* **Pearson** 8.2 Reciprocal Function Family **Glencoe** 9.3 Graphing the Reciprocal Family *Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.* **Additional Resources:** **Math Vision Project: Module 1-Functions and Their Inverses (five tasks)** *Brutus Bites Back*	**Vocabulary** Reciprocal function, branch **Writing in Math/ Discussion** What are the key components of the graph of a reciprocal function? Create and graph an example about your thinking.

■Major Content   ➢ Supporting Content   ★(star) Modeling Standard/Domain

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
verbal description of the relationship. ★ *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* i) Tasks have a real-world context. ii) Tasks may involve square root, cube root, polynomial, exponential, and logarithmic functions. **Domain:** Interpreting Function **Cluster:** Analyze functions using different representations. ➤ **A2. F.IF.B.3** Graph functions expressed symbolically and show key features of the graph, by hand and using technology. ★ **Domain:** Quantities **Cluster:** Reason quantitatively and use units to solve problems ➤ **A2. N.Q.A.1** Identify, interpret, and justify appropriate quantities for the purpose of descriptive modeling. ★ **Domain:** Building Functions **Cluster:** Build new functions from existing functions. ➤ **A2.F.BF.B.3** Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.		*Flipping Ferraris* *Tracking the Tortoise* *Pulling a Rabbit Out of a Hat* *Inverse Universe* Illustrative Math: Summer Intern HS Flip Book with examples of each Standard	
Domain: Interpreting Functions **Cluster:** Interpret functions that arise in applications in terms of the context.	**Essential Question(s):** • What are the key features of the graphs of rational functions?	*Use the textbook resources to address procedural fluency.*	**Vocabulary** Rational function, continuous graph, discontinuous graph, point of discontinuity,

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
■ **A2. F.IF.A.1** For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. ★ *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *i) Tasks have a real-world context.* *ii) Tasks may involve square root, cube root, polynomial, exponential, and logarithmic functions.* **Domain:** Interpreting Function **Cluster:** Analyze functions using different representations. ➤ **A2. F.IF.B.3** Graph functions expressed symbolically and show key features of the graph, by hand and using technology. ★	• How can functions be manipulated to make new functions? • By looking at an equation, how do you recognize points of discontinuity? **Objective(s):** • Students will identify properties of rational functions. (A2. F.IF.A.1) • Students will recognize and graph rational functions, interpreting key features. (A2. F.IF.A.1)	**Pearson** 8.3 Rational Functions and Their Graphs **Glencoe** 9.4 Graphing Rational Functions ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Additional Resources:** Math Nspired: Airport Impact Study Math Vision Project: Module 4- Rational Functions (seven tasks)*.* *The Gift* *All in the Family* *What Does It Mean to be Rational?* *Rewriting Rational Expressions* *Watch Your Behavior* *Features of Rational Functions* *Graphing Rational Functions* HS Flip Book with examples of each Standard	removable discontinuity, non-removable discontinuity **Writing in Math/ Discussion** How do you know that there is a vertical asymptote in a rational function and how do you find it?
Domain: Arithmetic with Polynomials and Rational Expressions **Cluster:** Understand the relationship between zeros and factors of Polynomials ➤ **A2.A.APR.C.4** Rewrite rational expressions in different forms.	**Essential Question(s):** *What are the rules for multiplying and dividing fractions? Multiplying and dividing polynomials?* **Objective(s):** • *Students will simplify rational expressions. (A2.A.APR.C.4)* • *Students will multiply and divide rational expressions. (A2.A.APR.C.4)*	***Use the textbook resources to address procedural fluency.*** **Pearson** 8.4 Rational Expressions **Glencoe** 9.1 Multiplying and Dividing Rational Expressions ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.***	**Vocabulary** Rational expression, simplest form, restrictions **Writing in Math/ Discussion** How do you find the restrictions when multiplying and dividing polynomial expressions?

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
		Eureka Math Module 1 Topic C, Lessons 22 - 24 **Additional Resources:** HS Flip Book with examples of each Standard Illustrative Math: Combined Fuel Efficiency Illustrative Math: Egyptian Fractions II Chemistry Example: Alcohol Solution Khan Academy Videos: Rational Expressions, Equations, and Functions	
Domain: Arithmetic with Polynomials and Rational Expressions **Cluster:** Understand the relationship between zeros and factors of Polynomials ➤ **A2.A.APR.C.4 (formerly A-APR.C.6)** Rewrite rational expressions in different forms.	*Essential Question(s):* *How do you find the LCM of expressions?* *Objective(s):* *Students will add, subtract, and rewrite rational expressions. (A2.A.APR.C.4)* *.*	*Use the textbook resources to address procedural fluency.* **Pearson** 8.5 Adding and Subtracting Rational Expressions **Glencoe** 9.2 Adding and Subtracting Rational Functions *Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.* **Eureka Math** Module 1 Topic C, Lesson 25 **Additional Resources:** Application Problems Khan Video-Rational Expressions HS Flip Book with examples of each Standard	**Vocabulary** Complex fraction **Writing in Math/ Discussion** How can you extend addition and subtraction of rational numbers to addition and subtraction of rational expressions?
Domain: Reasoning with Equations and Inequalities *Cluster: Understand solving equations as a process of reasoning and explain the reasoning.*	*Essential Question(s):* *When do you have extraneous solutions?*	*Use the textbook resources to address procedural fluency.*	**Vocabulary** Rational equation

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
■ **A2.A.REI.A.1** *Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.* *Tasks are limited to square root, cube root, polynomial, rational, and logarithmic functions.* ■ **A2.A.REI.A.2** Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise **Domain:** *Reasoning with Equations and Inequalities* **Cluster:** *Represent and solve equations and inequalities 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. Include cases where *f*(*x*) and/or *g*(*x*) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. *Tasks may involve any of the function types mentioned in the standard.*	***Objective(s):*** • *Students will solve rational equations and explain the reasoning behind the solution method. (A2.A.REI.A.1, A2.A.REI.D.6)* • *Students will use rational equations to solve problems. (A2.A.REI.A.1, A2.A.REI.D.6)* •	**Pearso**n 8.6 Solve Rational Equations **Glencoe** 9.6 Solving Rational Equations and Inequalities . ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Eureka Math** Module 1 Topic C, Lessons 26-27 **Additional Resources:** Property Rules Planting Flowers HS Flip Book with examples of each Standard **ACT Practice** (sample problems to prepare for the ACT) Pearson, pp.558-560 Glencoe, pp.612-613	**Writing in Math/ Discussion** Explain why a rational equation could have extraneous solutions. Have students to create two different examples about their thinking- one equation that has an extraneous solution and one that does not.
Sequences and Series (Allow approximately 2 weeks for instruction, review, and assessment)			
Domain: Building Functions **Cluster:** Build a function that models a relationship between two quantities.	**Essential Question(s):** • What are the patterns? • What is the best way to represent the patterns?	***Use the textbook resources to address procedural fluency.*** . **Pearson** 9.2 Arithmetic Sequences	**Vocabulary** Sequence, term of a sequence, explicit formula, recursive formula, arithmetic sequence, common difference, arithmetic mean

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
■ **A2. F.BF. A.1a** 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. b. Combine standard function types using arithmetic operations. ■ **A2. F.BF.A.2** Know and write arithmetic and geometric sequences with an explicit formula and use them to model situations. ★	• How do we identify and express arithmetic sequences and geometric sequences? • When is it best to use an explicit formula? **Objective(s):** • Students will define, identify, and apply arithmetic sequences. (A2. F.BF.A.1a) • Students write explicit polynomial expressions for sequences by investigating successive differences of those sequences.(A2.F.BF.A.2)	**Glencoe** 11.1 Sequences as Functions 11.2 Arithmetic Sequences 11.5 Recursion and Iteration ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Additional Resources:** Better Lesson: Introduction to Sequences TN Alg. 2 Assessment Task –Interior Angle Sum Illustrative Math: Susita's Account Khan Academy: Arithmetic Sequences Sequence and Series Applications HS Flip Book with examples of each Standard	**Writing in Math/ Discussion** When is it easier to use a recursive formula? Have students to create two different examples -one explicit and one recursive- about their thinking. **Resources in the Pearson Book** 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.
Domain: Building Functions **Cluster:** Build a function that models a relationship between two quantities ■ **A2. F.BF. A .1a** 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. ■ **A2. F.BF.A.2** Know and write arithmetic and geometric sequences with an explicit formula and use them to model situations. ★ **Domain:** Linear, Quadratic, and Exponential Functions	**Essential Question(s):** How do you find the next term in a geometric sequence? **Objective(s):** • Students will define, identify, and apply geometric sequences. (A2. F.BF.A.1a) • Students use geometric sequences to model situations of exponential growth and decay. (A2. F.LE.A.1) • Students write geometric sequences explicitly and recursively and translate between the two forms.(A2.F.BF.A.2) • Students review and practice applying the	***Use the textbook resources to address procedural fluency.*** **Pearson** 9.3 Geometric Sequences **Glencoe** 11.1 Sequences as Functions 11.3 Geometric Sequences 11.5 Recursion and Iteration ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.***	**Vocabulary** Geometric sequence, geometric mean, common ratio **Writing in Math/ Discussion** Explain the difference between an arithmetic and geometric sequence. Have students to create examples of arithmetic and geometric sequences, showing their differences.

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
Cluster: Construct and compare linear, quadratic, and exponential models and solve problems ➢ **A2. F.LE.A.1** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs. ★	properties of exponents for integer exponents. (?????) • Students model a real-world scenario involving exponential growth and decay.(A2.F.LE.A.1)	**Eureka Math** Module 3, Topic D, Lesson 25 **Additional Resources:** Modeling Exponential Growth Task Achieve the Core: Exponential Growth & Decay Lesson TN Alg.2 Assessment Task–Honeybees Common Differences Khan Academy: Geometric Sequences HS Flip Book with examples of each Standard	
Domain: Seeing Structure in Expressions **Cluster:** Use expressions in equivalent forms to solve problems. ■ **A2.A.SSE.B.3** Recognize a finite geometric series (when the common ratio is not 1), and know and use the sum formula to solve problems in context. **Domain:** Building Functions **Cluster:** Build a function that models a relationship between two quantities. ■ **A2. F.BF.A.2** Know and write arithmetic and geometric sequences with an explicit formula and use them to model situations. ★	**Essential Question(s):** • What are some ways that geometric series are used in the real world? • What are the differences between a finite and infinite geometric series? **Objective(s):** • Students will define geometric series and find their sums. (A2.A.SSE.B.3) • Students derive the sum of a finite geometric series formula. (A2. F.BF.A.2) • Students apply the sum of a finite geometric series formula to a structured savings plan. (A2.A.SSE.B.3) • Students use the sum of a finite geometric series formula to develop a formula to calculate a payment plan for a car loan and use that calculation to derive the present value of an annuity formula. (A2. A. SSE.B.3, A2. F.BF.A.2) • Students will compare payment strategies for a decreasing credit card balance. (A2. A. SSE.B.3, A2.F.BF.A.2)	***Use the textbook resources to address procedural fluency.*** **Pearson** 9.5 (Finite)Geometric Series **Glencoe** 11.3 Geometric Series ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Eureka Math** Module 3, Topic E, Lessons 29 – 30 & 33 **Additional Resources:** HS Flip Book with examples of each Standard TN Alg.2 Assessment Task -Patterns in Patterns Khan Academy: Sequences and Series	**Vocabulary** Series, Geometric series, converge, diverge, finite series, infinite series, limits **Writing in Math/ Discussion** How do you decide if an infinite geometric series converges or diverges? Explain.

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES
	• Students will apply the sum of a finite geometric series formula to a decreasing balance on a credit card. (A2. A. SSE.B.3, A2. F.BF.A.2) • Students model the scenario of buying a house. (A2. A. SSE.B.3, A2. F.BF.A.2) • Students recognize that a mortgage is mathematically equivalent to car loans studied in Lesson 30 and apply the present value of annuity formula to a new situation. (A2. A. SSE.B.3, A2. F.BF.A.2) • Students use geometric series to calculate how much money should be saved each month to have 1 million in assets within a specified amount of time. (A2. A. SSE.B.3, A2. F.BF.A.2)	

Probability and Statistics
(Allow approximately 3 weeks for instruction, review, and assessment)

Domain: Interpreting Categorical and Interpretive Data **Cluster:** Make inferences and justify conclusions from sample surveys, experiments, and observational studies. ■ **A2. S.IC.A.1** Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. *For example, in a given situation, is it more appropriate to use a sample survey, an experiment, or an observational study? Explain how randomization affects the bias in a study.*	**Essential Question(s):** What is the difference between theoretical and experimental probability? **Objective(s):** • Students will find the probability of an event using theoretical, experimental, and simulation methods. (A2. S.IC.A.1)	***Use the textbook resources to address procedural fluency.*** **Pearson** 11.2 Probability – Simulation **Glencoe** 12.4 Probability and Probability Distributions ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Additional Resources:** Engage New York: math-g7-m5-topic-b-lesson-10-teacher Khan Video on Simulation e Math instruction: Unit 12	**Vocabulary** Experimental probability, simulation, sample space, equally likely outcomes, theoretical probability **Writing in Math/ Discussion** Why is a simulation better the more times you perform it? **Resources in the Pearson Book** 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.

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
		HS Flip Book with examples of each Standard	
Domain: Conditional Probability and the Rules of Probability **Cluster:** Understand independence and conditional probability and use them to interpret data ➢ **A2. S.CP.A.1** Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not"). ➢ **A2. S.CP.A.2** Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	**Essential Question(s):** What is the difference independent and dependent events? **Objective(s):** • Students will find the probability of the events A and B. (A2. S.CP.A.1, A2. S.CP.A.2) • Students will find the probability of event A or B. (A2. S.CP.A.1, A2. S.CP.A.2)	***Use the textbook resources to address procedural fluency.*** **Pearson** 11.3 Probability of Multiple Events **Glencoe** 12.4 Probability and Probability Distributions ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Additional Resources:** e Math instruction: Unit 12 Illustrative Math: The Titanic Illustrative Math: The Titanic 2 HS Flip Book with examples of each Standard	**Vocabulary** Dependent events, independent events, mutually exclusive events **Writing in Math/ Discussion** Make up a sample problem that would show mutually exclusive events.
Domain: Conditional Probability and the Rules of Probability **Cluster:** Use the rules of probability to compute probabilities of compound events in a uniform probability model. ➢ **A2. S.CP.B.5** Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model. *For example, a teacher gave two exams. 75 percent passed the first quiz and 25 percent passed both. What percent who passed the first*	**Essential Question(s):** What makes a probability conditional? **Objective(s):** • Students will find conditional probabilities and apply the Addition Rule. (A2. S.CP.B.5, A2. S.CP.B.6, A2. CP.A.3, A2. S.CP.A.4) • Students will use tables and tree diagrams to determine conditional probabilities. (A2. S.CP.B.5, A2. S.CP.B.6, A2. S.CP.A.3, A2. S.CP.A.4)	***Use the textbook resources to address procedural fluency.*** **Pearson** 11-4 Conditional Probability **Glencoe** 12.3 Conditional Probability ***Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.*** **Additional Resources:** e Math instruction: Unit 12	**Vocabulary** Conditional probability **Writing in Math/ Discussion** Write about a conditional situation in your everyday life.

■Major Content   ➢ Supporting Content   ★(star) Modeling Standard/Domain

TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
quiz also passed the second quiz? ➤ **A2. S.CP.B.6** Know and apply the Addition Rule, P(A or B) = P(A) + P(B) – P(A and B), and interpret the answer in terms of the model. *For example, in a math class of 32 students, 14 are boys and 18 are girls. On a unit test 6 boys and 5 girls made an A. If a student is chosen at random from a class, what is the probability of choosing a girl or an A student?* **Domain:** Conditional Probability and the Rules of Probability **Cluster:** Understand independence and conditional probability and use them to interpret data ➤ **A2. S.CP.A.3** Know and understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B. ➤ **A2. S.CP.A.4** Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a*		Illustrative Math: Rain and Lightning Illustrative Math: Finding Probabilities of Compound Events Illustrative math: How Do You Get to School? HS Flip Book with examples of each Standard	

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
smoker with the chance of being a smoker if you have lung cancer.			
Domain: Making Inferences and Justifying Conclusions **Cluster:** Make Inferences and justify conclusions from sample surveys, experiments, and observational studies. ■ **A2. S.IC.A.1** Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. *For example, in a given situation, is it more appropriate to use a sample survey, an experiment, or an observational study? Explain how randomization affects the bias in a study.* ■ **A2. S.IC.A.2** Use data from a sample survey to estimate a population mean or proportion; use a given margin of error to solve a problem in context.	**Essential Question(s):** • How can data collection help in making decisions? • How can situations be modeled and approximated using probability and statistic? • How can parameters be adjusted to help in making the best fit for a given situation? **Objective(s):** • Students will identify sampling methods. (A2. S.IC.A.1) • Students will recognize the differences and bias in samples and surveys. (A2. S.IC.A.1) • Students will solve problems using real-world data from surveys or studies. (A2. S.IC.A.2)	*Use the textbook resources to address procedural fluency.* **Pearson** 11.7 Samples and Surveys **Glencoe** 12.1 Experiments, Surveys, and Observational Studies *Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.* **Additional Resources:** Illustrative Math: Strict Parents Illustrative Math: Musical Preferences Illustrative Math: Types of Statistical Studies HS Flip Book with examples of each Standard	**Vocabulary** Population, sample, convenience sample, self-selected sample, systematic sample, random sample, bias, observational study, controlled experiment, survey **Writing in Math/ Discussion** What are the key features to an observational study?
Domain: Interpreting Categorical and Interpretive Data **Cluster:** Summarize, represent, and interpret data on a single count or measurement variable ➤ **A2. S.ID.A.1** Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages using the Empirical Rule.	**Essential Question(s):** What percent of data falls within three standard deviations? **Objective(s):** Students will use a normal distribution and make inferences/draw conclusions from the data. (A2. S.ID.A.1)	*Use the textbook resources to address procedural fluency.* **Pearson** 11.9 Normal Distribution **Glencoe** 12.5 Normal Distribution 12.5 Extension Lesson; Normal Distributions and *z*-Scores	**Vocabulary** Discrete probability distribution, continuous probability distribution, normal distribution, *z*-score **Writing in Math/ Discussion** How do outliers fit in with the normal curve?

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TN STATE STANDARDS	CONTENT	INSTRUCTIONAL SUPPORT & RESOURCES	
		Select from the following resources to ensure that the intended outcome and level of rigor of the standards are met.	
		Additional Resources:	
		e Math instruction: Unit 13	
		Math Vision Project- Module 8- Statistics (choose from the following eight tasks)	
		What is Normal? *Just ACT Normal* *B Normal?* *Whoa! That's Weird!* *Would You Like to Tray a Sample?* *Would You Like to Try a Sample?* *Let's Investigate – A Solidify Understanding Task* *Slacker's Simulation*	
		Data Analysis Khan Academy	
		Standard Deviation Khan Academy	
		HS Flip Book with examples of each Standard	
		ACT Practice	
		(sample problems to prepare for the ACT)	
		Pearson, pp.608-610	
		Glencoe, pp.674-677	

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

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January 2020					
Suggested Lessons for the Week	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Notes:**

Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
			1	**2**	**3**	*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*
			Winter Break			
Pearson 8.1,8.2, 8.3; Selected Tasks	**6** *Begin 3rd Quarter*	**7**	**8**	**9**	**10**	
Pearson 8.4,8.5, EM M1L25; Selected Tasks	**13**	**14**	**15**	**16**	**17** *½ day students*	
Pearson 8.6, EM M1L26 & 27; Selected Tasks, Remediation, Review, & Assessment	**20** *Martin Luther King Jr. Day*	**21**	**22**	**23**	**24**	
	27	**28**	**29**	**30**	**31**	

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February 2020

Suggested Lessons for the Week	Monday	Tuesday	Wednesday	Thursday	Friday	Notes:
Pearson 9.2, 9.3, EM M3L25; Selected Tasks	3	4	5	6	7	
Pearson 9.5, EM M3L29-30 & 33; Selected Tasks; Remediation, Review, & Assessment	10	11	12	13 *Parent Teacher Conferences*	14 *1/2 day students*	
Remediation, Review, & Assessment Pearson 11.2, 11.3; Selected Tasks	17 *President's Day*	18	19	20	21	
Pearson 11.4, 11.7, 11.9; emathinstruction – Unit 12; Selected Tasks	24	25	26	27	28	

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March 2020					
Suggested Lessons for the Week	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Notes:**
Remediation, Review, and Assessment	**2**	**3**	**4**	**5**	**6**	
	9	**10**	**11**	**12**	**13** *3rd Quarter Ends*	
	16	**17**	**18**	**19**	**20**	
	Spring Break					
	23	**24**	**25**	**26**	**27**	
	30	**31**	1	2	3	

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