

JOHNSON CITY SCHOOLS
ALGEBRA 2 SCOPE AND SEQUENCE
SCHOOL YEAR: 2024-2025

The Tennessee Math Standards are addressed throughout Algebra II and are aligned with each unit. In addition, ACT standards are aligned with each chapter. Standards that are major works of the grade are bolded and the Instructional Focus Documents were highly utilized in writing Learning and Performance Goals.

The following Standards for Mathematical Practice and Literacy Skills for Mathematical Proficiency will be addressed throughout the course.

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 others.
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.

Literacy Skills for Mathematical Proficiency

1. Use multiple reading strategies.
2. Understand and use correct mathematical vocabulary.
3. Discuss and articulate mathematical ideas.
4. Write mathematical arguments.

Honors Addendum:

Honors courses are high school courses that provide additional rigor and substantially exceed the academic standards approved by the State Board of Education. Teachers of honors courses model instructional approaches that facilitate the maximum interchange of ideas among students: independent study, self-directed research and learning, and appropriate use of technology. All honors courses include multiple assessments exemplifying coursework (such as short answer, constructed-response prompts, performance-based tasks, open-ended questions, essays, original or creative interpretations, authentic products, portfolios, and analytical writing). This honors course includes the following components:

- Projects that apply the course curriculum to relevant or real-world situations. These may include oral presentations, PowerPoint, or other modes of sharing findings. The connection of the project to the community is encouraged. (Green Monster task, What's in a Name? project)
- Open-ended investigations in which the student selects the questions and designs the research. (What's in a Name? project)
- Writing assignments that demonstrate a variety of modes, purposes, and styles. (algebraic proofs, justification of solving procedures)
 - Examples of mode include descriptive and persuasive.
 - Examples of purpose include to inform and to persuade.
 - Examples of the style include formal, analytical, and technical.
- Integration of appropriate technology into the course of study. (Desmos, TI-84 graphing calculator)
- Extensive opportunities for problem-solving experiences through imagination, critical analysis, and application. (throughout the entire course)

CHAPTER 1: LINEAR AND ABSOLUTE VALUE FUNCTIONS

Chapter Learning Target: Understand linear functions.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
1.1 Modeling Quantities	Use proportional reasoning and analyze units when solving problems.	<ul style="list-style-type: none"> • A2.N.Q.A.1 Use units as a way to understand real-world problems. <i>(1.1)</i> • A2.N.Q.A.1.b Use appropriate quantities in formulas, converting units as necessary. <i>(1.1)</i> • A2.N.Q.A.1.c Define and justify appropriate quantities within a context for the purpose of modeling. <i>(1.1)</i> 	<p>At the conclusion of the chapter, students will be evaluated through a common summative assessment.</p> <p>Task(s):</p> <p>ACT Standard(s): G203, N404, A406, G407, AF501, AF502, AF503, AF501, A502, A514, F503, F504, F505, F506, G504, G510, S505, S506, AF602, AF603, AF604, A601, A606, AF702, AF703, AF706, F701</p> <p>Honors Addendum: At the conclusion of the course, Honors students will be expected to use transformations and the functions learned in this chapter to complete the <i>What's in a Name?</i> project.</p>
1.2 Accuracy with Measurements	Choose an appropriate level of accuracy when calculating with measurements.	<ul style="list-style-type: none"> • A2.N.Q.A.1.d Choose an appropriate level of accuracy when reporting quantities. <i>(1.2)</i> • A2.1.CED.A.2 Create equations in two variables to represent relationships between quantities and use them to solve problems in a real-world context. Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions. <i>(1.5, 1.6)</i> 	
1.3 Parent Functions and Transformations	Graph and describe transformations of functions.	<ul style="list-style-type: none"> • 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. <i>(1.6, 1.7)</i> 	
1.4 Transformations of Linear and Absolute Value Functions	Write functions that represent transformations of functions.	<ul style="list-style-type: none"> • A2.F.IF.B.4 Graph functions expressed algebraically and show key features of the graph by hand and using technology. <i>(1.3, 1.4, 1.6, 1.7)</i> • A2.F.IF.B.6 Compare properties of functions represented algebraically, graphically, numerically in tables, or by verbal descriptions. <i>(1.5, 1.6, 1.7)</i> 	
1.5 Modeling with Linear Functions	Use linear functions to model and analyze real-life situations.	<ul style="list-style-type: none"> • A2.F.IF.B.6.a Compare properties of two different functions. Functions may be of different types and/or represented in different ways. <i>(1.5, 1.6)</i> 	
1.6 Absolute Value Functions	Understand characteristics of absolute value functions.		

1.7 Piecewise Function	Graph and write piecewise functions.	<ul style="list-style-type: none">• A2.F.IF.B.6.b Compare properties of the same function on two different intervals or represented in two different ways. (1.6, 1.7)• A2.F.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. (1.3, 1.4)• A2.S.ID.B.4 Represent data from two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. (1.5)	
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CHAPTER 2: QUADRATIC FUNCTIONS

Chapter Learning Target: Understand quadratic functions and quadratic equations.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
2.1 Transformations of Quadratic Functions	Describe and graph transformations of quadratic functions.	<ul style="list-style-type: none"> • A2.A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context. (2.2, 2.3) • A2.A.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients. (2.2, 2.3) • A2.A.SSE.A.1.b Interpret complicated expressions by viewing one or more of their parts as a single entity. (2.2, 2.3) 	At the conclusion of the chapter, students will be evaluated through a common summative assessment.
2.2 Characteristics of Quadratic Functions	Graph and describe quadratic functions.	<ul style="list-style-type: none"> • A2.A.APR.A.2 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. (2.4) 	<p>Task(s): Green Monster</p>
2.3 Modeling with Quadratic Functions	Write equations of quadratic functions using given characteristics.	<ul style="list-style-type: none"> • A2.A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems in a real-world context. (2.4) • A2.A.CED.A.2 Create equations in two variables to represent relationships between quantities and use them to solve problems in a real-world context. Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions. (2.3, 2.4) 	<p>ACT Standard(s): F401, N504, A505, A506, A507, A508, F501, F504, F505, F506, F507, F511, S505, S506, N606, AF602, AF603, AF604, A601, A605, G609, AF702, AF703, AF704, AF705, AF706, F701</p>
2.4 Solving Quadratic Equations and Inequalities	Solve quadratic equations and inequalities graphically and algebraically.	<ul style="list-style-type: none"> • A2.A.REI.A.1 Understand solving equations as a process of reasoning and explain the reasoning. Construct a viable argument to justify a solution method. (2.4) 	
2.5 Solving Systems of Equations	Solve systems graphically and algebraically.	<ul style="list-style-type: none"> • A2.A.REI.B.3 Write and solve a system of linear equations in a real-world context. (2.5) • A2.A.REI.B.4 Solve a system consisting of a linear equation and a quadratic equation in two variables algebraically, graphically, and using technology. (2.5) • 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 	<p>Honors Addendum: At the conclusion of the course, Honors students will be expected to use transformations and the functions learned in this chapter to complete the <i>What's in a Name?</i> project.</p>

		<p>graphs showing key features given a verbal description of the relationship. (2.2)</p> <ul style="list-style-type: none"> • A2.F.IF.A.2 Calculate and interpret the average rate of change of a function (presented algebraically or as a table) over a specified interval. Estimate and interpret the rate of change from a graph. (2.3) • A2.F.IF.A.3 Understand geometric formulas as functions. (2.1) • A2.F.IF.B.4 Graph functions expressed algebraically and show key features of the graph by hand and using technology. (2.1, 2.2) • A2.F.IF.B.5 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. (2.4) • A2.F.IF.B.5.a Rewrite quadratic functions to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a real-world context. (2.2, 2.4) • A2.F.IF.B.6 Compare properties of functions represented algebraically, graphically, numerically in tables, or by verbal descriptions. (2.2) • A2.F.IF.B.6.a Compare properties of two different functions. Functions may be of different types and/or represented in different ways. (2.2) • A2.F.IF.B.6.b Compare properties of the same function on two different intervals or represented in two different ways. (2.3) • A2.F.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. (2.1) • A2.S.ID.B.4 Represent data from two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. (2.3) 	
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CHAPTER 3: CUBIC FUNCTIONS

Chapter Learning Target: Understand polynomial functions.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
3.1 Graphing Cubic Functions	Graph and describe cubic functions.	<ul style="list-style-type: none"> • A2.N.Q.A.1 Use units as a way to understand real-world problems. (3.8) • A2.N.Q.A.1.c Define and justify appropriate quantities within a context for the purpose of modeling. (3.8) • A2.N.Q.A.1.d Choose an appropriate level of accuracy when reporting quantities. (3.8) 	<p>At the conclusion of the chapter, students will be evaluated through a common summative assessment.</p> <p>Task(s):</p> <p>ACT Standard(s): A402, A404, A505, F501, F504, F505, F506, F507, F508, F509, F511, S505, S506, AF602, AF603, AF604, A601, AF703, AF704, AF705, AF706, A703, F701</p> <p>Honors Addendum: At the conclusion of the course, Honors students will be expected to use transformations and the functions learned in this chapter to complete the <i>What's in a Name?</i> project.</p>
3.2 Adding, Subtracting, and Multiplying Polynomials	Add, subtract, and multiply polynomials.	<ul style="list-style-type: none"> • A2.A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context. (3.8) • A2.A.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients. (3.8) 	
3.3 Dividing Polynomials	Divide polynomials by other polynomials and use the Remainder Theorem.	<ul style="list-style-type: none"> • A2.A.SSE.A.1.b Interpret complicated expressions by viewing one or more of their parts as a single entity. (3.8) • A2.A.APR.A.1 Know and apply the Factor Theorem: For a polynomial $p(x)$ and a number a, $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. (3.2, 3.3, 3.4, 3.5) 	
3.4 Factoring Polynomials	Factor polynomials and use the Factor Theorem.	<ul style="list-style-type: none"> • A2.A.APR.A.2 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. (3.4, 3.5, 3.7) • A2.A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems in a real-world context. (3.5) 	
3.5 Solving Cubic Equations and Inequalities	Solve cubic equations and find zeros of cubic functions.	<ul style="list-style-type: none"> • A2.A.CED.A.2 Create equations in two variables to represent relationships between quantities and use them to solve problems in a real-world context. Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions. (3.8) 	
3.6 Transformations of Cubic Functions	Describe and graph transformations of cubic functions.	<ul style="list-style-type: none"> • A2.F.IF.A.1 For a function that models a relationship between two quantities, interpret key features of graphs 	

3.7 Analyzing Graphs of Cubic Functions	Analyze graphs of cubic functions.	<p>and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. (3.1, 3.7)</p> <ul style="list-style-type: none"> • A2.F.IF.A.2 Calculate and interpret the average rate of change of a function (presented algebraically or as a table) over a specified interval. Estimate and interpret the rate of change from a graph. (3.1) 	
3.8 Modeling with Cubic Functions	Write cubic functions.	<ul style="list-style-type: none"> • A2.F.IF.A.3 Understand geometric formulas as functions. (3.6) • A2.F.IF.B.4 Graph functions expressed algebraically and show key features of the graph by hand and using technology. (3.1, 3.6, 3.7) • A2.F.IF.B.5 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. (3.5) • A2.F.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. (3.6) • A2.S.ID.B.4 Represent data from two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. (3.8) 	

CHAPTER 4: RATIONAL EXPONENTS AND RADICAL FUNCTIONS

Chapter Learning Target: Understand rational exponents and radical functions.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
4.1 <i>n</i> th Roots and Rational Exponents	Evaluate expressions and solve equations containing <i>n</i> th roots and rational exponents.	<ul style="list-style-type: none"> • A2.N.RN.A.1 Extend the properties of integer exponents to rational exponents. (4.1, 4.2) • A2.N.RN.A.1.a Develop the meaning of rational exponents by applying the properties of integer exponents. (4.1) 	At the conclusion of the chapter, students will be evaluated through a common summative assessment.
4.2 Properties of Rational Exponents and Radicals	Simplify radical expressions.	<ul style="list-style-type: none"> • A2.N.RN.A.1.b Explain why $x^{1/n}$ can be written as the <i>n</i>th root of <i>x</i>. (4.1) • A2.N.RN.A.1.c Rewrite expressions involving radicals and rational exponents using the properties of exponents. (4.1, 4.2) 	Task(s):
4.3 Graphing Radical Functions	Describe and graph transformations of radical functions.	<ul style="list-style-type: none"> • A2.A.CED.A.3 Rearrange formulas to isolate a quantity of interest using algebraic reasoning. (4.7) • A2.A.REI.A.1 Understand solving equations as a process of reasoning and explain the reasoning. Construct a viable argument to justify a solution method. (4.4) 	ACT Standard(s): A509, A510, A512, F505, F506, F507, F511, N604, N605, AF603, AF604, A601, F604, AF702, AF704, AF705, AF706, F708
4.4 Solving Radical Equations and Inequalities	Solve equations and inequalities containing radicals and rational exponents.	<ul style="list-style-type: none"> • A2.A.REI.A.2 Solve radical equations in one variable, and identify extraneous solutions when they exist. (4.4) • 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. (4.3) 	Honors Addendum: At the conclusion of the course, Honors students will be expected to use transformations and the functions learned in this chapter to complete the <i>What's in a Name?</i> project.
4.5 Performing Function Operations	Perform arithmetic operations on two functions.	<ul style="list-style-type: none"> • A2.F.IF.B.4 Graph functions expressed algebraically and show key features of the graph by hand and using technology. (4.3) 	
4.6 Composition of Functions	Evaluate and find compositions of functions.	<ul style="list-style-type: none"> • A2.F.BF.A.1 Build a function that describes a relationship between two quantities. (4.5, 4.6) • A2.F.BF.A.1.a Combine standard function types using arithmetic operations. (4.5) 	

4.7 Inverse of a Function	Understand the relationship between inverse functions.	<ul style="list-style-type: none"> • A2.F.BF.A.1.b Combine standard function types using composition. (4.6) • A2.F.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. (4.3) • A2.F.BF.B.4 Find the inverse of a function. (4.7) • A2.F.BF.B.4.a Determine whether a function is one-to-one. (4.7) • A2.F.BF.B.4.b Find the inverse of a function on an appropriate domain. (4.7) • A2.F.BF.B.4.c Given an invertible function on an appropriate domain, identify the domain of the inverse function. (4.7) 	
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CHAPTER 5: EXPONENTIAL AND LOGARITHMIC FUNCTIONS

Chapter Learning Target: Understand exponential and logarithmic functions.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
5.1 Exponential Growth and Decay Functions	Write and graph exponential growth and decay functions.	<ul style="list-style-type: none"> • A2.N.Q.A.1 Use units as a way to understand real-world problems. (5.1, 5.7) • A2.N.Q.A.1.a Choose and interpret the scale and the origin in graphs and data displays. (5.1) • A2.N.Q.A.1.b Use appropriate quantities in formulas, converting units as necessary. (5.1, 5.7) 	At the conclusion of the chapter, students will be evaluated through a common summative assessment.
5.2 The Natural Base e	Use the natural base e and graph natural base functions.	<ul style="list-style-type: none"> • A2.N.Q.A.1.c Define and justify appropriate quantities within a context for the purpose of modeling. (5.7) • A2.N.Q.A.1.d Choose an appropriate level of accuracy when reporting quantities. (5.7) 	Task(s):
5.3 Logarithms and Logarithmic Functions	Understand logarithms and graph logarithmic functions.	<ul style="list-style-type: none"> • A2.A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context. (5.7) • A2.A.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients. (5.7) • A2.A.SSE.A.1.b Interpret complicated expressions by viewing one or more of their parts as a single entity. (5.7) 	ACT Standard(s): F504, F505, F506, F507, S505, S506, AF601, AF602, AF603, AF604, A601, AF702, AF703, AF704, AF705, AF706, F701, F702, F707
5.4 Transformations of Exponential and Logarithmic Functions	Describe and graph transformations of exponential and logarithmic functions.	<ul style="list-style-type: none"> • A2.A.CED.A.2 Create equations in two variables to represent relationships between quantities and use them to solve problems in a real-world context. Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions. (5.7) 	Honors Addendum: At the conclusion of the course, Honors students will be expected to use transformations and the functions learned in this chapter to complete the <i>What's in a Name?</i> project.
5.5 Properties of Logarithms (HONORS ONLY)	Use properties of logarithms.	<ul style="list-style-type: none"> • A2.A.REI.A.1 Understand solving equations as a process of reasoning and explain the reasoning. Construct a viable argument to justify a solution method. (5.6) 	
5.6 Solving Exponential and Logarithmic Equations	Solve exponential and logarithmic equations and inequalities.	<ul style="list-style-type: none"> • A2.F.IF.B.4 Graph functions expressed algebraically and show key features of the graph by hand and using technology. (5.1, 5.2, 5.3, 5.4) 	

<p>5.7 Modeling with Exponential and Logarithmic Functions</p>	<p>Write exponential and logarithmic functions to model sets of data.</p>	<ul style="list-style-type: none"> • A2.F.IF.B.5.b Know and use the properties of exponents to interpret expressions for exponential functions in terms of a real-world context. (5.1) • A2.F.IF.B.6 Compare properties of functions represented algebraically, graphically, numerically in tables, or by verbal descriptions. (5.2) • A2.F.IF.B.6.a Compare properties of two different functions. Functions may be of different types and/or represented in different ways. (5.2) • A2.F.BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. (5.4) • A2.F.BF.B.4 Find the inverse of a function. (5.4) • A2.F.LE.A.1 Know the relationship between exponential functions and logarithmic functions. (5.3) • A2.F.LE.A.1.a Solve exponential equations using a variety of strategies, including logarithms. (5.6) • A2.F.LE.A.1.b Understand that a logarithm is the solution to $ab^{ct} = d$, where a, b, c, and d are numbers. (5.5, 5.6) • A2.F.LE.A.1.c Evaluate logarithms using technology. (5.3, 5.6) • A2.F.LE.A.2 Know that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or cubically. (5.1) • A2.S.ID.B.4 Represent data from two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. (5.7) 	
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CHAPTER 6: PROBABILITY

Chapter Learning Target: Understand probability.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
6.1 Sample Spaces and Probability	Find sample spaces and probabilities of events.	<ul style="list-style-type: none"> • A2.S.ID.A.2 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. (6.5) • A2.S.CP.A.1 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. Categorize events as independent or dependent. (6.4) • A2.S.CP.B.2 Apply statistical counting techniques. (6.6) • A2.S.CP.B.2.a Use the Fundamental Counting Principle to compute probabilities of compound events and solve problems. (6.6) • A2.S.CP.B.2.b Use permutations and combinations to compute probabilities of compound events and solve problems. (6.6, 6.7) • A2.S.CP.B.3 Use the Law of Large Numbers to assess the validity of a statistical claim. (6.1) • A2.S.CP.C.4 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 given context. (6.1, 6.2, 6.3) 	At the conclusion of the chapter, students will be evaluated through a common summative assessment.
6.2 Two-Way Tables and Probability	Use two-way tables to represent data and find probabilities.		<p>Task(s):</p>
6.3 Conditional Probability	Find and use conditional probabilities.		<p>ACT Standard(s): S305, S403, S404, S405, S503, S504, S602, S603, S604, S605, S606, S702, S704</p>
6.4 Independent and Dependent Events	Understand and find probabilities of independent and dependent events.		
6.6 Permutations and Combinations	Count permutations and combinations.		

CHAPTER 7/8: DATA ANALYSIS

Chapter Learning Target: Understand data analysis and statistics.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
7.1 Measures of Center and Variation	Find measures of center and variation of a data set.	<ul style="list-style-type: none"> • A2.N.Q.A.1 Use units as a way to understand real-world problems. (7.2, 7.3) • A2.N.Q.A.1.a Choose and interpret the scale and the origin in graphs and data displays. (7.2, 7.3) • A2.S.ID.A.1 Use statistics appropriate to the shape of the data distribution to compare center (mean, median, and/or mode) and spread (range, standard deviation) of two or more different data sets. (7.1, 7.2, 7.3) • A2.S.ID.A.2 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. (8.1) • A2.S.ID.A.3 Compute, interpret, and compare z-scores for normally distributed data in a real-world context. (8.1) • A2.S.IC.A.1 Recognize the purposes of and differences among sample surveys, experiments, and observational studies. (8.3, 8.4) • A2.S.IC.A.2 Identify potential sources of bias in statistical studies. (8.3) • A2.S.IC.A.3 Distinguish between a statistic and a parameter; Evaluate reports based on data and recognize when poor conclusions are drawn from well-collected data. (8.2, 8.4) 	At the conclusion of the chapter, students will be evaluated through a common summative assessment.
7.3 Shapes of Distributions	Describe and compare shapes of distributions.		<p>Task(s):</p>
8.1 Using Normal Distributions	Understand normal distributions.		<p>ACT Standard(s): S201, S301, S501, S502, S701, S703</p>
8.2 Populations, Samples, and Hypotheses	Use random samples and simulations to make conclusions.		
8.3 Collecting Data	Describe sampling methods and recognize bias when collecting data.		
8.4 Experimental Design	Describe and analyze experiments and their designs.		

CHAPTER 9: SEQUENCES

Chapter Learning Target: Understand sequences.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
9.1 Defining and Using Sequences	Understand sequences.	<ul style="list-style-type: none"> A2.F.BF.A.2 Define sequences as functions, including recursive definitions, whose domain is a subset of the integers. Write explicit and recursive formulas for arithmetic and geometric sequences in context and connect them to linear and exponential functions. <i>(9.1, 9.2, 9.3, 9.4)</i> 	<p>At the conclusion of the chapter, students will be evaluated through a common summative assessment.</p> <p>Task(s):</p> <p>ACT Standard(s): N201, F301, F502, F504, F505, F506, F507, F703</p>
9.2 Arithmetic Sequences	Understand the concept of arithmetic sequences.		
9.3 Geometric Sequences	Identify, extend, and graph geometric sequences.		
9.4 Using Recursive Rules with Sequences	Write and use recursively defined sequences.		

CHAPTER 10: MATRICES

Chapter Learning Target: Understand matrices.

LESSON	LEARNING TARGETS	TENNESSEE ACADEMIC STANDARDS	ASSESSMENTS
10.1 Basic Matrix Operations	Perform basic operations involving matrices.	<ul style="list-style-type: none"> • A2.N.M.A.1 Use matrices to represent data in a real-world context. Interpret rows, columns, and dimensions of matrices in terms of the context. <i>(10.1, 10.2)</i> • A2.N.M.A.2 Perform operations on matrices in a real-world context. <i>(10.1, 10.2)</i> 	At the conclusion of the chapter, students will be evaluated through a common summative assessment.
10.2 Multiplying Matrices	Understand how to multiply matrices.	<ul style="list-style-type: none"> • A2.N.M.A.2.a Multiply a matrix by a scalar to produce a new matrix. <i>(10.1)</i> • A2.N.M.A.2.b Add and/or subtract matrices by hand and using technology. <i>(10.1, 10.2)</i> 	Task(s):
10.3 Matrices and Systems of Linear Equations	Use augmented matrices to solve systems of linear equations.	<ul style="list-style-type: none"> • A2.N.M.A.2.c Multiply matrices of appropriate dimensions, by hand in simple cases and using technology for more complicated cases. <i>(10.2)</i> • A2.N.M.A.2.d Describe the roles that zero matrices and identity matrices play in matrix addition and multiplication, recognizing that they are similar to the roles of 0 and 1 in the real number system. <i>(10.1, 10.2)</i> • A2.N.M.A.3 Create and use augmented matrices to solve systems of linear equations in real-world contexts, by hand and using technology. <i>(10.3)</i> • A2.A.REI.B.3 Write and solve a system of linear equations in a real-world context. <i>(10.3)</i> 	ACT Standard(s): N406, N505, N607, A604, N705, N706