

Tennessee Curriculum Matrix for Mathematics

Tennessee Mathematics Content Standards/ State Performance Indicators Algebra I	Common Core Mathematics Standards Domain/Cluster/Standards Algebra I	National Essential Skills Study (NESS) Rankings Rank	NESS	TCAP	Priority	
Standard 1 – Mathematical Processes						
SPI 3102.1.1 Interpret patterns found in sequences, tables, and other forms of quantitative information using variables or function notation.	<p style="text-align: center;"><u>Algebra -- Creating Equations</u> Create equations that describe numbers or relationships. 1. Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i> 2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p> <p style="text-align: center;"><u>Functions—Building Functions.</u> Build a function that models a relationship between two quantities. 1. Write a function that describes a relationship between two quantities. a. Determine an explicit expression, a recursive process, or steps for calculation from a context. b. Combine standard function types using arithmetic operations. <i>For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.</i> c. (+) Compose functions. <i>For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.</i></p>	M11	Apply variables in expressions and equations to solve problems (i.e., write mathematical equations for given situation, create a mathematical model to understand the relationships between variables, or make connections between the structures of mathematically abstract concepts and the real world).			
		M16	Apply pattern recognition in data sets and series to reason or solve problems involving arithmetic, geometry, exponents, etc.	H	H	H

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SPI 3102.1.2 Write an equation symbolically to express a contextual problem.	<u>Algebra--Creating Equations</u> Create equations that describe numbers or relationships. 1. Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i> 2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i> 3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.</i>	M7	Simplify and solve algebraic equations by identifying and using the correct order of operations and techniques necessary to carry out the solution.	H	H	H
		M11	Apply variables in expressions and equations to solve problems (i.e., write mathematical equations for given situation, create a mathematical model to understand the relationships between variables, or make connections between the structures of mathematically abstract concepts and the real world).			

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SPI 3102.1.3 Apply properties to evaluate expressions, simplify expressions, and justify solutions to problems.	<p><u>Algebra—Arithmetic with Polynomials & Rational Expressions</u></p> <p>Perform Arithmetic operations on polynomials.</p> <p>1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.</p> <p>Rewrite Rational Expressions.</p> <p>7. Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.</p> <p><u>Algebra--Creating Equations</u></p> <p>Create equations that describe numbers or relationships.</p> <p>4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. <i>For example, rearrange Ohm's law $V = IR$ to highlight resistance R.</i></p>	M2	Understand and apply basic algebraic properties (commutative and associative laws of addition and multiplication, distributive law of multiplication over addition, and identities and inverses).	H	H	H
		M10	Understand and apply a systematic methodology or procedure (e.g., direct or indirect measurement, direct or indirect proof, inductive or deductive reasoning) to model and solve problems.			