

Tennessee Mathematics Standards Alignment to:

- the Common Core State Standards (CCSS)
- the National Essential Skills Study (NESS)

Please note that the National Essential Skills Study (NESS) is only aligned to the Tennessee Algebra I standards. The NESS descriptors are not intentionally aligned to the Common Core State Standards (CCSS) or their subparts. Any alignment between NESS descriptors and CCSS is coincidental.

Tennessee Mathematics Content Standards/ State Performance Indicators Algebra I	Mathematics Domains Clusters Common Core State Standards High School	National Essential Skills Study (NESS) Rankings	
		Rank	
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.	<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.	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).
	<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>	M16	Apply pattern recognition in data sets and series to reason or solve problems involving arithmetic, geometry, exponents, etc.

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<p>SPI 3102.1.2 Write an equation symbolically to express a contextual problem.</p>	<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. 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></p>	<p>M7</p>	<p>Simplify and solve algebraic equations by identifying and using the correct order of operations and techniques necessary to carry out the solution.</p>
		<p>M11</p>	<p>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).</p>
<p>SPI 3102.1.3 Apply properties to evaluate expressions, simplify expressions, and justify solutions to problems.</p>	<p style="text-align: center;"><u>Algebra—Arithmetic with Polynomials & Rational Expressions</u> Perform Arithmetic operations on polynomials. 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. Rewrite Rational Expressions. 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 style="text-align: center;"><u>Algebra--Creating Equations</u> Create equations that describe numbers or relationships. 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> </p>	<p>M2</p>	<p>Understand and apply basic algebraic properties (commutative and associative laws of addition and multiplication, distributive law of multiplication over addition, and identities and inverses).</p>
		<p>M10</p>	<p>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.</p>