Grade PK	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Standard 1.0 Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	**Standard 1.0** Knowledge of Algebra, Patterns, and Functions: Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.
A. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions	**A**. Patterns and Functions
	1. Identify and copy numeric patterns	**1**. Identify, describe, extend, and create numeric patterns	**1**. Identify, describe, extend, and create numeric patterns	**1**. Identify, describe, extend, and create numeric patterns and functions	**1**. Identify, describe, extend, and create numeric patterns and functions	**1**. Identify, describe, extend, and create numeric patterns and functions	**1**. Identify, describe, extend, and create numeric patterns and functions	**1**. Identify, describe, extend, and create linear patterns and functions	**1**. Identify, describe, extend, and create patterns, functions and sequences
	a. Use manipulatives with numeric qualities to build patterns	**a.** Represent and analyze numeric patterns using skip counting by multiples of 2 and 10 starting with any whole number, and using manipulatives and the 100 chart	**a.** Represent and analyze numeric patterns using skip counting by 2, 5, and 10 starting with any whole number and using whole numbers to 100	**a.** Represent and analyze numeric patterns using skip counting **Assessment limit:** • Use 2, 5, 10, or 100 starting with any whole number (0 – 1000)	**a.** Represent and analyze numeric patterns using skip counting **Assessment limit:** • Use patterns of 3, 4, 6, 7, 8, or 9 starting with any whole number (0 – 100)	**a.** Interpret and write a rule for a one-operation (+, -, x, ÷ with no remainders) function table **Assessment limit:** • Use whole numbers or decimals with no more than 2 decimal places (0 – 1000)	**a.** Identify and describe sequences represented by a physical model or in a function table	**a.** Complete a function table with a given two-operation rule **Assessment limit:** • Use the operations (+, -, x), numbers no more than 20 in the rule and whole numbers (0-500)	**a.** Determine the recursive relationship of arithmetic sequences represented in words, in a table or in a graph **Assessment limit:** • Provide the nth term no more than 10 terms beyond the last given term using common differences no more than 10 with integers (-100 to 5000)

			b.	b.	b.	b.	b.	b.	b.	b.
			b. Represent and analyze numeric patterns using skip counting backward by 10s starting with a multiple of 10, and using manipulatives	**b.** Represent and analyze numeric patterns using skip counting backward by 10s starting with any 2-digit whole number	**b.** Represent and analyze numeric patterns using skip counting **Assessment limit:** • Use 3 or 4 starting with 0, 1, 2, 3, or 4 (0 - 30)	**b.** Create a one-operation (+ or -) function table to solve a real world problem	**b.** Create a one-operation (x, ÷ with no remainders) function table to solve a real world problem	**b.** Interpret and write a rule for a one-operation (+, -, x, ÷) function table **Assessment limit:** • Use whole numbers or decimals with no more than two decimal places (0 – 10,000)	**b.** Identify and extend a geometric sequence	**b.** Determine the recursive relationship of geometric sequences represented in words, in a table, or in a graph **Assessment limit:** • Provide the nth term no more than 5 terms beyond the last given term using the recursive relationship of geometric sequences with whole numbers and a common ratio of no more than 5:1 (0 – 10,000)
			c. Recognize a function table as a relationship between numbers	**c.** Represent and analyze numeric patterns using skip counting backward **Assessment limit:** • Use 10 or 100 starting with any whole number (0 – 1000)	**c.** Complete a function table using a one operation (+, -, ×, ÷ with no remainders) rule **Assessment limit:** •	**c.** Complete a one-operation function table	**c.** Complete a one-operation function table **Assessment limit:** • Use whole numbers with +, -, x, ÷ (with no remainders) or use decimals with no more than two decimal places with +, - (0 – 200)	**c.** Complete a function table with a given two-operation rule **Assessment limit:** • Use the operations of (+, -, x), numbers no more than 10 in the rule, and whole numbers (0 - 50)	**c.** Describe how a change in one variable in a linear function affects the other variable in a table of values	**c.** Determine whether relationships are linear or nonlinear when represented in words, in a table, symbolically, or in a graph **Assessment limit:** • Use a graph to determine if a relationsip is linear or nonlinear

				d. Complete a function table with a given one-operation rule (+, -) using whole numbers	d. Complete a function table using a given addition or subtraction rule	d. Describe the relationship that generates a one-operation rule	d. Apply a given two operation rule for a pattern **Assessment limit:** • Use two operations (+, -, x) and whole numbers (0 – 100)			d. Determine whether relationships are linear or nonlinear when represented symbolically
2. Identify, copy, and extend non-numeric patterns	**2.** Identify, copy, describe, create, and extend non-numeric patterns	**2.** Identify, copy, describe, create and extend non-numeric patterns	**2.** Identify, copy, describe, create, and extend nonnumeric patterns	**2.** Identify, describe, extend, and create non-numeric growing or repeating patterns	**2.** Identify, describe, extend, analyze, and create a non-numeric growing or repeating pattern					
a. Match patterns kinesthetically such as: clap/snap/clap…	**a.** Represent patterns kinesthetically such as: clap/snap/clap	**a.** Represent and analyze growing patterns kinesthetically such as: clap/snap, clap/snap/snap, clap/snap/snap/snap, …	**a.** Represent and analyze growing patterns that start at the beginning and show no more than 3 levels, and ask for the next level, using symbols, shapes, designs, and pictures	**a.** Represent and analyze growing patterns using symbols, shapes, designs, or pictures **Assessment limit:** • Start at the beginning, show at least 3 levels but no more than 5 levels, and ask for the next level	**a.** Generate a rule for the next level of the growing pattern **Assessment limit:** • Use at least 3 levels but no more than 5 levels					
b. Recognize simple patterns	**b.** Represent and analyze repeating patterns using no more than 3 objects in the core of the pattern	**b.** Represent and analyze repeating patterns using no more than 3 different objects in the core of the pattern	**b.** Represent and analyze repeating patterns using 3 different objects in the core of the pattern	**b.** Represent and analyze repeating patterns using symbols, shapes, designs, or pictures **Assessment limit:** • Use no more than 4 objects in the core of	**b.** Generate a rule for a repeating pattern **Assessment limit:** • Use no more than 4 objects in the core of the pattern					

				the pattern					
c. Represent simple repeating patterns using no more than 2 different objects, and different actions in the core of the pattern	**c.** Sort a collection of objects according to a rule	**c.** Transfer a repeating pattern from one medium to a different medium using no more than 3 different objects in the core of the pattern	**c.** Transfer a repeating pattern from one medium to 2 different media using no more than 3 different objects in the core of the pattern such as: red, green, red, green, … A, B, A, B, … △, □, △, □, …		**c.** Create a non-numeric growing or repeating pattern				
d. Continue a simple pattern	**d.** Identify patterns in real life situations	**d.** Identify patterns in real-world situations							
e. Create a simple pattern of 2 different objects when given the rule	**e.** Recognize the difference between patterns and non-patterns								
f. Identify patterns in real-world situations	**f.** Continue patterns								
B. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities	**B**. Expressions, Equations, and Inequalities
	1. Write and identify expressions	**1.** Write and identify expressions	**1.** Write and identify expressions	**1.** Write and identify expressions	**1.** Write and identify expressions	**1.** Write and identify expressions	**1.** Write and evaluate expressions	**1.** Write and evaluate expressions	**1.** Write, simplify, and evaluate expressions
	a. Represent numeric quantities using concrete and pictorial representations to model addition expressions with a value of no more than 10	**a.** Represent numeric quantities using concrete and pictorial representations and operational symbols (+, -) with whole numbers to 20	**a.** Represent numeric quantities using operational symbols (+, -) and whole numbers to 25	**a.** Represent numeric quantities using operational symbols (+, -, ×, ÷) **Assessment limit:** • Use operational symbols (+ or -) and	**a.** Represent numeric quantities using operational symbols (+, -, ×, ÷ with no remainders) **Assessment limit:** • Use whole numbers (0	**a.** Represent unknown quantities with one unknown and one operation (+, -, ×, ÷ with no remainders) **Assessment limit:** • Use whole numbers (0	**a.** Write an algebraic expression to represent unknown quantities **Assessment limit:** • Use one unknown and one operation	**a.** Write an algebraic expression to represent unknown quantities **Assessment limit:** • Use one unknown and one or two	**a.** Write an algebraic expression to represent unknown quantities **Assessment limit:** • Use one unknown and no more than 3

					whole numbers (0 – 50) **38. Every Drop Counts, Part A**	– 100)	– 100) or money ($0 - $100)	(+, -) with whole numbers, fractions with denominators as factors of 24, or decimals with no more than two decimal places (0-200)	operations (+, -, ×, ÷ with no remainders) with whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0-500)	operations and rational numbers (-1000 to 1000)
						b. Determine equivalent expressions **Assessment limit:** • Use whole numbers (0 – 100)	**b.** Determine the value of algebraic expressions with one unknown and one operation **Assessment limit:** • Use +, - with whole numbers (0-1000) or ×, ÷ (with no remainders) with whole numbers (0-100) and the number for the unknown is no more than 9	**b.** Evaluate an algebraic expression **Assessment limit:** • Use one unknown and one operation (+, -) with whole numbers (0 – 200), fractions with denominators as factors of 24 (0 – 50), or decimals with no more than two decimal places (0 – 50)	**b.** Evaluate algebraic expressions **Assessment limit:** • Use one unknown and no more than two operations (+, -, ×, ÷ with no remainders) with whole numbers (0 – 200), fractions with denominators as factors of 100 (0 – 100), or decimals with no more than three decimal places (0 – 100)	**b.** Evaluate an algebraic expression **Assessment limit:** • Use one or two unknowns and up to three operations and rational numbers (-100 to 100)
							c. Use parenthesis to evaluate a numeric	**c.** Evaluate numeric expressions using	**c.** Evaluate numeric expressions using	**c.** Evaluate numeric expressions using

							expression	the order of operations **Assessment limit:** • Use no more than 4 operations (+, -, x, ÷ with no remainders) with or without 1 set of parentheses or a division bar and whole numbers (0-100)	the order of operations **Assessment limit:** • Use no more than 4 operations (+, -, ×, ÷ with no remainders) with or without up to 2 sets of parentheses, brackets, or a division bar, with whole numbers (0 – 200), fractions with denominators as factors of 100 (0 – 100), or decimals with no more than three decimal places (0 – 100)	the order of operations **Assessment limit:** • Use no more than 5 operations including exponents of no more than 3 and 2 sets of parentheses, brackets, a division bar, or absolute value with rational numbers (-100 to 100)
		•						**d.** Represent algebraic expressions using physical models, manipulatives, and drawings	**d.** Simplify algebraic expressions represented as physical models by combining like terms	**d.** Simplify algebraic expressions by combining like terms **Assessment limit:** • Use no more than 3 variables with integers (-50 to 50), or proper fractions with denominators as factors

									of 20 (-20 to 20)
									e. Describe a real-world situation represented by an algebraic expression
2. Identify inequalities	**2.** Identify equations and inequalities	**2.** Identify, write, and solve equations and inequalities	**2.** Identify, write, and solve equations and inequalities	**2.** Identify, write, solve, and apply equations and inequalities	**2.** Identify, write, solve, and apply equations and inequalities	**2.** Identify, write, solve, and apply equations and inequalities	**2.** Identify, write, solve, and apply equations and inequalities	**2.** Identify, write, solve, and apply equations and inequalities	**2.** Identify, write, solve, and apply equations and inequalities
a. Explore relationships by comparing groups of no more than 5 objects to determine more or less	**a.** Represent relationships by comparing groups of no more than 10 objects to determine more or less	**a.** Represent relationships using the terms greater than, less than, and equal to for quantities up to 100	**a.** Represent relationships using appropriate relational symbols (>, <, =) and operational symbols (+, -) with whole numbers to 100	**a.** Represent relationships using appropriate relational symbols (<, >, or =) and operational symbols (+, -, ×, ÷) on either side **Assessment limit:** • Use operational symbols (+ or -) and whole numbers (0 – 1000)	**a.** Represent relationships using relational symbols (>, <, =) and operational symbols (+, -, ×, ÷) on either side **Assessment limit:** • Use operational symbols (+, -, ×) and whole numbers (0 – 200)	**a.** Represent relationships by using the appropriate relational symbols (>, <, =) and one operational symbol (+, -, ×, ÷ with no remainders) on either side **Assessment limit:** • Use whole numbers (0 – 400)	**a.** Identify and write equations and inequalities to represent relationships **Assessment limit:** • Use a variable, the appropriate relational symbols (>, <, =), and one operational symbol (+, -, ×, ÷) on either side and use fractions with denominators as factors of 24 (0 – 50) or decimals with no more than two decimal places (0 – 200)	**a.** Write equations and inequalities to represent relationships **Assessment limit:** • Use a variable, the appropriate relational symbols (>, ≥, <, ≤, =), and one or two operational symbols (+, -, ×, ÷) on either side and use whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 – 500)	**a.** Write equations or inequalities to represent relationships **Assessment limit:** • Use a variable, the appropriate relational symbols (>, ≥, <, ≤, =) and no more than 3 operational symbols (+, -, ×, ÷) on either side and rational numbers (-1000 to 1000) *50. 400-Acre Wood* *50. 400-Acre Wood, Enrichment*

								50. 400-Acre Wood 50. 400-Acre Wood, Enrichment	
	b. Model and name the value of the missing part in a part-part-whole situation using no more than 10 manipulatives	**b.** Find the missing number (unknown) in a number sentence using operational symbols (+, -) with whole numbers to 20 using pictures and manipulatives	**b.** Find the missing number (unknown) in a number sentence using operational symbols (+, -) with whole numbers up to 50	**b.** Find the missing number (unknown) in a number sentence (equation) using operational symbols (+, -, ×, ÷) **Assessment limit:** • Use one operational symbol (+ or -) and whole numbers (0 – 100)	**b.** Find the unknown in an equation with one operation **Assessment limit:** • Use multiplication (×) and whole numbers (0-81)	**b.** Find the unknown in an equation use one operation (+, -, ×, ÷ with no remainders) **Assessment limit:** • Use whole numbers (0 – 2000)	**b.** Determine the unknown in a linear equation **Assessment limit:** • Use one operation (+, -, ×, ÷ with no remainders) and use positive whole number coefficients using decimals with no more than two decimal places (0 – 100)	**b.** Determine the unknown in a linear equation **Assessment limit:** • Use one or two operations (+, -, ×) and the unknown only once with whole numbers (0 – 500), fractions with denominators as factors of 100 (0 – 50), or decimals with no more than three decimal places (0 – 100)	**b.** Solve for the unknown in a linear equation **Assessment limit:** • Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and rational numbers (-2000 to 2000)
	c. Describe addition using terms such as: and, add, plus, join, equal			**c.** Find the missing number(s) (unknown) on one or both sides of a number sentence (equation)			**c.** Solve for the unknown in a one-step inequality	**c.** Solve for the unknown in an inequality **Assessment limit:** • Use an inequality with one variable with a positive whole number coefficient and one operation	**c.** Solve for the unknown in an inequality **Assessment limit:** • Use a one- or two-operation inequality with one variable on one side no more than 3 times whose result after

									(+, -, ×, ÷ with no remainders) using whole numbers or decimals with no more than 2 decimal places (0 – 500)	combining coefficients is a positive whole number coefficient with integers (-100 to 100)
								d. Identify or graph solutions of a one-step inequality on a number line	**d.** Identify or graph solutions of inequalities on a number line **Assessment limit:** • Use whole numbers (0 – 50)	**d.** Identify or graph solutions of inequalities on a number line **Assessment limit:** • Use one variable once with a positive whole number coefficient and integers (-100 to 100)
								e. Apply given formulas to a problem solving situation	**e.** Apply given formulas to a problem solving situation **Assessment limit:** Use formulas having no more than three variables and up to two operations, with whole numbers, fractions with denominators as factors of 100, or decimals with no more than three decimal places (0 –	**e.** Identify equivalent equations **Assessment limit:** • Use one unknown no more than 3 times on one side and up to three operations (same or different but only one division) and integers (-2000 to

								100)	2000)
								50. 400-Acre Wood ***50. 400-Acre Wood, Enrichment***	
									f. Apply given formulas to a problem-solving situation **Assessment limit:** • Use no more than four variables and up to three operations with rational numbers (-500 to 500)
									g. Write equations and inequalities that describe real-world problems
C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships	C. Numeric and Graphic Representations of Relationships
	1. Locate points on a number line	**1.** Locate points on a number line	**1.** Locate points on a number line	**1.** Locate points on a number line	**1.** Locate points on a number line and in a coordinate grid	**1.** Locate points on a number line and in a coordinate grid	**1.** Locate points on a number line and in a coordinate plane	**1.** Locate points on a number line and in a coordinate plane	**1.** Locate points on a number line and in a coordinate plane
	a. Identify and represent whole numbers up to 10 on a number line using manipulatives, symbols, and one-to-one correspondence	**a.** Identify and represent whole numbers up to 50 on a number line using manipulatives and symbols	**a.** Represent whole numbers up to 100 on a number line	**a.** Represent whole numbers on a number line **Assessment limit:** • Use whole numbers (0 - 500)	**a.** Represent mixed numbers and proper fractions on a number line **Assessment limit:** • Use proper fractions with a denominator	**a.** Represent decimals and mixed numbers on a number line **Assessment limit:** • Use decimals with no more than two decimal	**a.** Represent rational numbers on a number line **Assessment limit:** • Use integers (-20 to 20)	**a.** Represent rational numbers on a number line **Assessment limit:** • Use rational numbers (-100 to 100)	**a.** Graph linear equations in a coordinate plane **Assessment limit:** • Use two unknowns having integer coefficients

						s of 6, 8, or 10	places (0 – 100) or mixed numbers with denominators of 2, 3, 4, 5, 6, 8, or 10 (0 - 10)			(-9 to 9) and integer constants (-20 to 20)
					b. Represent proper fractions on a number line **Assessment limit:** • Use fractions that have denominators of 2, 3, or 4	**b.** Identify positions in a coordinate plane **Assessment limit:** • Use the first quadrant and ordered pairs of whole numbers (0 - 20)	**b.** Create a graph in a coordinate plane **Assessment limit:** • Use the first quadrant and ordered pairs of whole numbers (0 – 50)	**b.** Graph ordered pairs in a coordinate plane. **Assessment limit:** • Use no more than 3 ordered pairs of integers (-20 to 20) or no more than 3 ordered pairs of fractions/mixed numbers with denominators of 2 (-10 to 10)	**b.** Graph ordered pairs in a coordinate plane **Assessment limit:** • Use no more than 4 ordered pairs of rational numbers (-20 to 20)	
						c. Represent decimals on a number line		**c.** Graph linear data from a function table	**c.** Graph linear equations with one operation in a coordinate plane	
								2. Analyze linear relationships	**2.** Analyze linear relationships	**2.** Analyze linear relationships
								a. Identify and describe the change represented in a graph **Assessment limit:** • Identify increase,	**a.** Identify and describe the change represented in a table of values **Assessment limit:** • Identify increase,	**a.** Determine the slope of a graph in a linear relationship **Assessment limit:** • Use an equation with integer

							decrease, or no change	decrease, or no change	coefficients (-9 to 9) and integer constants (-20 to 20) and a given graph of the relationship
							b. Translate the graph of a linear relationship onto a table of values that illustrates the type of change	**b.** Describe the rate of change of a linear relationship by a table of values and a graph	**b.** Determine the slope of a linear relationship represented numerically or algebraically

Note: Highlighted assessment limits will be tested in the no calculator section of MSA. In the assessment limit, (0-10) or (-10 to 10) means all numbers in the problem or the answer will fall within the range of 0 to 10 (including endpoints) or -10 to 10 (including endpoints), respectively. All content standards are tested in MSA but not all objectives. Objectives that have an assessment limit are tested on MSA. Objectives without an assessment limit are not tested on MSA.

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