

Content analysis for SpringMath coverage of North Dakota Mathematics Content Standards K-8 (July 2023)

How to use this summary:

The SpringMath skill coverage column references Assessment and Intervention coverage. Assessments are shown in orange and are numbered. Intervention coverage is shown in blue and is shared only if a specific assessment is not focused on a standard. For all assessments, all related prerequisite assessments are also relevant to the standard but are not listed in our summary.

For example, Addition with & without Regrouping, the prerequisite assessments of Addition with Regrouping with 2-digit (one measure) and 3-digit numbers (second measure) would apply, as would Addition without regrouping with 2-digit numbers (third measure) and 3-digit numbers (fourth measure) For all grade-level assessments pertaining to a grade-level standard, the diagnostic assessment process directed by SpringMath can and will take the child all the way back to the entry-level skill causing the grade-level misunderstanding and begin intervention there. The entry-level skill may be well below grade level. Efficiency of assessment is permitted by assessing slightly broader targets with rigorous expectations for skill proficiency such that if a child is not proficient, the child will be routed into diagnostic assessment and intervention. Once in intervention, the intervention protocols are aligned with Common Core State Standards such that skills not directly assessed are addressed within the intervention protocols.

Another example, at Grade 4, SpringMath assesses addition and subtraction with decimal values to the hundredths. If children are not proficient with this skill, the follow-up assessment would verify mastery of multi-digit addition and subtraction and build the intervention accordingly.

Kindergarten

Domain: Numbers and Operations (NO)

Counting and Cardinality (CC)		
	Standards	SpringMath skill coverage
	K.NO.CC.1 Count verbally in sequential order by ones and tens to 100, making accurate decuple transitions (e.g., 89 to 90) Count verbally forward from any given number within 100.	1) Missing Number to 10 2) Missing Number to 20 3) Number Names to 10 4) Number Names to 20 Included in intervention protocols: counting in sequence. Count Objects 1-10, Circle Answer Count Objects 1-20, Circle Answer Count Objects 1-10, Write Answer Count Objects 1-20, Write Answer Count Objects Aloud 1-10 Count Objects Aloud 1-20
	K.NO.CC.2 Count backward from 20 by ones and from a given number within 10.	1) Missing Number to 10 2) Missing Number to 20 3) Number Names to 10 4) Number Names to 20 5) More/Less Quantity Discrimination with Dots 1-10 Included in intervention protocols: Change Quantity of Dots to 10
	K.NO.CC.3 Identify and write any given numeral within 20.	1) Count & Circle Answer to 10 2) Count & Circle Answer to 20 3) Count & Write Number to 10 4) Count & Write Number to 20

	K.NO.CC.4 Recognize and verbally label arrangements, without counting, for briefly shown collections up to 10 (e.g., “I saw 5.” How do you know?” “I saw 3 and 2, that is 5.”).	1) Count & Circle Answer to 10 2) Count & Write Number to 10 3) Identify & Draw Circles to 10 4) Quantity Comparison with Dots to 10 5) Quantity Comparison with Dots to 20
	K.NO.CC.5 Count and tell how many objects up to 20 are in an arranged pattern or up to 10 objects in a scattered configuration. Represent a quantity of up to 20 with a numeral.	1) Count & Circle Answer to 10 2) Count & Circle Answer to 20 3) Count & Write Number to 10 4) Count & Write Number to 20 5) Identify & Draw Circles to 10 6) Identify & Draw Circles to 20
Base Ten (NBT)		
	K.NO.NBT.1 Compose and decompose numbers from 11 to 19 using a group of ten ones and some more ones using a model, drawing, or equation.	1) Count Objects Aloud to 10 2) Count Objects Aloud to 20 3) Count & Circle Answer to 10 4) Count & Circle Answer to 20 5) Count & Write Number to 10 6) Count & Write Number to 20 7) Quantity Comparison with Dots to 10 8) Quantity Comparison with Dots to 20
	K.NO.NBT.2 Compare two numbers between 1 and 20 using words greater than, less than, or equal to.	1) Count Objects Aloud to 10 2) Count Objects Aloud to 20 3) Count & Circle Answer to 10 4) Count & Circle Answer to 20 5) Count & Write Number to 10 6) Count & Write Number to 20 7) Quantity Comparison with Dots to 10 8) Quantity Comparison with Dots to 20 Included in intervention protocols: Quantity comparison with numerals, dots, & manipulatives.

Algebraic Reasoning (AR)		
	K.AR.OA.1 Automatically add and subtract within 5.	1) Change Quantity with Dots to 10 2) Add 0-5 for Kindergarten 3) Subtract 0-5 for Kindergarten
	K.AR.OA.2 For any number from 1 to 9, find the number that makes 10 when added to the given number, sharing the answer with a model, drawing, or equation.	1) Change Quantity with Dots to 10
	K.AR.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way using verbal explanations, objects, or drawings.	Intervention protocols include: find the doubles, making quantities to 5 and 10 using manipulatives and drawings. Using addition/subtraction expressions to make numbers 5 to 10.
	K.AR.OA.4 Solve authentic word problems with addition by putting together or adding to within 10.	1) Change Quantity with Dots to 10 2) Add 0-5 for Kindergarten 3) Subtract 0-5 For Kindergarten
	K.AR.OA.5 Solve authentic word problems with subtraction by taking apart or taking from within 10.	1) Change Quantity with Dots to 10 2) Add 0-5 for Kindergarten 3) Subtract 0-5 For Kindergarten

Kindergarten Overall Summary

- Numbers and Operations (Counting and Cardinality): 5/5 standards covered.
- Numbers and Operations (Base Ten): 2/2 standards covered.
- Algebraic Reasoning: 6/6 standards covered.
- Geometry and Measurement: Not Covered.
- Data, Probability and Statistics: Not Covered.

Grade 1		
Domain: Numbers and Operations (NO)		
Counting and Cardinality (CC)		
	Standards	SpringMath skill coverage
	1.NO.CC.1 Count forward by ones and tens from any given point within 120.	1) Quantity Comparison 101-999 Included in intervention protocols: Adding & taking tens to quantities, Decomposing tens and ones to add quantities.
	1.NO.CC.2 Count backward by ones and tens from a given number within 120.	1) Quantity Comparison 101-999 Included in intervention protocols: Adding & taking tens to quantities, Decomposing tens and ones to add quantities.
	1.NO.CC.3 Represent several objects with a written numeral up to 120.	1) Quantity Comparison 101-999 Included in intervention protocols: Adding & taking tens to quantities, Decomposing tens and ones to add quantities.
	1.NO.CC.5 Skip count forward and backward by 5s and 10s from multiples and recognize the patterns of up to 10 skip counts.	Included in intervention protocols: Taking and Adding Tens and Hundreds.
Base Ten (NBT)		
	1.NO.NBT.1 Demonstrate that the two digits	1) Quantity Comparison 20-99

	of a two-digit number represent a composition of some tens and some ones.	Included in intervention protocols: Adding & taking tens to quantities, Decomposing tens and ones to add quantities.
	1.NO.NBT.2 Compare two two-digit numbers using symbols $>$, $<$, and $=$. Justify comparisons based on the value of tens and ones.	1) Quantity Comparison 20-99 Included in intervention protocols: Adding & taking tens to quantities, Decomposing tens and ones to add quantities.
	1.NO.NBT.3 Add within 100 using a two-digit number and a one-digit number. Use concrete models, drawings, and strategies that reflect an understanding of place value.	1) Add 0-20 Included in intervention protocols: Adding & taking tens to quantities, decomposing tens and ones to add quantities, creating equivalent expressions using tens and ones and counting with manipulatives to check, and composing tens to create equivalent expressions.
	1.NO.NBT.4 Subtract multiples of 10 within 100 using concrete models, drawings, and strategies that reflect an understanding of place value.	Included in intervention protocols: Adding & taking tens to quantities up to 85.
	1.NO.NBT.5 Mentally add or subtract 10 to or from a given two-digit number and explain the reasoning used.	Included in intervention protocols: Adding & taking tens to quantities up to 85.
Algebraic Reasoning (AR)		
	1.AR.OA.1 Automatically add and subtract within 10.	1) Add 0-20 2) Subtraction 0-20 3) Fact Families for Addition & Subtraction

		0-20
	1.AR.OA.2 For any number from 1 to 19, find the number that makes 20 when added to the given number, sharing the answer with a model, drawing, or equation.	1) Fact Families for Addition & Subtraction 0-20 Included in intervention protocols: word problems that require multi-step solutions and require child to reach conclusions about quantity with addition and subtraction, solving for unknowns, and creating equivalent expressions.
	1.AR.OA.3 Decompose numbers less than or equal to 20 into pairs in more than one way.	Included in intervention protocols: solving for unknowns with the unknowns in all positions with addition and subtraction problems, word problems for all fluency-building protocols, creating equivalent expressions with addition and subtraction, and use of manipulatives, drawings, and number lines to solve addition & subtraction.
	1.AR.OA.4 Solve authentic word problems with addition, including three numbers and unknowns, within 20.	Included in intervention protocols: word problems that require multi-step solutions and require child to reach conclusions about quantity with addition and subtraction, solving for unknowns, and creating equivalent expressions.
	1.AR.OA.5 Solve authentic word problems with subtraction, including unknowns, within 20.	Included in intervention protocols: solving for unknowns with the unknowns in all positions with addition and subtraction problems, word problems for all fluency-building protocols, creating equivalent expressions with addition and subtraction, and use of manipulatives, drawings, and number lines to solve addition & subtraction.

	1.AR.OA.6 Distinguish and use the +, -, , and = symbols accurately in an equation.	Included in intervention protocols: creating equivalent expressions, solving for unknowns to make an expression true.
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1st Grade Overall Summary

- Numbers and Operations (Counting and Cardinality): 5/5 standards covered.
- Numbers and Operations (Base Ten): 5/5 standards covered.
- Numbers and Operations (Fractions): 0/1 standard covered.
- Algebraic Reasoning: 7/7 standards covered.
- Geometry and Measurement: Not covered.
- Data, Probability and Statistics: Not covered..

Grade 2		
Domain: Numbers and Operations (NO)		
Counting and Cardinality (CC)		
	Standards	SpringMath skill coverage
	2.NO.CC.1 Count forward from any given number within 1000.	Included in intervention protocols: Taking and Adding Tens and Hundreds. All interventions use number lines to represent counting units.
	2.NO.CC.2 Count backward from any given number within 1000.	Included in intervention protocols: Taking and Adding Tens and Hundreds. All interventions use number lines to represent counting units.
	2.NO.CC.3 Read and write numbers up to 1000 using standard, word, and expanded forms.	1) Quantity Comparison 1001-9999
	2.NO.CC.4 Skip count forward and backward by 2s and 100s and recognize the patterns of skip counts.	Included in intervention protocols: Taking and Adding Tens and Hundreds.
Base Ten (NBT)		
	2.NO.NBT.1 Understand that the three digits of a three-digit number represent a composition of some hundreds, some tens, and some ones.	1) Quantity Comparison 101-999 Included in intervention protocols: Solving 2-digit addition and subtraction problems via expanded notation, decomposing and composing tens to solve addition and subtraction,

		decomposing and composing tens & hundreds to solve addition and subtraction.
	2.NO.NBT.2 Compare two three-digit numbers using symbols $>$, $<$, and $=$. Justify comparisons based on the value of hundreds, tens, and ones.	1) Quantity Comparison 101-999 Included in intervention protocols: Solving 2-digit addition and subtraction problems via expanded notation, decomposing and composing tens to solve addition and subtraction, decomposing and composing hundreds to solve addition and subtraction.
	2.NO.NBT.3 Add within 100 using place value strategies and/or the relationship between addition and subtraction.	1) Fact Families for Addition & Subtraction 0-20 2) Create Equivalent Addition and Subtraction Problems using Place Value Properties 3) Create Equivalent Problems using Associative, Commutative, and Near Easy Problems 4) 2-digit addition with and without regrouping 5) 2-digit subtraction with and without regrouping
	2.NO.NBT.4 Subtract within 100 using place value strategies and/or the relationship between addition and subtraction.	1) Fact Families for Addition & Subtraction 0-20 2) Create Equivalent Addition and Subtraction Problems using Place Value Properties 3) Create Equivalent Problems using Associative, Commutative, and Near Easy Problems 4) 2-digit addition with & without regrouping

		5) 2-digit subtraction with & without regrouping
	2.NO.NBT.5 Mentally add or subtract 10 or 100 to or from a given number between 100 and 900.	1) Create Equivalent Addition and Subtraction Problems using Place Value Properties 2) Create Equivalent Problems using Associative, Commutative, and Near Easy Problems Included in intervention protocols: Solving 2-digit addition and subtraction problems via expanded notation, decomposing and composing tens to solve addition and subtraction, decomposing and composing hundreds to solve addition and subtraction, and making and taking tens and hundreds.
Algebraic Reasoning (AR)		
	2.AR.OA.1 Automatically add and subtract within 20.	1) Addition 0-20 2) Subtraction 0-20 3) Fact Families for Addition & Subtraction 0-20
	2.AR.OA.2 Apply the properties of operations to solve addition and subtraction equations within 100 and justify thinking.	1) Create Equivalent Addition and Subtraction Problems using Place Value Properties 2) Create Equivalent Problems using Associative, Commutative, and Near Easy Problems All the fact families skills here
	2.AR.OA.3 Solve one- and two-step authentic word problems with addition within 100, including the use of unknowns.	Included in intervention protocols: one- & two-step word problems to solve adding, taking, comparing, identifying patterns, and estimating quantity,

		creating equivalent expressions, solving for unknown quantities to make an expression true.
	2.AR.OA.4 Solve one- and two-step authentic word problems with subtraction within 100, including the use of unknowns.	Included in intervention protocols: one- & two-step word problems to solve adding, taking, comparing, identifying patterns, and estimating quantity, creating equivalent expressions, solving for unknown quantities to make an expression true.
	2.AR.OA.5 Use repeated addition to find the total number of objects arranged in a rectangular array.	Included in intervention protocols: numerical quantities up to 50 taught on a number line as repeated addition of ones and tens, ten expressed as adding ten sets of 1, and hundred expressed as adding ten sets of 10.
	2.AR.OA.6 Identify a group of objects from 0 to 20 as even or odd by showing even numbers as a sum of two equal parts.	Included in intervention protocols: Making equivalent sets with manipulatives and expressing as addition.

2nd Grade Overall Summary

- **Numbers and Operations (Counting and Cardinality): 4/4 standards covered.**
- **Numbers and Operations (Base Ten): 5/5 standards covered.**
- **Numbers and Operations (Fractions): 0/3 standards covered.**
- **Algebraic Reasoning: 6/6 standards covered.**
- **Geometry and Measurement: Not covered.**
- **Data, Probability and Statistics: Not covered**

Grade 3		
Domain: Numbers and Operations (NO)		
Base Ten (NBT)		
	3.NO.NBT.1 Compare two four-digit numbers using symbols $>$, $<$, and $=$. Justify comparisons based on the value of thousands, hundreds, tens, and ones.	Included in intervention protocols: using expanded notation to add and subtract with 3-digit numbers and to compose and decompose tens and hundreds. Quantity comparison screening uses fractions with like denominators but if not proficient, follow-up assessments assess whole number quantity comparisons in subsequently finer slices to identify misunderstandings.
	3.NO.NBT.2 Apply place value understanding to round whole numbers to the nearest 10 or 100.	Included in intervention protocols: using expanded notation to add and subtract with 3-digit numbers and to compose and decompose tens and hundreds. Quantity comparison screening uses fractions with like denominators but if not proficient, follow-up assessments assess whole number quantity comparisons in subsequently finer slices to identify misunderstandings.
	3.NO.NBT.3 Add and subtract within 1000 using place value strategies, algorithms, and/or the relationship between addition and	1) Add 3-digit Numbers with and without regrouping 2) Subtract 3-digit numbers with and without regrouping

	subtraction.	Included in intervention protocols: solving for unknown with multi-digit addition and subtraction problems and using expanded notation to solve.
	3.NO.NBT.4 Multiply one-digit whole numbers by multiples of 10 within 100.	1) Multiply 1-digit by 2-3 digits with and without regrouping
Fractions	3.NO.NF.1 Partition two-dimensional figures into equal areas and express the area of each part as a unit fraction of the whole. Describe using the language of sixths, eighths, a sixth of, and an eighth of.	1) Place Fractions on a Number Line with Denominators 2, 4, and 8 Intervention protocols include explicit instruction about the base unit, fraction quantity as repeated addition of the base unit fraction, extensive use of number lines and understanding fraction as a special case of division.
	3.NO.NF.2 Represent and understand a fraction as a number on a number line.	1) Place Fractions on a Number Line with Denominators 2, 4, and 8 Intervention protocols include explicit instruction about the base unit, fraction quantity as repeated addition of the base unit fraction, extensive use of number lines and understanding fraction as a special case of division.
	3.NO.NF.3 Represent equivalent fractions using visual representations and number lines.	1) Quantity Comparison for Fractions with Like Denominators Intervention protocols include explicit instruction about the base unit, fraction quantity as repeated addition of the base unit fraction, extensive use of number lines and understanding fraction as a special case of division.
	3.NO.NF.5 Compare fractions of the same	1) Quantity Comparison for Fractions with

	whole having the same numerators or denominators, using symbols $>$, $<$, and $=$ by reasoning about their size (fractions should be limited to denominators of 2, 3, 4, 6, and 8 and should not exceed the whole).	Like Denominators
Algebraic Reasoning (AR)		
	3.AR.OA.1 Using mental strategies, multiply and divide basic facts within 100. Automatically multiply and divide up to 5×5 and 10s facts.	1) Multiplication 0-9, 0-12 2) Division 0-9, 0-12
	3.AR.OA.2 Apply the properties of operations to solve multiplication and division equations and justify thinking.	1) Fact Families for Multiplication & Division 0-12 Included in intervention protocols: commutative, associative, and distributive property is explicitly taught using representational-abstract sequencing, and the child must demonstrate understanding in solving for unknowns, and creating equivalent expressions.
	3.AR.OA.3 Solve two-step authentic word problems using addition and subtraction within 1000, including equations with a letter as an unknown.	1) Fact Families for Addition & Subtraction 0-20 2) Fact Families for Multiplication & Division 0-9 Included in intervention protocols: word problems requiring solve for unknown set-up, converting more challenging problems to easier problems to solve operations via expanded notation, and all SpringMath protocols ask children to articulate patterns, estimate, think

		aloud, and justify answers using what they understand about related operations.
	3.AR.OA.4 Use strategies and visual models to solve authentic word problems with multiplication within 100, including unknowns, using grouping models and equations.	1) Fact Families Included in intervention protocols: solving multiplication problems as repeated addition, using arrays, verbally describing quantities as sets, and solving word problems.
	3.AR.OA.5 Use strategies and visual models to solve authentic word problems with division within 100, including unknowns, using grouping models and equations.	1) Fact Families Included in intervention protocols: articulating division as finding an unknown factor, partitioning sets using graphics (visual representation), and solving word problems.
	3.AR.OA.6 Identify arithmetic patterns and explain them using the properties of operations.	Included in intervention protocols: Beginning with missing number in Kindergarten, patterns are explicitly taught, and children are asked to articulate counting, adding, and multiplying patterns, estimate, and justify answers.

3rd Grade Overall Summary

- **Numbers and Operations (Counting and Cardinality): 0/1 standard covered.**
- **Numbers and Operations (Base Ten): 4/4 standards covered.**
- **Numbers and Operations (Fractions): 5/5 standards covered.**
- **Algebraic Reasoning: 6/6 standards covered.**
- **Geometry and Measurement: Not covered.**
- **Data, Probability and Statistics: Not covered.**

Grade 4

Domain: Numbers and Operations (NO)

Counting and Cardinality (CC)		
	Standards	SpringMath skill coverage
	4.NO.CC.1 Read numbers to the millions place, including word, standard, and expanded form. Write numbers to the millions place, including standard and expanded form.	1) Quantity Comparison with Decimals to the 100ths
Base Ten (NBT)		
	4.NO.NBT.1 Understand that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.	Taught explicitly in the context of decimal operations in intervention protocols. Included in intervention protocols: creating equivalent expressions using repeated addition, multiplication, and division to reflect place value understanding.
	4.NO.NBT.2 Compare two numbers to the millions place and decimals to the hundredths place, using symbols $>$, $<$, and $=$. Justify comparisons based on the value of the digits.	1) Quantity Comparison with Decimals to the 100ths 2) Quantity comparison with Whole Numbers, Fractions, and Decimals Included in intervention protocols: expanded notation and use of mental math strategies to estimate solutions (and justify estimations) based on place value understanding with all four operations.

	4.NO.NBT.3 Apply place value understanding to round multi-digit whole numbers to any place.	Included in intervention protocols: expanded notation and use of mental math strategies to estimate solutions (and justify estimations) based on place value understanding with all four operations.
	4.NO.NBT.4 Add and subtract multi-digit whole numbers to the one million place using strategies, including the algorithm.	1) Add and subtract decimals to the 100ths
	4.NO.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers. Show and justify the calculation using equations, rectangular arrays, and models.	1) 1-digit Multiplied by 2-3 Digits with and without Regrouping 2) 2-digit Multiplied by 2-Digit with and without Regrouping
	4.NO.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using place value strategies. Show and justify the calculation using equations, rectangular arrays, and models.	1) Fact Families for Multiplication & Division 0-12 2) Divide 1-Digit Divisor into 1-2-Digit Dividend with Remainders 3) Divide 1-Digit Divisor into 2-3-Digit Dividend without Remainders.
Fractions		
	4.NO.NF.1 Express equivalent fractions with a denominator of 10 and a denominator of 100 to generate a decimal notation.	1) Convert Fractions to Decimals 2) Convert Decimals to Fractions Intervention protocols use number line placement, demonstrate fraction equivalence in simplified form, require the child to estimate and make quantity comparisons, and explicit instruction for using and understanding of fraction quantities to convert decimal quantities to make a given problem solution easier

		and vice versa.
	4.NO.NF.2 Explain and demonstrate how a mixed number is equivalent to a fraction greater than one and how a fraction greater than one is equal to a mixed number using visual fraction models and reasoning strategies (proper and improper fractions limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100).	Add & subtract mixed numbers and like denominators Intervention protocols include understanding of mixed number and fraction quantities, creating equivalent quantities with fractions using addition of fraction units and multiplication of fraction units.
	4.NO.NF.3 Generate equivalent fractions using numerical representations, visual representations, and number lines (proper and improper fractions limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100).	1) Quantity Comparison with Fractions with Unlike Denominators 2) Place Fractions on Number Line with Denominators 1, 2, 3, 4, 5, 6, 8 10. (Number line extends beyond 1)
	4.NO.NF.4 Demonstrate how equivalent fractions are generated by multiplying a fraction equivalent to 1 or the properties of multiplication (proper and improper fractions limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100).	1) Quantity Comparison with Fractions with Unlike Denominators—we specifically teach the conceptual basis for creating equivalent fractions with common denominators using the identify property of multiplication. 2) Place Fractions on Number Line with Denominators 1, 2, 3, 4, 5, 6, 8 10. (Number line extends beyond 1)
	4.NO.NF.5 Compare and order fractions having, unlike numerators or denominators. Record comparisons using the symbols $>$, $<$, and $=$. Justify using a visual fraction model (proper and improper fractions limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, and	1) Quantity Comparison with Fractions with Unlike Denominators

	100).	
	4.NO.NF.6 Solve authentic word problems by adding and subtracting fractions and mixed numbers with like denominators (proper and improper fractions limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100).	1) Add & Subtract Mixed Numbers with Like Denominators with Regrouping
	4.NO.NF.7 Solve problems by multiplying fractions and whole numbers using visual fraction models (proper and improper fractions limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100).	
Algebraic Reasoning (AR)		
	4.AR.OA.1 Automatically multiply and divide through 10 x 10.	1) Multiplication 0-12 2) Division 0-12 3) Fact Families for Multiplication & Division 0-12
	4.AR.OA.2 Identify and apply the properties of operations for addition, subtraction, multiplication, and division and justify thinking.	1) Fact Families for Multiplication & Division 0-12 2) Add & Subtract with Decimals to the 100ths Included in intervention protocols: word problems requiring solving for unknown set-up, estimating quantity, and justifying and checking answers using the inverse operation and creating equivalent expressions using expanded notation and the four operations.
	4.AR.OA.3 Solve multi-step authentic word problems using the four operations, including	1) Fact Families for Addition & Subtraction 0-20

	problems with interpreted remainders. Represent problems using equations, including a symbol as an unknown.	2) Fact Families for Multiplication & Division 0-12 3) Division with remainders (taught as finding an unknown factor plus an addend) Included in intervention protocols: word problems requiring solving for unknown set-up, estimating quantity, and justifying and checking answers using the inverse operation and creating equivalent expressions using expanded notation and the four operations.
	4.AR.OA.4 Find factor pairs and multiples within the range of 1-36 while classifying numbers as prime or composite.	1) Fact Families for Multiplication & Division 0-12 2) Create Equivalent Multiplication Problems by Factoring
	4.AR.OA.5 Interpret multiplication equations as a comparison. Represent multiplicative comparisons as multiplication equations.	Included in intervention protocols: solving multiplication problems as repeated addition, using arrays, verbally describing quantities as sets, articulating division as finding an unknown factor, partitioning sets using graphics (visual representation), solving word problems, estimating quantity, and justifying solutions.
	4.AR.OA.6 Generate a number or shape pattern that follows a given rule while identifying apparent features of the pattern that were not explicit in the rule itself.	Included in intervention protocols: multiplication is taught as repeated addition and all SpringMath protocols ask children to articulate patterns, estimate, think aloud, and justify answers using what they understand about related operations.

4th Grade Overall Summary

- **Numbers and Operations (Counting and Cardinality): 0/1 standard covered.**
- **Numbers and Operations (Base Ten): 6/6 standards covered.**
- **Numbers and Operations (Fractions): 7/7 standards covered.**
- **Algebraic Reasoning: 6/6 standards covered.**
- **Geometry and Measurement: Not covered..**
- **Data, Probability and Statistics: Not covered.**

Grade 5

Domain: Numbers and Operations (NO)

Counting and Cardinality (CC)		
	Standards	SpringMath skill coverage
	5.NO.CC.1 Read and write decimals to the thousandths, including standard, word, and expanded forms.	1) Quantity Comparisons Fractions, Whole Numbers, and Decimals 2) Add & Subtract with Decimals to the Hundredths 3) Multiply & Divide with Decimals
Base Ten (NBT)		
	5.NO.NBT.1 Understand that in a multi-digit number, a digit in one place represents ten times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	1) Quantity Comparisons Fractions, Whole Numbers, and Decimals Included in intervention protocols: creating equivalent expressions using repeated addition, multiplication, and division to reflect place value understanding. Taught explicitly in all decimal comparison and operation protocols
	5.NO.NBT.2 Compare two decimals to the thousandth place using symbols $>$, $<$, and $=$. Justify comparisons based on the value of the digits.	1) Quantity Comparisons Fractions, Whole Numbers, and Decimals Included in intervention protocols: creating equivalent expressions using repeated addition, multiplication, and division to reflect place value understanding, but exponents are not introduced.

	5.NO.NBT.3 Apply place value understanding to round decimals to any place.	1) Quantity Comparisons Fractions, Whole Numbers, and Decimals 2) Quantity Comparisons Fractions, Whole Numbers, Decimals, & Included in intervention protocols: creating equivalent expressions using repeated addition, multiplication, and division to reflect place value understanding, and mental math strategies to compare quantities and to estimate problem solutions with decimals.
	5.NO.NBT.4 Multiply multi-digit whole numbers using strategies flexibly, including the algorithm.	1) Multiply 2-Digit by 2-Digit with and without Regrouping
	5.NO.NBT.5 Use concrete models, drawings, place value strategies, properties of operations and/or relationships to add, subtract, and multiply decimals to hundredths.	1) Add & Subtract with Decimals to the Hundredths 2) Multiply & Divide with Decimals to the Hundredths
	5.NO.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors using place value strategies. Show and justify the calculation by using equations, rectangular arrays, and/or area models.	1) Fact Families Multiplication & Division 0-12 2) Simplify Fractions (levels A, B, and C) 3) Divide 1-Digit into 2-3-Digit with Remainders 4) Divide 2-Digit Divisor into 3-4 Digit Dividend with Remainders 5) Convert Improper Fractions to Mixed Numbers
	5.NO.NBT.7 Explain patterns in the number of zeros of the product when multiplying a	Included in intervention protocols: creating equivalent expressions using repeated addition, multiplication, and

	number by powers of 10. Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	division with decimals to reflect place value understanding, but exponents are not introduced.
Fractions (NF)		
	5.NO.NF.1 Generate equivalent forms of commonly used fractions and decimals (e.g., halves, fourths, fifths, tenths).	1) Find Least Common Denominator 2) Add & Subtract Fractions with Unlike Denominators 3) Simplify Fractions
	5.NO.NF.2 Explain why multiplying a given number by a fraction greater than one results in a product greater than the given number and explain why multiplying a given number by a fraction less than one results in a product smaller than the given number.	1) Multiply & Divide Proper and Improper Fractions 2) Multiply & Divide with Decimals Intervention protocols include word problems requiring a child to understand multiplication of fraction quantities and their meaning as scaling by a factor.
	5.NO.NF.3 Solve authentic word problems by adding and subtracting fractions and mixed numbers with unlike denominators using visual fraction models and equations.	1) Add & Subtract Fractions with Unlike Denominators
	5.NO.NF.4 Solve authentic word problems by multiplying fractions and mixed numbers using visual fraction models and equations.	1) Multiply Proper and Improper Fractions Intervention protocols include: using multiplying and dividing with fractions to solve word problems, using understanding of multiplication and division of fractions to create equivalent expressions.

Algebraic Reasoning (AR)		
	5.AR.OA.1 Automatically multiply and divide through 12 x 12.	1) Fact Families Multiplication & Division 0-12
	5.AR.OA.2 Analyze problems using the order of operations to solve and evaluate expressions while justifying thinking.	Included in intervention protocols: using understanding of associative property and distributive property to create equivalent expressions with addition (associative) and multiplication (associative & distributive) we don't introduce order of operations til grade 6
	5.AR.OA.3 Write simple expressions that record calculations with numbers. Interpret numerical expressions without evaluating them.	Intervention protocols include determining quantity using understanding of operations without conducting actual operations.
	5.AR.OA.4 Find factor pairs and multiples within the range of 1-100 while classifying numbers as prime or composite.	1) Fact Families Multiplication & Division 0-12 2) Find Least Common Denominator 3) Simplify Fractions (3 Levels) 4) Convert Improper Fractions to Mixed Numbers
	5.AR.OA.5 Generate two numerical patterns using two given rules and form ordered pairs consisting of corresponding terms from the two patterns. (Graphing on a coordinate plane).	Intervention protocols include using understanding of numerical patterns and operations to create equivalent expressions with various number representations.

5th Grade Overall Summary

- **Numbers and Operations (Counting and Cardinality): 1/1 standard covered.**
- **Numbers and Operations (Base Ten): 6/7 standards covered.**
- **Numbers and Operations (Fractions): 4/4 standards covered.**
- **Algebraic Reasoning: 5/5 standards covered.**
- **Geometry and Measurement: Not covered.**
- **Data, Probability and Statistics: Not covered.**

Grade 6

Domain: Numbers and Operations (NO)

Number Systems		
	Standards	SpringMath skill coverage
	6.NO.NS.1 Explain and show the relationship between non-zero rational numbers and their opposites using horizontal and vertical number lines, including authentic problems. Use rational numbers to represent quantities in authentic contexts and explain the meaning of 0 in certain situations.	1) Quantity Comparison with integers 2) Graphing Points in a Coordinate Plane Intervention protocols include explicit instruction with number lines reflecting positive and negative quantities and opposites and the meaning of zero in multiple real-world situations.
	6.NO.NS.2 Write, interpret, and explain statements of order for rational numbers on a number line and in authentic contexts.	1) Quantity Comparison with integers 2) Graphing Points in a Coordinate Plane Intervention protocols include explicit instruction with number lines reflecting positive and negative quantities and opposites and the meaning of zero in multiple real-world situations. Number lines are used in all protocols to teach quantity and creating equivalent quantities is a core skill that is cultivated beginning across all protocols K-8 using grade-appropriate quantity representations and operations.
Operations		

	6.NO.O.1 Divide multi-digit whole numbers up to four-digit dividends and two-digit divisors using strategies or procedures.	1) Mixed Operations 2) Multiply 2-Digit by 2-Digit with Decimals
	6.NO.O.2 Add and subtract fractions and decimals up to the hundredth place, including authentic problems.	1) Add, Subtract, Multiply, and Divide with Decimals
	6.NO.O.3 Apply multiplication and division of fractions and decimals to solve and interpret problems using visual models, including authentic problems.	1) Multiply and Divide Mixed Numbers 2) Mixed Fraction Operations 3) Multiply and Divide with Decimals
Algebraic Reasoning (AR)		
Ratios and Proportional Relationships		
	6.AR.RP.1 Describe the concept of a ratio relationship between two quantities using ratio language and visual models.	1) Find Percent of a Whole Number 2) Graph Points in a Coordinate Plane
	6.AR.RP.2 Describe and calculate a unit rate when given a ratio relationship between two quantities using rate language and visual models.	1) Find Least Common Denominator This is taught in the context of Find Least Common Denominator where we teach how to create a common unit rate between fractions with unlike denominators using number lines.
	6.AR.RP.3 Make and use tables of equivalent ratios, tape diagrams, double number line diagrams, and equations to solve problems involving ratios, rates, and unit rates, including authentic problems.	1) Order of Operations 2) Collect Like Terms
	6.AR.RP.4 Calculate a percent of a quantity as	1) Find Percent of a Whole Number

	a rate per 100. Solve problems using ratio reasoning involving finding the whole when given a part and the percent.	
	6.AR.RP.5 Convert measurement units within and between measurement systems using ratio reasoning given conversion factors.	The prerequisite understanding of converting fractions to decimals, decimals to fractions, and finding least common denominator is covered in Grade 5 using ratio reasoning to convert unit rates. In Grade 6, we cover Finding Percent of a Whole Number and Collecting Like Terms which use measurement conversions as real-world set ups to teach this understanding. These grade 6 targets then lead to Grade 7 solving algebraic proportions, solving for a missing value in a percentage problem, and a number of other skills related to linear function.
Expressions and Equations		
	6.AR.EE.1 Read, write, and evaluate numerical expressions, including expressions with whole number exponents and grouping symbols.	1) Order of Operations 2) Distributive Property of Expression 3) Collecting Like Terms 4) Substitute Whole Number to Solve Equations We target exponents in Grade 8.
	6.AR.EE.2 Read and evaluate algebraic expressions, including expressions with whole number exponents and grouping symbols. Write algebraic expressions to represent simple and authentic situations.	1) Substitute Whole Numbers to Solve Equations 2) Order of Operations 3) Distributive Property of Expression 4) Collect Like Terms
	6.AR.EE.3 Identify when two expressions are Equivalent. Apply the properties of operations to generate equivalent expressions.	1) Distributive Property of Expression 2) Collect Like Terms Intervention protocols include: guided practice to use distribution and factoring

		to create equivalent expressions with variables.
	6.AR.EE.4 Describe the concept of a solution of an equation and an inequality. Determine whether a given number is a solution to an equation or an inequality.	1) Substitute Whole Number to Solve Equations is our entry point to linear function at Grade 6. In Grade 8 we teach solving for slope, intercept, and point on a line in the context of linear function and teach inequalities here.
	6.AR.EE.5 Write and solve equations of the form $x + p = q$ and $px = q$ for cases in which p and q are non-negative whole numbers or decimals, including authentic problems.	1) Substitute Whole Numbers to Solve Equations 2) Distributive Property of Expression 3) Collecting Like Terms Intervention protocols include: word problems that require using inverse operations of addition/subtraction and multiplication/division to solve, and guided practice to use inverse operations to create equivalent expressions.
Geometry and Measurement (GM)		
Geometric Figures		
	6.GM.GF.1 Identify and position ordered pairs of rational numbers in all four quadrants of a coordinate plane.	1) Graph Points on a Coordinate Plane

6th Grade Overall Summary

- **Numbers and Operations (Number Systems): 2/2 standards covered.**
- **Numbers and Operations (Operations): 4/4 standards covered.**
- **Algebraic Reasoning (Ratios and Proportional Relationships): 5/5 standards covered.**
- **Algebraic Reasoning (Expressions and Equations): 6/6 standards covered.**
- **Geometry and Measurement (Area and Volume & Geometric Figures): Not covered.**
- **Data, Probability and Statistics: Not covered.**

Grade 7		
Domain: Numbers and Operations (NO)		
Number Systems		
	Standards	SpringMath skill coverage
	7.NO.NS.1 Describe the absolute value of a number as its distance from zero on a number line.	1) Quantity Comparison with Negative Numbers 2) Add, Subtract, Multiply, & Divide with Integers of Varied Sign 3) Inverse Operations with Addition & Subtraction (includes positive and negative numbers) Intervention protocols include: specific proofing of positive and negative quantities on a number line, conceptual meaning of adding and subtracting with positive and negative values.
	7.NO.NS.2 Recognize common fractions and decimal equivalencies up to a denominator of 10. Convert a rational number to a decimal using technology.	1) Convert Decimals to Fractions 2) Convert Fractions to Decimals
Operations		
	7.NO.O.1 Add, subtract, multiply, and divide integers using visual models and properties of operations in multi-step problems, including authentic problems.	1) Add, Subtract, Multiply, & Divide with Integers of Varied Sign 2) Inverse Operations with Addition & Subtraction (includes positive and negative numbers)

		3) Inverse Operations with Multiplication & Division (includes positive and negative numbers) Intervention protocols include: specific proofing of positive and negative quantities on a number line, conceptual meaning of adding and subtracting with positive and negative values.
	7.NO.O.2 Add, subtract, multiply, and divide non-negative fractions in multi-step problems, including authentic problems.	1) Add & Subtract Fractions with Unlike Denominators 2) Multiply & Divide Proper & Improper Fractions 3) Mixed Fraction Operations 4) Complex Fractions 5) Solve 2-Step Equations with Fractions 6) Solve Equations with Percentages 7) Calculate Missing Value in a Percentage Problem
	7.NO.O.3 Add, subtract, multiply, and divide non-negative decimals to the hundredth place in multi-step problems using strategies or procedures, including authentic problems.	1) Convert Decimals to Fractions 2) Convert Fractions to Decimals We cover operations with decimals in grades 4, 5, and 6. These skill targets can be accessed at this grade level if students are found to not be proficient with decimal operations.
Algebraic Reasoning (AR)		
Ratios and Proportional Relationships		
	7.AR.RP.1 Calculate unit rates associated with ratios of rational numbers, including ratios of lengths, areas, and other quantities	1) Solve Algebraic Proportions Intervention protocols include: word problems to solve for an unknown with the unknown value in all four positions

	measured in like or different units.	in a ratio of two fractions many of which use measured quantity set ups in word problems.
	7.AR.RP.2 Analyze the relationship between the dependent and independent variables of a proportional relationship using graphs and tables. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, k) where k is the unit rate.	1) Solve Algebraic Proportions
	7.AR.RP.3 Identify the constant of proportionality in tables, graphs, equations, diagrams, and descriptions of proportional relationships. Represent proportional relationships by an equation of the form $y = kx$, where k is the constant of proportionality, and describe the meaning of each variable (y, k, x) in the context of the situation.	1) Translate Verbal Expressions to Mathematical Equations 2) Solve for Missing Value with a Percentage Problem 3) Solve Algebraic Proportions 4) Find Percent of a Whole Number 5) Inverse Operations with Multiplication and Division
	7.AR.RP.4 Use proportional relationships to solve multi-step problems involving ratios, percents, and scale drawings of geometric figures, including authentic problems.	1) Translate Verbal Expressions to Mathematical Equations 2) Solve for Missing Value with a Percentage Problem 3) Solve Equations with Percentages 4) Calculate Missing Value in Percentage Problem 5) Complex Fractions 6) Solve 2-Step Equations with Fractions
Expressions and Equations		
	7.AR.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand	1) Order of Operations 2) Inverse Operations for Addition &

	linear expressions involving variables, integers, and/or nonnegative fractions and decimals with an emphasis on writing equivalent expressions.	Subtraction 3) Inverse Operations for Multiplication & Division 4) Solve Two-Step Equations 5) Solve Two-Step Equations with Fractions Intervention protocols include factoring and expanding to create equivalent expressions.
	7.AR.EE.2 Write and solve equations of the form $px + q = r$ and $p(x + q) = r$, including authentic problems.	1) Translate Verbal Expressions into Mathematical Equations 2) Solve Two-Step Equations 3) Solve Two-Step Equations with Fractions Intervention protocols include: guided practice to turn numerical expressions into word problems reflecting a real-world problem to be solved.
	7.AR.EE.3 Write and solve one- or two-step inequalities where coefficients and solutions are integers and/or non-negative fractions and decimals, including authentic problems. Graph the solution set of the inequality and interpret it in the context of the problem.	1) Solve Algebraic Proportions 2) Solve Two-Step Equations 3) Solve Two-Step Equations with Fractions In Grade 8 we teach solving for slope, intercept, and point on a line in the context of linear function and solving systems of linear equations and teach inequalities here.

7th Grade Overall Summary

- **Numbers and Operations (Number Systems): 2/2 standards covered.**
- **Numbers and Operations (Operations): 3/3 standards covered.**
- **Algebraic Reasoning (Ratios and Proportional Relationships): 4/4 standards covered.**
- **Algebraic Reasoning (Expressions and Equations): 3/3 standards covered.**
- **Geometry and Measurement (Area and Volume & Geometric Figures): Not covered.**
- **Data, Probability and Statistics (Data Analysis & Probability): Not covered.**

Grade 8		
Domain: Numbers and Operations (NO)		
Number Systems		
	Standards	SpringMath skill coverage
	8.NO.NS.1 Compare and classify real numbers within the real number system.	Targeted in the context of whole number, fraction, and integer operations
	8.NO.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them on a number line diagram, and estimate the value of irrational expressions involving one operation.	Irrational number quantities are not taught.
	8.NO.NS.3 Use scientific notation to represent very large or very small quantities. Interpret scientific notation generated by technology. Compare and order numbers in both scientific and standard notation.	1) Add, Subtract, Multiply, & Divide with Exponents Intervention protocols include explicit proofing of exponent quantity, comparing exponent quantities, and using operations to create equivalent quantities with exponents. Intervention protocols use scientific notation with exponents to create equivalent quantities, to make quantity comparisons, and to make quantity statements true.
Operations		

	8.NO.O.1 Evaluate mentally the square roots of perfect squares up to 225 and cube roots of perfect cubes up to 1000.	Intervention protocols include explicit proofing of exponent quantity, comparing exponent quantities, and using operations to create equivalent quantities with exponents, which directly supports the ability to mentally evaluate roots. Intervention protocols use scientific notation with exponents to create equivalent quantities, to make quantity comparisons, and to make quantity statements true, reinforcing the mental math skills needed for recognizing perfect squares and cubes.
	8.NO.O.2 Add, subtract, multiply, and divide rational numbers using strategies or procedures.	1) Add, Subtract, Multiply, & Divide with Integers of Varied Sign 2) Inverse Operations with Addition & Subtraction (includes positive and negative numbers) 3) Inverse Operations with Multiplication & Division (includes positive and negative numbers) also whole number operations and fraction operations
Algebraic Reasoning (AR)		
Expressions and Equations		
	8.AR.EE.1 Explain the relationship between repeated multiplication and the properties of integer exponents. Apply a single exponent property to generate equivalent numeric and	1) Add, Subtract, Multiply, & Divide with Exponents 2) Order of Operations II Intervention protocols include:

	algebraic expressions that include numerical coefficients.	conversion of positive and negative exponents to equivalent numerical expressions and proofing of operations with positive and negative exponents.
	8.AR.EE.3 Explain the characteristics of a linear relationship, including identifying the slope and y- intercept in tables, graphs, equations, and descriptions.	1) Solve for Slope and Intercept using linear function $y=mx+b$ 2) Solve for Point on a Line
	8.AR.EE.4 Represent linear relationships using tables, graphs, equations, and descriptions when given a relationship in one of these forms.	1) Solve for Slope and Intercept using linear function $y=mx+b$ 2) Solve for Point on a Line Intervention protocols include specific assessment and intervention for: Graph in a Coordinate Plane and Solve Slope Given Two Coordinate Pairs.
	8.AR.EE.5 Solve linear equations with rational number coefficients and variables on both sides, including equations that require using the distributive property and/or combining and collecting like terms. Interpret the number of solutions. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions.	1) Simplify Expressions 2) Distributive Property to Simplify Expressions 3) Collect Like Terms to Simplify Expressions 4) Linear Combinations to Solve Equations 5) Substitute Equation to Solve Linear Equation 6) Use Comparison Method to Solve Systems of Linear Equations Intervention protocols include making quantity comparisons with variables using exponents and integers when certain conditions about the variable are true (e.g., $y>0$ but <1), creating equivalent quantities with variables using exponents and integers, and real-world problems to solve for a

		variable.
	8.AR.EE.6 Read, write, and evaluate numerical and algebraic expressions including expressions involving absolute value. Solve and graph equations of the form $ x =r$ where r is a nonnegative rational number.	1) Distribute to simplify 2) Collect to simplify 3) Simplify expressions 4) Solve 1-Step Equations with Rational Numbers 5) Solve 2-Step Equations 6) Solve 2-step Equations with Fractions
	8.AR.EE.7 Solve and graph inequalities in one variable with rational number coefficients and variables on both sides, including inequalities that require using the distributive property and/or combining like terms.	
	8.AR.EE.8 Graph linear inequalities in two variables on a coordinate plane. Interpret the possible solutions in the context of authentic problems.	
Functions		
	8.AR.F.1 Defend whether a relation is a function from various representations using appropriate function language.	1) Solve for Slope and Intercept using linear function $y=mx+b$ 2) Solve for Point on a Line Intervention protocols include specific assessment and intervention for: Graph in a Coordinate Plane and Solve for Slope Given Two Coordinate Pairs.
	8.AR.F.2 Compare and contrast properties of two linear functions, each represented in a different way (algebraically, graphically, numerically in tables, and/or by descriptions).	1) Solve for Slope and Intercept using linear function $y=mx+b$ 2) Solve for Point on a Line 3) Linear Combinations to Solve Equations 4) Substitute Equation to Solve Linear Equation

		5) Use Comparison Method to Solve Systems of Linear Equations Intervention protocols include specific assessment and intervention for: Graph in a Coordinate Plane and Solve for Slope Given Two Coordinate Pairs.
	8.AR.F.3 Compare and contrast linear and non-linear functions represented in different ways (algebraically, graphically, numerically in tables, and/or by descriptions).	
	8.AR.F.4 Model a linear function between two quantities by creating a table, graph, and equation. Interpret the rate of change and initial value of a linear function in terms of the situation it models.	1) Solve for Slope and Intercept using linear function $y=mx+b$ 2) Solve for Point on a Line Intervention protocols include specific assessment and intervention for: Graph in a Coordinate Plane and Solve for Slope Given Two Coordinate Pairs.
	8.AR.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph including where the function is constant, increasing, or decreasing; linear or nonlinear; and discrete or continuous. Create a graph that exhibits the qualitative features of a function described.	1) Solve for Slope and Intercept using linear function $y=mx+b$ 2) Solve for Point on a Line Intervention protocols include specific assessment and intervention for: Graph in a Coordinate Plane and Solve for Slope Given Two Coordinate Pairs.

8th Grade Overall Summary

- **Numbers and Operations (Number Systems): 2/3 standards covered.**
- **Numbers and Operations (Operations): 2/2 standards covered.**
- **Algebraic Reasoning (Expressions and Equations): 8/8 standards covered.**
- **Algebraic Reasoning (Functions): 5/5 standards covered.**
- **Geometry and Measurement (Area and Volume & Geometric Figures): Not covered.**
- **Data, Probability and Statistics: Not covered.**