CORRELATION
of
the 10 UNDERSTANDING MATH PLUS PROGRAMS & UNDERSTANDING NUMERATION PLUS PROGRAMS
with

South Carolina MATHEMATICS CURRICULUM STANDARDS

Grades 3 to 5 NUMBERS & OPERATIONS

Note: a. The Understanding Math PLUS series of programs consist of 10 programs written for Kindergarten to 10th Grade.

The 10 programs are:

Understanding Fractions
Understanding Probability
Understanding Exponents
Understanding Algebra
Understanding Numeration
Understanding Measurement and Geometry
Understanding Whole Numbers and Integers
Understanding Percent
Understanding Equations
Understanding Graphing

Note: b. The Understanding Numeration software for K to 3 is set up so that the teacher selects items in the following order:
Concept .. from 5 concepts .. Counting, Comparing & Ordering, Place Value, Operations and Problem Solving.
Skill .. chosen from the list of specific learning expectations
Level .. indicates the levels of development for Kindergarten to 3rd grade.

Level	Upper Range of Number
A	**10**
B	**20**
C	**100**
D	**1000**

Lesson .. 250 lessons are sequenced to build understanding of concepts.
A detailed Lesson Synopsis on the website www.neufeldmath.com to assist the teacher by stating the lesson contents but also by giving lesson suggestions.
Worksheet .. off computer worksheets are selected from the CD by a code.

Note: c. The remaining 9 Understanding Math programs for 4th to 10th grade are set up so that they can be used in a variety of teaching and learning environments ranging from a teacher centered approach with 1 computer to a student centered lab approach. The lessons can also be used in remediation, tutorial, intervention, resource, fast-tracking.
Each topic has:
..an interactive concept introduction, usually with a variety of graphic approaches.
..a number of particular examples
..practice questions with random questions but particular feedback
..a topic test with random questions and tracking
..off computer worksheets selected from the website .. www.neufeldmath.com

STANDARD I. Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

EXPECTATION A. Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers and decimals.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
***1. Explain the place value structure of whole numbers through hundred thousands.	**NUM+ Concept :** **Place Value, C/D** **Identify Place Value Patterns (to 1000)** 3 Digit Numbers Expanded Notation worksheet #1, #2 **MAT+** **Understanding Fractions** **Topic 5. Introduction to Decimals** Decimals to Thousandths Examples 1, 2, 3, 4, 5 Understanding Place Value Examples 1, 2, 3, 4	1. Explain the place value structure of whole numbers including periods (thousands, millions, billions, etc.).	**MAT+** **Understanding Whole Numbers and Integers** **Topic 1. The Meaning of Whole Numbers CAN/US** Represent Numbers in Many Ways Examples 1, 2, 3, 4, 5 Place Value to 999 9999 Examples Examples 1, 2, 3, 4, 5 The Number Line Examples 1, 2 Millions Examples Examples 1, 2, 3, 4 The Number Line Billions Example 1		
2. Read and write whole numbers.	**MAT+** **Understanding Whole Numbers and**				

	<u>Integers</u> **Topic 1. The Meaning of Whole Numbers CAN/US** Seeing the Number To Tens Examples 1, 2 To Hundreds Examples 1, 2 To Thousands Examples 1, 2, 3				
3. Compare whole numbers using symbols (>, <, =) and words (*is greater than*, *is less than*, and *equals*).	**NUM+ Concept :** **<u>COMPARING AND ORDERING</u>** **Skill – Introduce "Greater Than" & " Less Than"** **Level A** Greater Than Less Than "Greater Than, Less Than" #1 "Greater Than, Less Than, Equal To" **NUM+ Concept :** **<u>COMPARING AND ORDERING</u>** **Skill – Working with Whole Numbers >, <, =** **Level B/C** Make it True #2 " Great Than, Less Than #2" Ordering…Horizontal #2 Ordering … Vertical #2 Compare Numbers #1				

	Level D Compare Numbers #2				

4. Identify the place value of decimals through hundredths using concrete and pictorial models. 5. Read and write decimals through hundredths based on concrete and pictorial models.	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Decimals on a Number Line Examples 1, 2, 3, 4, 5			1. Describe the place value structure of decimals.	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Understanding Place Value Examples 1, 2, 3, 4
				2. Read and write decimals.	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Ones, Tenths, Hundreds, Thousandths Decimals to Tenths Examples 1, 2, Decimals to Hundredths Examples 1, 2, 3, 4, 5 Decimals to Thousandths Examples 1, 2, 3, 4, 5
6. Compare decimals (through hundredths) using symbols (>, <, and =) and words (*is greater than*, *is less than*, and *equals*) with concrete and pictorial models.	**NUM+ Concept : <u>COUNTING</u>** **Skill – Introduce Decimals** **Level D** Tenths and Decimals Ones and Tenths **MAT+** **<u>Understanding</u>**	*****2. Compare decimals (through hundredths) using symbols (>, <, and =) and words (*is greater than*, *is less than*, and *equals*).	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Decimals on a Number Line Examples 1, 2, 3, 4, 5 Place Value	*****3. Order lists of three or more numbers that contain whole numbers, decimals, or both.	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Comparing Decimals Examples 1, 2, 3, 4 Ordering Decimals Introduction

	<u>Fractions</u> **Topic 5. Introduction to Decimals** Comparing Decimals Examples 1, 2, 3, 4		Ones and Tenths 1 Ones and Tenths 2 Tens, Ones and Tenths Decimals on a Number Line Hundreds and Tenths Greater and Less Than Ones, Tenths, Hundreds, Thousandths Decimals to Tenths Examples 1, 2, Decimals to Hundredths Examples 1, 2, 3, 4, 5 Decimals to Thousandths Examples 1, 2, 3, 4, 5 Understanding Place Value Examples 1, 2, 3, 4 Equivalent Decimals Examples 1, 2, 3, 4 Comparing Decimals Examples 1, 2, 3, 4		Examples 1, 2, 3, 4
7. Read and write amounts of money using the dollar sign ($) and decimal notation (.).	**NUM+ Concept : <u>COUNTING</u>** **Skill – Counting Using Money** **Level B** " Pennies, Nickels, Dimes": worksheet #1, #2				

	" Coins – Count by 10s, 5s, and 1s" : worksheet #1, #2 **Skill – Counting Using Money** **Level C** Quarters: worksheet #1, #2 **Level D** Dollars: worksheet #1, #2				

EXPECTATION B. **Recognize equivalent representations for the same number and generate them by decomposing and composing numbers.**

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
*****1. Recognize equivalent representations for the same whole number by decomposing and composing whole numbers up through three digits.	**NUM+ Concept:** **OPERATIONS** **Skill – Demonstrate Addition Facts…Patterns Level C/D** Decomposition Stack Patterns in Additions worksheet #1, #2 Decomposition Tree #3				
2. Write three-digit whole numbers in standard form, in expanded form, and in words.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 1. The Meaning of Whole Numbers CAN/US** Expanded Notation To 999	1. Write whole numbers in standard form, in expanded form, and in words.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 1. The Meaning of Whole Numbers CAN/US** Expanded Notation To 999 Write as Numerals Examples 1, 2 The Number Line	1. Write decimals (ten thousandths) in standard form, in expanded form, and in words.	

EXPECTATION C. Develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
***1. Describe fractional parts of a unit or a group of objects (1/100, 1/10, 1/8, 1/6, 1/5, 1/4, 1/3, and 1/2).	**NUM+ Concept : COUNTING** **Skill – Introduce Common Fractions as Parts of a Whole** **Level B** One Half of a Shape Three Quarters of a Shape **Level C** **Skill – Introduce Fraction of a Set** **Level C** Fraction of a Set: Worksheets #1, #2	1. Describe fractional parts of collections of objects.	**MAT+** **Understanding Fractions** **1. The Meaning of Fractions** Fraction of a Set Example 1 - Marbles Example 2 - Candies Example 3 - Birthday Cake Fraction of a Gas Tank Fraction Strips Concepts 1, 2, 3, 4 Fraction of Pie The Clock Fractions of Odd Shapes	1. Name and write mixed numbers and improper fractions shown in concrete and pictorial models. 2. Locate points on a number line corresponding to mixed numbers and improper fractions.	**MAT+** **Understanding Fractions** **Topic 13. Improper and Mixed Numbers** The Concept Packages Clock Improper Fractions and Mixed Numbers... What are They? Introductory Problem Mixed to Improper Method 1 – Examples 1, 2 Method 2 – Examples 1, 2 Improper to Mixed Examples 1, 2 Practice Questions
		2. Locate points on a number line corresponding to a unit fraction and its multiples between 0 and 1.	**MAT+** **Understanding Fractions** **1. The Meaning of Fractions** Fractions on a Number Line Halves Thirds Quarters Summary		

				3. Explain the relationship between fractions and division.	**MAT+** **<u>Understanding Fractions</u>** **Topic 11. Dividing Fractions** Understanding Division Examples with Diagrams Soda Pop Ice Cream Shape 1 Shape 2 Patterns from Examples

EXPECTATION **D. Use models, benchmarks, and equivalent forms to judge the size of fractions.**

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
		1. Relate the size of fractions to the benchmark fractions of 0, 1/2, and 1. 2. Compare concrete or pictorial models of fractions using the symbols >, <, and =.	**MAT+** **<u>Understanding Fractions</u>** **1. The Meaning of Fractions** Comparison of Fractions The Symbol Greater Than - Ex. 1, Ex. 2 Less Than - Ex. 1, Ex. 2 Greater and Less Than - Ex. 1, Ex. 2 Concept 1 - Fraction Strips Concept 2 - Circles Examples 1, 2, 3, 4	1. Relate the size of fractions to the benchmark fractions 0, 1/4, 1/2 , 3/4, and 1.	**MAT+** **<u>Understanding Fractions</u>** **Topic 1. The Meaning of Fractions** Fractions on a Number Line Halves Thirds Quarters Summary Pattern Blocks Examples 1, 2, 3, 4 Fraction of Pie The Clock Fractions of Odd Shapes Word Problems Fruit Basket
				*****2. Compare fractions using symbols (>, <, and =) and words (*is greater than*, *is less than*, and *equals*).	**MAT+** **<u>Understanding Fractions</u>** **Topic 1. The Meaning of Fractions** Comparison of Fractions The Symbol Greater Than - Ex. 1, Ex. 2

					Less Than - Ex. 1, Ex. 2 Greater and Less Than - Ex. 1, Ex. 2

EXPECTATION **E. Recognize and generate equivalent forms of commonly used fractions, decimals, and percents.**

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
*****1. Represent equivalent forms of commonly used fractions using concrete and pictorial models.	**MAT+** **<u>Understanding Fractions</u>** **Topic 3. Equivalent Fractions** Introduction Square Triangle Pattern Blocks Hexagon 1, 2	1. Write equivalent forms of commonly used fractions.	**MAT+** **<u>Understanding Fractions</u>** **Topic 3. Equivalent Fractions** Fraction Strips Concepts 1, 2 The Clock Introduction 1, 2 Examples Equivalent Fractions on a Number Line Comparison of Fractions Equivalent Fractions in a Multiplication Table One Equivalent Fractions... The Pattern Example Questions Examples 1, 2, 3	1. Represent fractions as decimals and percents using concrete and pictorial models. *****2. Identify equivalent relationships among fractions, decimals, and percents such as 1/4 = .25 = 25%, 1/3 = $.\overline{33}$ = 33 1/3%, 2/5 = .40 = 40%, 1/2 = .50 = 50%, and 3/4 = .75 = 75%.	**MAT+** **<u>Understanding Fractions</u>** **Topic 4. Percent…A Special Fraction** Percent Means... Introduction Ex. 1 - School Ex. 2 - Money Percent Strips Concepts 1, 2, 3 Examples 1. Barrel Example 2. Red Squares 3. Blue Squares 4. Green Blocks5. Ruler **Topic 6. Percents, Fractions, Decimals** Expressing a Percent as a Fraction Introduction without Graphics Introduction with Graphics

					Expressing a Fraction in Simplest Form Greatest Common Factor Examples 1, 2 Expressing a Percent as a Decimal Introduction Examples 1, 2, 3 Number Line #1 Expressing a Decimal as a Percent Examples 1, 2, 3 Summary and Pattern % Nitrogen in the Air Batting Averages
		2. Write equivalent forms of decimals.	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Equivalent Decimals Examples 1, 2, 3, 4		
		*****3. Identify and represent common fraction-decimal equivalents.	**MAT+** **<u>Understanding Fractions</u>** **Topic 15. Fractions and Decimals** Compare Fractions... Method 1 Compare Fractions... Method 2 Fractions to Decimals		

EXPECTATION **F. Explore numbers less than 0 by extending the number line and through familiar applications.**

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
		1. Identify situations in which numbers less than 0 are used.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 4. The Meaning of Integers** Integers Around Us Temperature Helicopter Submarine Elevator The Integer Line	1. Describe numbers less than 0 using real world models.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 4. The Meaning of Integers** Integers Around Us Temperature Helicopter Submarine Elevator The Integer Line Opposite Integers Examples 1, 2

EXPECTATION **G. Describe classes of numbers according to characteristics such as the nature of their factors.**

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Describe and identify the characteristics of even and odd numbers by examining their divisibility by 2.	**NUM+ Concept : <u>COUNTING</u>** **Skill – Skip Counting and Patterns** **Level C** Patterns in Rows: worksheet #1, #2 Skip Counting to 100 Skip Count by 2s to 100 : worksheet #1, #2	*****1. Determine the factors of a given number up to 50.		1. Identify a number as prime, composite, or neither. *****2. Explain the characteristics of prime numbers and composite numbers.	**MAT+** **<u>Understanding Algebra</u>** **Topic 3. Patterns, Patterns, Patterns** Prime and Composite Prime Numbers Composite Numbers Common Factors/GCF Examples 1, 2
		*****2. Determine common multiples of pairs of whole numbers each of which is less than or equal to 12.		*****3. Determine the least common multiple of two whole numbers.	

STANDARD II. Understand meanings of operations and how they relate to one another.

EXPECTATION A. Understand various meanings of multiplication and division.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
*****1. Describe the meaning of multiplication using concrete and pictorial models.	**NUM+ Concept:** **<u>OPERATIONS</u>** **Skill – Introduce Multiplication Concretely** **Level C** Grouping Eggs into Bowls: Worksheets #1, #2 Grouping Chairs into Rows: Worksheets #1, #2 Eggs in Bowls – Introduce X: Worksheets #1, #2 Chairs and Rows – Introduce X: Worksheets #1, #2			*****1. Solve problems using multiplication and division.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying and Dividing Whole Numbers** Whole Numbers Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running Example 7 - Apples Example 8 - Saving Example 9 - Sit-ups Example 10 - Taxi Example 11 - Skipping Practice Questions
*****2. Describe the meaning of division using concrete and pictorial models.	**NUM+ Concept:** **<u>OPERATIONS</u>** **Skill – Introduction to Division** **Level C**	1. Explain the meaning of a remainder.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying**		

	Equal Groups of Eggs: Worksheets #1, #2 Sharing Oranges Equally: Worksheets #1, #2 Division Introduction – Eggs Worksheets #1, #2 Division Introduction – Oranges Worksheets #1, #2 Division - How Many Groups? Worksheets #1, #2		**and Dividing Whole Numbers** Divide by a Single Digit Divisor Fair Sharing Fair Sharing - Example 1 - With Blocks Fair Sharing - Example 2 - Without Blocks Fair Sharing - Questions 1, 2, 3, 4, 5, 6		

EXPECTATION B. Understand the effects of multiplying and dividing whole numbers.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
		1. Explain the effect on the product when one of the factors is changed.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying and Dividing Whole Numbers** Multiply by a Single Digit Multiplier Repeated Addition Repeated Addition - Example 1 - With Blocks Repeated Addition - Example 2 - With Blocks Repeated Addition - Example 3 - Without Blocks Repeated Addition - Example 4 - Without Blocks Partial Products (Area) Partial Products - Example 1 - With Blocks Partial Products - Example 2 - With Blocks Partial Products -	1. Describe and explain the effect on the product when both factors are changed.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying and Dividing Whole Numbers** Multiply by a Single Digit Multiplier Repeated Addition Repeated Addition - Example 1 - With Blocks Repeated Addition - Example 2 - With Blocks Repeated Addition - Example 3 - Without Blocks Repeated Addition - Example 4 - Without Blocks Partial Products (Area) Partial Products - Example 1 - With Blocks Partial Products - Example 2 - With Blocks Partial Products -

			Example 3 - With Blocks Partial Products - Example 4 - Without Blocks Partial Products - Example 5 - Without Blocks Partial Products - Example 6 - Without Blocks Partial Products - Questions 1, 2, 3 Distributive Method Distributive Method - Examples 1, 2, 3 Distributive Method - Questions 1, 2, 3 Lattice Method Lattice Method - Examples 1, 2, 3 Lattice Method - Questions 1, 2, 3 The Standard Method The Standard Method - Examples 1, 2, 3 The Standard Method - Questions 1, 2, 3		Example 3 - With Blocks Partial Products - Example 4 - Without Blocks Partial Products - Example 5 - Without Blocks Partial Products - Example 6 - Without Blocks Partial Products - Questions 1, 2, 3 Distributive Method Distributive Method - Examples 1, 2, 3 Distributive Method - Questions 1, 2, 3 Lattice Method Lattice Method - Examples 1, 2, 3 Lattice Method - Questions 1, 2, 3 The Standard Method The Standard Method - Examples 1, 2, 3 The Standard Method - Questions 1, 2, 3
		2. Compare the size of the quotient to the dividend when dividing two whole numbers.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying and Dividing Whole Numbers** Divide by a Single	2. Describe and explain the effect on the quotient when the divisor is changed.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying and Dividing Whole Numbers** Divide by a Single

			Digit Divisor Fair Sharing Fair Sharing - Example 1 - With Blocks Fair Sharing - Example 2 - Without Blocks Fair Sharing - Questions 1, 2, 3, 4, 5, 6		Digit Divisor Fair Sharing Fair Sharing - Example 1 - With Blocks Fair Sharing - Example 2 - Without Blocks Fair Sharing - Questions 1, 2, 3, 4, 5, 6

EXPECTATION C. **Identify and use relationships between operations, such as division as the inverse of multiplication, to solve problems.**

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
***1. Use the inverse relationships between addition and subtraction to solve problems.	**NUM+ Concept:** **<u>OPERATIONS</u>** **Skill – Fact Families…Add & Subtract** **Level B** Doubles – Add and Subtract Fact Families **Skill – Fact Families…Add & Subtract** **Level C** Check Subtraction by Addition	***1. Use the inverse relationships between multiplication and division to solve problems.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying and Dividing Whole Numbers** Whole Numbers Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running	***1. Describe the relationships among the four operations.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 2. Addition and Subtraction of Whole Numbers** ***All Sections*** **Topic 3. Multiplying and Dividing Whole Numbers** ***All Sections***
				2. Solve multiplication problems such as rates and applications of the Fundamental Counting Principle.	

EXPECTATION D. Understand and use properties of operations, such as the distributivity of multiplication over addition.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Recognize commutativity in the addition facts.	**NUM+ Concept:** **OPERATIONS** **Skill – Demonstrate Commutative Property Level C** Multiplication – Any Order Worksheet #1, #2	1. Recognize commutativity in the multiplication facts.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 3. Multiplying and Dividing Whole Numbers** Commutative Property 5 x 1 = 1 x 5 5 x 2 = 2 x 5 5 x 3 = 3 x 5 4 x 3 = 3 x 4		
2. Use the associative property to add efficiently.	**MAT+** **Understanding Whole Numbers and Integers** **3. Multiplying and Dividing Whole Numbers** Associative Property Examples 1, 2	*****2. Use the associative and distributive properties to multiply efficiently.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 3. Multiplying and Dividing Whole Numbers** Associative Property Examples 1, 2		
		3. Apply divisibility rules for 2, 5, and 10.		1. Apply the divisibility rules for 3, 6, and 9.	

STANDARD III. Compute fluently and make reasonable estimates.

EXPECTATION A. Develop fluency with basic number combinations for multiplication and division and use these combinations to mentally compute related problems, such as 30 x 50.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Recall multiplication and division facts through 9.	**NUM+ Concept:** **<u>OPERATIONS</u>** **Skill – Introduce Multiplication Facts…6,7,8,9** **Level D** Multiplication : Groups of 6,7,8,9 **Skill – Patterns in Multiplication** **Level D** X Table – Groups of 6,7,8,9,10 **Skill – Introduce Division Facts…6,7,8,9** **Level D** Division Groups of 6,7,8,9				
*****2. Use basic number combinations to compute related problems in multiplication and division using multiples of 10 (e.g., using 3 x 5 to compute 30 x 5).	**NUM+ Concept:** **<u>OPERATIONS</u>** **Skill – Patterns in Multiplication** **Level D** X Table – Groups of 6,7,8,9,10 **Skill – Note Patterns in 10 X 10 Multiplication Table** **Level D** X Table – Patterns in Rows X Table – Patterns in Columns X Table – Other	1. Use basic number combinations to compute related problems in multiplication and division using multiples of 100 and 1,000.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 3. Multiplying and Dividing Whole Numbers** Multiples of 10, 100, 1000 Patterns in Multiplication by 100 Patterns in Multiplication by 1000		

	Patterns X Table – User Picks X Table – Computer Picks **MAT+** **<u>Understanding Whole Numbers and Integers</u>** **3. Multiplying and Dividing Whole** Multiples of 10, 100, 1000 Patterns in Multiplication by 10		Examples 1, 2, 3		

EXPECTATION B. Develop fluency in adding, subtracting, multiplying, and dividing whole numbers.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Compare and contrast different addition and subtraction algorithms to select the most efficient one for solving a given problem.	**NUM+ Concept:** **PROBLEM SOLVING** **Skill – Number Sentence** Oranges Bill's Ball	*****1. Construct and analyze algorithms for all operations on whole numbers.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 2. Adding and Subtracting Whole Numbers** ***All Sections*** **Topic 3. Multiplying and Dividing Whole Numbers** ***All Sections***		
2. Construct and analyze concrete models (rectangular arrays) for multiplication of one- and two-digit numbers.	**NUM+ Concept:** **OPERATIONS** **Skill – Introduction to Arrays** **Level C** Introduction to Arrays Worksheet #1, #2 Build Arrays Worksheet #1, #2 Introduce Arrays with Multiplication Worksheet #1, #2 Build Arrays with Multiplication Worksheet #1, #2			1. Find the quotient and a remainder given a dividend of four digits or less and a divisor of two digits or less.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 8. Dividing Integers** Division to Multiplication The Division Table Instructions Patterns Practice
*****3. Demonstrate fluency in the use of both addition and subtraction algorithms	**NUM+ Concept:** **OPERATIONS** **Skill – Add 2 Digit Numbers…Abstractly**	*****2. Demonstrate fluency in the use of a multiplication algorithm and explain	**Topic 3. Multiplying and Dividing Whole Numbers** Whole Numbers	*****2. Demonstrate fluency in the use of a division algorithm and explain the steps	**Topic 3. Multiplying and Dividing Whole Numbers** Whole Numbers

and explain the steps involved.	**Level C** Addition without Regrouping: worksheet #1, #2 Addition with Regrouping: worksheet #1, #2 **Skill – Add 3 Digit Numbers…Concretely Level D** Addition Without Regrouping: worksheet #1, #2 Addition With Regrouping: worksheet #1, #2 **Skill – Add 3 Digit Numbers…Abstractly Level D** Addition Without Regrouping: worksheet #1, #2 Addition With Regrouping #1: worksheet #1, #2 Addition With Regrouping #2: worksheet #1, #2 **Skill – Subtract 3 Digit Numbers…Concretely Level D** Subtraction Without Regrouping: worksheet #1, #2 Subtraction With Regrouping #1: worksheet #1, #2 Subtraction With	the steps involved.	Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running Example 7 - Apples Example 8 - Saving Example 9 - Sit-ups Example 10 - Taxi Example 11 - Skipping	involved.	Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running Example 7 - Apples Example 8 - Saving Example 9 - Sit-ups Example 10 - Taxi Example 11 - Skipping

	Regrouping #2: worksheet #1, #2 Subtraction With Regrouping #3: worksheet #1, #2 **Skill – Subtract 3 Digit Numbers…Abstractly Level D** Subtraction Without Regrouping: worksheet #1, #2 Subtraction With Regrouping #1: worksheet #1, #2 Subtraction With Regrouping #2: worksheet #1, #2 Subtraction With Regrouping #3: worksheet #1, #2 Subtraction With Regrouping #4: worksheet #1, #2				
				3. Explain computational strategies used to solve mathematical problem situations.	**MAT+ *All Programs***

EXPECTATION C. Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Round whole numbers to the nearest 10, 100, and 1,000.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 1. The Meaning of Whole Numbers CAN/US** Rounding Large Numbers Examples 1, 2, 3, 4, 5	1. Round whole numbers to the nearest 10,000, 100,000, and 1,000,000.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 1. The Meaning of Whole Numbers CAN/US** Rounding Large Numbers Examples 1, 2, 3, 4, 5		
2. Estimate whole number sums and differences, describe the method used, and determine the reasonableness of the results.		*****2. Estimate and determine the reasonableness of the product of whole numbers (one factor with two digits or less and the other factor with three digits or less).		1. Use estimation as a tool for judging the reasonableness of calculator, mental, and paper-and-pencil computations.	
		3. Estimate the quotient of whole numbers with a one-digit divisor, a two-digit divisor, and multiples of 10 and determine the reasonableness of results.		*****2. Apply a variety of computational estimation strategies to solve problems involving whole numbers.	**MAT+** **Understanding Whole Numbers and Integers** **Topic 2. Addition and Subtraction of Whole Numbers** Whole Numbers Around Us Example 1 -

					kilometers Example 2 - quarters Example 3 - baseball cards Example 4 - dollars Example 5 - pennies Example 6 - water in a jug Example 7 - coins Example 8 - jelly beans Example 9 - photographs Example 10 - minutes walking Example 11 - cost of a car **Topic 3. Multiplying and Dividing Whole Numbers** Whole Numbers Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running Example 7 - Apples Example 8 - Saving Example 9 - Sit-ups Example 10 - Taxi Example 11 - Skipping
		4. Refine estimates using terms such as			

		closer to, between, and *a little more than*.			

EXPECTATION D. Develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experience.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
		1. Round decimals to the nearest tenth and hundredth.	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Rounding Decimals Examples 1, 2, 3, 4, 5 Special Case #1, #2 Summary	1. Round decimals to the nearest tenth, hundredth, and thousandth.	**MAT+** **<u>Understanding Fractions</u>** **Topic 5. Introduction to Decimals** Rounding Decimals Examples 1, 2, 3, 4, 5 Special Case #1, #2 Summary
		2. Develop and use strategies to estimate sum and difference of decimals.	**MAT+** **<u>Understanding Fractions</u>** **Topic 14. Addition and Subtraction of Decimals** Adding Decimals Tenths... The Pencil Examples 1, 2, 3, 4, 5 Tenths... The Line Examples 1, 2, 3, 4 Hundredths... The Town Examples 1, 2, 3, 4 Subtracting Decimals Tenths...The Pencil Examples 1, 2, 3, 4,	*****2. Estimate the sum and difference of decimals through thousandths and determine the reasonableness of the results.	**MAT+** **<u>Understanding Fractions</u>** **Topic 14. Addition and Subtraction of Decimals** Adding Decimals Tenths... The Pencil Examples 1, 2, 3, 4, 5 Tenths... The Line Examples 1, 2, 3, 4 Hundredths... The Town Examples 1, 2, 3, 4 Subtracting Decimals Tenths...The Pencil Examples 1, 2, 3, 4, 5

			5 Hundredths... The Field Examples 1, 2, 3, 4		Hundredths... The Field Examples 1, 2, 3, 4

EXPECTATION E. Use visual models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
				*****1. Add and subtract commonly used fractions using concrete models, pictorial models, and equivalent forms.	**MAT+** **<u>Understanding Fractions</u>** **Topic 8. Adding Fractions** Percent Strips Examples 1, 2 Decimal Strips Examples 1, 2 The Clock Examples 1, 2 Adding Fractions on a Number Line Examples 1, 2, 3 The Lowest Common Denominator Examples 1, 2 **Topic 9. Subtracting Fractions** Pattern Blocks Hexagons 1, 2, 3 Summary The Clock

					Examples 1, 2 Fraction Strips Concepts 1, 2 Percent Strips Examples 1, 2 Decimal Strips Examples 1, 2 Subtracting Fractions on a Number Line Examples 1, 2, 3 The Lowest Common Denominator Examples 1, 2
				2. Multiply commonly used fractions (including decimals) using area models.	**MAT+** **<u>Understanding Fractions</u>** **Topic 10. Multiplying Fractions** Pattern Blocks Hexagons 1, 2, 3 Fraction Strips Concepts 1, 2 Word Problems Boris' Money Maria's Trip A Summary The Meaning of "OF"
				3. Relate connections between products of fractions and products of decimals using area models.	
1. Add and subtract decimals through	**NUM+ Concept:** **<u>OPERATIONS</u>** **Skill – Introduce**			*4. Add and subtract decimals through	**MAT+** **<u>Understanding</u>**

hundredths using concrete and pictorial models.	**Addition of Decimals** **Level D** Add Decimals #1, #2 **Skill – Introduce Subtraction of Decimals** **Level D** Subtract Decimals #1,#2			thousandths.	**<u>Fractions</u>** **Topic 14. Addition and Subtraction of Decimals** Method 1... Partial Sums Example 1 - With Grids Example 2 - With Grids Example 3 - Without Grids Example 4 - Without Grids Example 5 - Without Grids Example 6 - Without Grids 12 Method 2... Columns Example 1 - With Grids Example 2 - With Grids Example 3 - Without Grids Example 4 - Without Grids Example 5 - Without Grids Example 6 - Without Grids Method 3... Right to Left Example 1 - With Grids Example 2 - With Grids

					Example 3 - Without Grids Example 4 - Without Grids Example 5 - Without Grids Example 6 - Without Grids Subtracting Decimals Tenths...The Pencil Examples 1, 2, 3, 4, 5 Hundredths... The Field Examples 1, 2, 3, 4 Method 1... Right to Left Example 1 - With Grids Example 2 - With Grids Example 3 - Without Grids Example 4 - Without Grids Example 5 - Without Grids Example 6 - Without Grids Method 2... Trade First Example 1 - With Grids Example 2 - With Grids Example 3 - Without Grids Example 4 - Without

					Grids Example 5 - Without Grids Example 6 - Without Grids Method 3... Add Up Example 1 - With Grids Example 2 - With Grids 13 Example 3 - With Grids Example 4 - With Grids Example 5 - Without Grids Example 6 - Without Grids Example 7 - Without Grids Example 8 - Without Grids Method 4... Add Up to Zero Examples 1, 2

EXPECTATION F. **Select appropriate methods and tools for computing with whole numbers from among mental computation, estimation, calculators, and paper and pencil according to the context and nature of the computation and use the selected method or tool.**

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
*****1. Select appropriate methods and tools and use the selected method or tool to solve addition and subtraction problems.	**NUM+ Concept: <u>PROBLEM SOLVING</u>** Oranges Bill's Ball	*****1. Explain why a particular method or tool may be the most appropriate one to use in solving a given problem.	**MAT+** ***All Programs***	*****1. Create and solve problems involving addition, subtraction, multiplication, and division of whole numbers using appropriate methods and tools.	**MAT+** **<u>Understanding Whole Numbers and Integers</u>** **Topic 2. Addition and Subtraction of Whole Numbers** Whole Numbers Around Us Example 1 - kilometers Example 2 - quarters Example 3 - baseball cards Example 4 - dollars Example 5 - pennies Example 6 - water in a jug Example 7 - coins Example 8 - jelly beans Example 9 - photographs Example 10 - minutes walking Example 11 - cost of a car **Topic 3. Multiplying**

					and Dividing Whole Numbers Whole Numbers Around Us Example 1 - Orange Example 2 - Bananas Example 3 - Cycling Example 4 - Baseball Cards Example 5 - Cookies Example 6 - Running Example 7 - Apples Example 8 - Saving Example 9 - Sit-ups Example 10 - Taxi Example 11 - Skipping