

CORRELATION
of
the 10 UNDERSTANDING MATH PLUS PROGRAMS & UNDERSTANDING NUMERATION PLUS PROGRAMS
with
South Carolina MATHEMATICS CURRICULUM STANDARDS

Grades 6 to 8 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 Whole Numbers and Integers
- Understanding Probability Understanding Percent
- Understanding Exponents Understanding Equations
- Understanding Algebra Understanding Graphing
- Understanding Numeration
- Understanding Measurement and Geometry

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

Grades 6–8: Number and Operations

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

EXPECTATION A. Work flexibly with fractions, decimals, and pComercents to solve problems.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
<p>*1. Show the relationship among fractions, decimals, and percents.</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 4: Percent a Special Fraction Percent Means Percent Strips Examples 1 through 5 Making Sense of Percent</p> <p>Topic 5: Introduction to Decimals Introduction to Decimals Tenths and Decimals Ones and Tenths</p>	<p>1. Write and use the appropriate equivalent forms of whole numbers, fractions, decimals, and percents.</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 3: Equivalent Fractions Comparison of Fractions Equivalent Fractions in a Multiplication Table One Equivalent Fractions...The Pattern Example Questions 1,2,3</p> <p>Topic 6: Percent...Fractions...Decimals Expressing a Percent as a Decimal Expressing a Decimal as a Percent Expressing a Fraction as a Percent</p> <p>Topic 15: Fractions and Decimals Compare Fractions – Method 1, 2 Fractions to Decimals Repeated Decimals</p>	<p>1. Solve real-world problems involving fractions, decimals, and percents.</p>	<p>MAT+ <u>Understanding Percent</u> Topic 6: Problems Involving Percent Steps in Solving Problems Finding the Whole Recall Proportion</p> <p>Topic 7: Percent in Business Sales Tax Discount Commission</p> <p>MAT+ <u>Understanding Fractions</u> Topic 5: Introduction to Decimals Decimals Around Us</p>

EXPECTATION B. Compare and order fractions, decimals, and percents efficiently and find their approximate locations on a number line.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
<p>1. Use order symbols to compare two fractions, two decimals, or two percents.</p>	<p>MAT+ Understanding Fractions Topic 3: Equivalent Fractions Comparison of Fractions</p> <p>Topic 5: Understanding Decimals Greater and Less Than</p>	<p>1. Identify, represent, and find the approximate location of fractions, decimals, percents, and square roots of perfect squares on a number line and then justify the reasoning used.</p>	<p>MAT+ Understanding Fractions Topic 1: The Meaning of Fractions Fractions on a Number Line</p> <p>Topic 5: Understanding Decimals Decimals on a Number Line</p> <p>Topic 6: Percents...Fractions...Decimals Number Line #1 Number Line #2</p> <p>MAT+ Understanding Exponents Topic 5: Square Roots Square Roots</p>	<p>1. Compare and order rational and irrational numbers and find their approximate locations on a number line.</p>	
		<p>2. Use order symbols to compare fractions, decimals, percents, and square roots of perfect squares and then justify the reasoning used.</p>	<p>MAT+ Understanding Fractions Topic 3: Equivalent Fractions Comparison of Fractions</p> <p>Topic 5: Understanding Decimals Greater and Less Than</p>		

EXPECTATION C. Develop meaning for percents greater than 100 and less than 1.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Use models to represent percents greater than 100 percent and solve problems involving them.	MAT+ <u>Understanding Percent</u> Topic 6: Problems Involving Percent Percent Greater Than 100% Number Problem Order Problem	1. Use models to represent percents less than 1 percent and solve problems involving them.	MAT+ <u>Understanding Percent</u> Topic 6: Problems Involving Percent Percent Less Than 1% Number Problem Pencil Problem	1. Solve real-world problems involving the use of percents greater than 100 percent or less than 1 percent.	MAT+ <u>Understanding Percent</u> Topic 6: Problems Involving Percent Mental Calculation Number Problem Tipping Percent Change Interest Tree Problem Percent Markup

EXPECTATION D. Understand and use ratios and proportions to represent quantitative relationships.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Connect the concept of ratio and fractions by determining the equivalence of two ratios.	MAT+ <u>Understanding Fractions</u> Topic 7: Ratios & Proportions What is a Ratio? Examples 1 through 4 Writing Ratios	*1. Create and write ratios and proportions from applied situations and explain the reasoning used.	MAT+ <u>Understanding Fractions</u> Topic 7: Ratios & Proportions Writing Ratios What is a Proportion? Examples 1 through 4 Ratios and Your Body		

EXPECTATION E. Develop an understanding of large numbers and recognize and appropriately use exponential, scientific, and calculator notation.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Evaluate powers of ten up to 10^6 .	MAT+ Understanding Exponents Topic 1: The Meaning of Exponents Exponents, Powers, Bases Powerful Explosions Examples – Substitution Examples – Order of Operation	1. Translate to standard form a number written in exponential form, in scientific notation, and in calculator notation.	MAT+ Understanding Exponents Topic 4 : Scientific Notation Why Use Scientific Notation Scientific Notation for Large Numbers	1. Use scientific notation to write very large numbers and numbers less than one.	MAT+ Understanding Exponents Topic 4 : Scientific Notation Scientific Notation for Large Numbers Scientific Notation for Small Numbers

EXPECTATION F. Use factors, multiples, prime factorization, and relatively prime numbers to solve problems.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Solve problems using prime factorization, common multiples, and common factors and then explain the reasoning used.	MAT+ Understanding Algebra Topic 3: Patterns, Patterns, Patterns Factor Pair in Arrays Prime and Composite Common Factors & GCF	1. Apply primes, composites, factors, multiples, and relatively prime numbers in a variety of applied and mathematical situations and explain the reasoning used.	MAT+ Understanding Algebra Topic 3: Patterns, Patterns, Patterns Factor Pair in Arrays Prime and Composite Common Factors & GCF Practice Questions		

EXPECTATION G. Develop meaning for integers and represent and compare quantities with them.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Use integers to describe real-world phenomena in order to develop meanings for integers.	MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 4: The Meaning of Integers Integers Around Us The Integer Line Opposite Integers Absolute Value	1. Compare and order integers.	MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 4: The Meaning of Integers Comparing Integers Examples 1 through 4		

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

EXPECTATION A. Understand the meaning and effects of arithmetic operations with fractions, decimals, and integers.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Explain the meaning and effects of adding, subtracting, multiplying, and dividing.	MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 2: Adding and Subtracting Whole Numbers <i>All Sections</i> Topic 3: Multiplying and Dividing Whole Numbers <i>All Sections</i>	1. Explain the meaning and effects of arithmetic operations with integers.	MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 5: Adding Integers <i>All Sections</i> Topic 6: Subtracting Integers <i>All Sections</i> Topic 7: Multiplying Integers <i>All Sections</i> Topic 8: Dividing Integers <i>All Sections</i>		

EXPECTATION B. Use the associative and commutative properties of addition and multiplication and the distributive property of multiplication over addition to simplify computations with integers, fractions, and decimals.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Apply the commutative, associative, and distributive properties to simplify computations with whole numbers, fractions, and decimals.	MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 3: Multiplying and Dividing Whole Numbers Commutative Property Associative Property Distributive Methods 1, 2	1. Apply the associative, commutative, and distributive properties for operations on integers, fractions, and decimals.	MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 3: Multiplying and Dividing Whole Numbers Commutative Property Associative Property Distributive Methods 1, 2	1. Apply the associative, commutative, and distributive properties to simplify expressions.	MAT+ <u>Understanding Algebra</u> Topic 2: Tiles & Algebra <i>All Sections</i>

EXPECTATION C. Understand and use the inverse relationships of addition and subtraction, multiplication and division, and squaring and finding square roots to simplify computations and solve problems.

6	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
	1. Using models and numbers, explain the inverse relationships between squaring and finding square roots of perfect squares.	MAT+ <u>Understanding Exponents</u> Topic 5: Square Roots Square Roots Radical Signs	1. Approximate to the nearest tenth the square root of a number that falls between two perfect squares.	MAT+ <u>Understanding Exponents</u> Topic 5: Square Roots Square Roots Radical Signs

STANDARD III. Compute fluently and make reasonable estimates.

EXPECTATION A. Select appropriate methods and tools for computing with fractions and decimals from among mental computation, estimation, calculators or computers, and paper and pencil, depending on the situation, and apply the selected methods.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Select appropriate methods and tools to solve problems requiring the addition and subtraction of fractions and decimals.	<p>MAT+ <u>Understanding Fractions</u> Topic 8: Adding Fractions Adding Fractions on a Number Line Lowest Common Denominator Word Problems</p> <p>Topic 9: Subtracting Fractions Subtracting Fractions on a Number Line Lowest Common Denominator Word Problems</p> <p>Topic 14: Addition and Subtraction of Decimals Adding Decimals Tenths Hundredths Method 1, 2,3 Subtracting Decimals Tenths Hundredths Method 1,2,3</p>	1. Applying all operations to fractions, decimals, and integers, select appropriate methods and tools to solve problems.	<p>MAT+ <u>Understanding Fractions</u> Topic 8: Adding Fractions Word Problems Fraction Card Game Magic Square</p> <p>Topic 9: Subtracting Fractions Word Problems Practice Questions</p> <p>Topic 10: Multiplying Fractions Pattern Blocks Fraction Strips Word Problems</p> <p>Topic 11: Dividing Fractions Examples with Diagrams Patterns from Examples Another Explanation Examples without Diagrams</p> <p>Topic 14: Addition and Subtraction of Decimals Decimals All Around Us</p>	1. Select appropriate methods and tools to solve problems requiring the use of rational numbers.	<p>MAT+ <u>Understanding Fractions</u> Topic 8: Adding Fractions <i>All Sections</i></p> <p>Topic 9: Subtracting Fractions <i>All Sections</i></p> <p>Topic 10: Multiplying Fractions <i>All Sections</i></p> <p>Topic 11: Dividing Fractions <i>All Sections</i></p>

EXPECTATION B. Develop and analyze algorithms for computing with fractions, decimals, and integers and develop fluency in their use.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Using models, divide commonly used fractions (including decimals).	MAT+ <u>Understanding Fractions</u> Topic 11: Dividing Fractions Examples with Diagrams Patterns from Examples	*1. Use models and numbers to develop and analyze the algorithms for computing with integers.		*1. Compute with rational numbers to solve a variety of applied and mathematical problems.	MAT+ <u>Understanding Fractions</u> Topic 8: Adding Fractions <i>All Sections</i> Topic 9: Subtracting Fractions <i>All Sections</i> Topic 10: Multiplying Fractions <i>All Sections</i> Topic 11: Dividing Fractions <i>All Sections</i>
*2. Use models and numbers to develop and analyze algorithms with fractions and decimals. *3. Add, subtract, multiply, and divide fractions (including decimals) to solve a variety of applied and mathematical problems.	MAT+ <u>Understanding Fractions</u> Topic 8: Adding Fractions Word Problems Fraction Card Game Magic Square Topic 9: Subtracting Fractions Word Problems Practice Questions Topic 10: Multiplying Fractions Pattern Blocks Fraction Strips	*2. Add, subtract, multiply, and divide integers to solve a variety of applied and mathematical problems.	MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 5: Adding Integers Elevators – An Introduction to Addition Markers – An Introduction to Addition Integers Going for a Walk – An Introduction to Addition Integers Number Line – An Introduction to Addition Writing Positive Integers		

	<p>Word Problems</p> <p>Topic 11: Dividing Fractions Examples with Diagrams Patterns from Examples Another Explanation Examples without Diagrams</p> <p>Topic 14: Addition and Subtraction of Decimals Decimals All Around Us</p>		<p>Topic 6: Subtracting Integers Markers-An Introduction to Subtraction Elevators-An Introduction to Subtraction Example Questions 1 through 6 Going for a Walk</p> <p>Topic 7: Multiplying Integers Order in Multiplication Summary #1, #2 – Signs Example Questions</p> <p>Topic 8: Dividing Integers Division to Multiplication The Inverse of Multiplication Summary # 1, #2 – Signs Example Questions</p>		
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EXPECTATION C. Develop and use strategies to estimate the results of rational-number computations and judge the reasonableness of the results.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Estimate the sums and differences of fractions, describe the method used, and determine the reasonableness of results.		1. Estimate the products, and quotients of fractions and decimals, describe the method used, and determine the reasonableness of results.			
		2. Estimate the sums and differences of integers, describe the method used, and determine the reasonableness of results.		1. Justify the reasonableness of an estimate of rational number computations.	

EXPECTATION D. Develop, analyze, and explain methods for solving problems involving proportions, such as scaling and finding equivalent ratios.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
		1. Explain the equivalent ratio method of solving problems involving proportions.	MAT+ <u>Understanding Fractions</u> Topic 7: Ratios and Proportions Proportions Examples 1 through 4	*1. Analyze and explain each method for solving a proportion (equivalent ratios, unit rates, and cross-multiplying). *2. Use proportional reasoning to solve applied problems and then justify the solution.	MAT+ <u>Understanding Fractions</u> Topic 7: Ratios and Proportions Proportions Examples 1 through 4 Ratios and Your Body Golden Ratio Measuring Your Body