

CORRELATION
of
the 10 UNDERSTANDING MATH PLUS PROGRAMS
with
Louisiana Mathematics Framework
Benchmarks K-4
February 2006

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

NUMBER and NUMBER RELATIONS

Benchmarks K-4

Students in Grades K-4 use estimation, mental arithmetic, number lines, graphs, appropriate models, manipulatives, calculators, and computers as they investigate problems involving whole numbers. As a result, what they know and are able to do includes:

Standard	Understanding Math PLUS Program and Lesson	Understanding Numeration PLUS Concepts and web address (click the link provided to see what a full list of lessons from level K to 3)
<p>N-1-E constructing number meaning and demonstrating that a number can be expressed in many different forms (e.g., standard notation, number words, number lines, geometrical representation, fractions, and decimals);</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> 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 Expanded Notation To 999 Examples 1, 2</p> <p>MAT+ <u>Understanding Fractions</u> 1. THE MEANING OF FRACTIONS Fractions in the News Introduction... Think, Write, Say Circle Squares Balls Examples Parts of a Fraction Introduce Fractions Part of a Whole One Half One Third One Quarter Parts of a Whole Two Fifths Three Eights Seven Tenths Write the Fraction</p>	<p>NUM+ COUNTING <u>Reading and Printing Numerals</u> Introduction Counting 1 to 10 – Level A Things in a Square – Level A Join up to 10 Dots – Level A Building a Numberline – Level A Introduction Counting 1 to 20 – Level B Things in a Square – Level B Join up to 20 Dots – Level B Counting 0 to 100 – Level C</p>

	<p>Questions 1, 2, 3, 4</p> <p>5. INTRODUCTION TO DECIMALS Introduction to Decimals Tenths and Decimals Examples 1, 2, 3, 4 Ones and Tenths Examples 1, 2, 3, 4 Decimals on a Number Line Examples 1, 2, 3, 4, 5</p>	
<p>N-2-E demonstrating number sense and estimation skills, giving particular attention to common equivalent reference points (i.e., $\frac{1}{4} = 25\% = .25$, etc.);</p>	<p>MAT+ <u>Understanding Fractions</u> 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 Simplifying Fractions Method 1, 2 Examples Examples 1, 2, 3, 4 The Watering Can Expressing a Percent as a Decimal Introduction Examples 1, 2, 3 Number Line #1 Decimal Strips Concepts 1, 2, 3</p>	<p>NUM+ PLACE VALUE <u>Compare Decimals</u> Compare Decimals – Level D</p>
<p>N-3-E reading, writing, representing, comparing, ordering, and using whole numbers in a variety of forms (e.g., standard notation, number line, and geometrical representation);</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> 1. THE MEANING OF WHOLE NUMBERS CAN/US Expanded Notation To 999 16 Examples 1, 2 To 9999 Examples 1, 2</p>	<p>NUM+ COMPARING AND ORDERING <u>Locate Numbers on a Numberline – Level A</u> <u>Locate Whole Numbers on a Grid – Level C</u> <u>Introduce “Greater Than, Less Than” – Level A, C</u> <u>Working with Whole Numbers $>$, $<$, $=$ - Level A, B, C, D</u></p>

	<p>Write as Numerals Examples 1, 2 The Number Line Represent Numbers in Many Ways Examples 1, 2, 3, 4, 5 The Number Line Examples 1, 2</p>	
<p>N-4-E demonstrating a conceptual understanding of the meaning of the basic arithmetic operations (add, subtract, multiply, and divide) and their relationships to each other;</p> <p>E N-5-E selecting appropriate operation(s) (add, subtract, multiply, and divide) for a given situation;</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> 2. ADDING AND SUBTRACTING WHOLE NUMBERS Add... Partial Sums Examples 1 through 6 Add... Trade First Examples 1 through 6 Add... Right to Left Examples 1 through 6 Subtract... Right to Left Examples 1 through 6 Subtract... Trade First Examples 1 through 6 Subtract... Add Up Examples 1 through 6</p> <p>3. MULTIPLYING AND DIVIDING WHOLE NUMBERS Multiplication Facts Groups of 6 Groups of 7 Groups of 8 Groups of 9 Commutative Property $5 \times 1 = 1 \times 5$ $5 \times 2 = 2 \times 5$ $5 \times 3 = 3 \times 5$ $4 \times 3 = 3 \times 4$ The 10 x 10 Multiplication Table User Picks Computer Picks Divide by a Single Digit Divisor</p>	<p>NUM+ OPERATIONS <u>Introduce Addition Concretely – Level A</u> <u>Demonstrate Addition Facts 5 to 10 – Level A</u> <u>Demonstrate Addition Facts – Patterns – Level A, B, C, D</u> <u>Add 3 or 4 Numbers – Levels A, B, C</u> <u>Add 2 Digits Concretely – Level C</u> <u>Add 2 Digit Abstractly – Level C</u> <u>Add 3 Digits Concretely – Level D</u> <u>Add 3 Digit Abstractly – Level D</u> <u>Introduce Subtraction Symbolism – Level A</u> <u>Fact Families Add & Subtract – Level A, B, C</u> <u>Subtract 2 Digit Numbers Concretely – Level C</u> <u>Subtract 2 Digit Numbers Abstractly – Level C</u> <u>Subtract 3 Digit Numbers Concretely – Level D</u> <u>Subtract 3 Digit Numbers Abstractly – Level D</u> <u>Introduce Multiplication Concretely – Level C</u> <u>Introduction to Division – Level C</u></p>

<p>N-6-E applying a knowledge of basic math facts and arithmetic operations to real-life situations;</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> 2. ADDING AND SUBTRACTING 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 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</p>	<p>NUM+ OPERATIONS <u>Introduce Addition Concretely – Level A</u> <u>Demonstrate Addition Facts 5 to 10 – Level A</u> <u>Demonstrate Addition Facts – Patterns – Level A, B, C, D</u> <u>Add 3 or 4 Numbers – Levels A, B, C</u> <u>Add 2 Digits Concretely – Level C</u> <u>Add 2 Digit Abstractly – Level C</u> <u>Add 3 Digits Concretely – Level D</u> <u>Add 3 Digit Abstractly – Level D</u> <u>Introduce Subtraction Symbolism – Level A</u> <u>Fact Families Add & Subtract – Level A, B, C</u> <u>Subtract 2 Digit Numbers Concretely – Level C</u> <u>Subtract 2 Digit Numbers Abstractly – Level C</u> <u>Subtract 3 Digit Numbers Concretely – Level D</u> <u>Subtract 3 Digit Numbers Abstractly – Level D</u> <u>Introduce Multiplication Concretely – Level C</u> <u>Introduction to Division – Level C</u></p> <p>NUM+ PROBLEM SOLVING</p>
<p>N-7-E constructing, using, and explaining procedures to compute and estimate with whole numbers (e.g., mental math strategies)</p> <p>N-8-E selecting and using appropriate computational methods and tools for given situations involving whole numbers (e.g., estimation, mental arithmetic, calculator, or paper and pencil);</p> <p>N-9-E demonstrating the connection of number and number relations to the other strands and to real-life situations</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> 1. THE MEANING OF WHOLE NUMBERS CAN/US 2. ADDING AND SUBTRACTING WHOLE NUMBERS 3. MULTIPLYING AND DIVIDING WHOLE NUMBERS <i>All Sections</i></p>	<p>NUM+ PROBLEM SOLVING</p> <p>NUM+ COUNTING <u>Estimating the Number of Objects and Reasonableness – Level A, b</u> Estimate the Handful Dot Flash Cards Estimating and Counting</p> <p><u>Associating Numbers in a Real World Context – Level A</u> The Street Scene The Zoo</p> <p>NUM+ OPERATIONS <u>Introduce Addition Concretely – Level A</u> <u>Demonstrate Addition Facts 5 to 10 – Level A</u> <u>Demonstrate Addition Facts – Patterns – Level A, B, C, D</u> <u>Add 3 or 4 Numbers – Levels A, B, C</u> <u>Add 2 Digits Concretely – Level C</u> <u>Add 2 Digit Abstractly – Level C</u> <u>Add 3 Digits Concretely – Level D</u> <u>Add 3 Digit Abstractly – Level D</u> <u>Introduce Subtraction Symbolism – Level A</u></p>

Fact Families Add & Subtract – Level A, B, C
Subtract 2 Digit Numbers Concretely – Level C
Subtract 2 Digit Numbers Abstractly – Level C
Subtract 3 Digit Numbers Concretely – Level D
Subtract 3 Digit Numbers Abstractly – Level D
Introduce Multiplication Concretely – Level C
Introduction to Division – Level C

ALGEBRA

Benchmarks K-4

Students in Grades K-4 use manipulatives, models, graphs, tables, technology, number sense, and estimation as they investigate problems involving the concepts and application of algebra. As a result, what they know and are able to do includes:

<p>A-1-E demonstrating a conceptual understanding of variables, expressions, equations, and inequalities (e.g., use letters or boxes to represent values; understand =, >, < symbols);</p>	<p>MAT+ <u>Understanding Algebra</u> 1. INTRODUCTION TO ALGEBRAIC THINKING Trick #1 - Whole Numbers Instruction Trick Machine Explanation Trick #2 - Whole Numbers Instruction Explanation Trick #3 - Whole Numbers Instruction Explanation Trick #1 - Integers Instruction Trick Machine Explanation Trick #2 - Integers Instruction Explanation Trick #3 - Integers Instruction Explanation Pictures to Words - Whole Numbers Pictures to Words More Pictures to Words Pictures to Words - Integers Pictures to Words</p>	<p>NUM+ <u>COMPARING AND ORDERING</u> <u>Introduce “Greater Than, Less Than” – Level A, C</u> Greater Than and Less Than on a Numberline #1 Greater Than and Less Than on a Numberline #2 Greater Than, Less Than #1 Greater Than, Less Than #2 Greater Than, Less Than, Equal To Greater Than <u>Understanding “Just Before”...”Just After”...”Between” – Level B, C</u> In Between #1 In Between #2 Just After Machine #1 Just After Machine #2 Just Before Machine #1 Just Before Machine #2 Less Than</p>
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	<p>More Pictures to Words Function Machine Introduction Find Output Find Input Find The Rule Rules 1, 2, 3, 4</p> <p>MAT+ <u>Understanding Equations</u> 1. TILES, BALANCES, AND EQUATIONS Definitions Introduction Summary Parts 1, 2 The Meaning of “Solving an Equation” Solve by Systematic Trials Recall Tile Concepts Balances... An Introduction Tiles, Balances and Equations Practice Questions</p>	
A-2-E modeling and developing strategies for solving equations and inequalities;	<p>MAT+ <u>Understanding Equations</u> 2. SOLVING ONE-STEP EQUATIONS Our Problem Concepts – Examples with Tiles Examples 1, 2, 3, 4 Concepts – Examples without Tiles Practice Questions</p>	
A-3-E recognizing the connection of algebra to the other strands and to real-life situations (e.g., number sentences or formulas to represent real-world problems).	<p>MAT+ <u>Understanding Algebra</u> 2. TILES AND ALGEBRA Area Area... The Concept Area... Examples 1, 2, 3 Introduction to Tiles Tile Representation Like Terms Combinations Squared Terms Pictures to Words to Algebraic Expressions Examples 1, 2</p>	

MEASUREMENT

Benchmarks K-4

Students in Grades K-4 use number sense, estimation, appropriate manipulatives, tools, and technology as they investigate problems involving measurement. As a result, what they know and are able to do includes:

<p>M-1-E applying (measure or solve measurement problem) the concepts of length (inches, feet, yards, miles, millimeters, centimetres, etc.) area, volume, capacity, weight, mass, time, money, and temperature to real-world experiences;</p> <p>M-2-E selecting and using appropriate standard and non-standard units of measure and tools for measuring length, area, capacity, weight/mass, and time for a given situation by considering the purpose and precision required for the task;</p>	<p>MAT+ <u>Understanding Measurement and Geometry</u> 1. AN INTRODUCTION TO MEASUREMENT The Ruler Benchmarks Establishing Benchmarks Meter Benchmarks Foot Benchmarks Centimeter Benchmarks Inch Benchmarks Yard Benchmarks Our Benchmarks Using Benchmarks</p>	<p>NUM+ COMPARING AND ORDERING <u>Understand Measurement of Time – Level B, C, D</u> The Clock – An Introduction Times to the Hour Analog and Digital Times to the Half Hour Times to Five Minutes</p> <p><u>Describe Elapsed Time...Hours, 5 Minutes</u> Elapsed Time in hours Elapsed Time in Hours Elapsed Time – 5 Minutes Time Goes By – Analog, Digital</p> <p>NUM+ OPERATIONS <u>Finding the Perimeter of a Shape – Level C, D</u> Perimeter of a Rectangle Perimeter of a 2D Shape</p> <p><u>Finding the Area of a Shape – Level D</u> Area of a Shaded Region #1, #2</p>
<p>M-3-E using estimation skills to describe, order, and compare measure of length, capacity, weight/mass, time, and temperature;</p>		<p>NUM+ COMPARING AND ORDERING <u>Reading and Comparing Temperatures – Level C</u> Fahrenheit and Celsius Temperatures Compare Temperatures in a Day</p>
<p>M-4-E converting from on unit of measurement to another within the same system (customary and metric); comparisons</p>	<p>MAT+ <u>Understanding Measurement and Geometry</u> 1. AN INTRODUCTION TO MEASUREMENT Measurement in the News A Glimpse into the Past</p>	

<p>between systems should be based on intuitive reference points, not formal computations (e.g., a meter is a little longer than a yard);</p>	<p>Metric and U.S.A Standard Measurement Systems Searching for the Standard Unit Related Units from Metric Prefixes Metric Prefixes at Work Converting Between Metric Units</p>	
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GEOMETRY

Benchmarks K-4

Students in Grades K-4 use number sense, estimation, models, drawings, manipulatives, and technology as they investigate problems involving geometric concepts. As a result, what they know and are able to do includes:

<p>M-5-E demonstrating the connection of measurement to the other strands and to real-life situations.</p>	<p>MAT+ <u>Understanding Measurement and Geometry</u> 1. AN INTRODUCTION TO MEASUREMENT <i>All Sections</i></p>	
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