

CORRELATION
of
the Understanding Numeration PLUS & Understanding Math PLUS programs
with
Maryland Voluntary State Curriculum
Kindergarten
May 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

Note: Highlighted assessment limits will be tested in the no calculator section of MSA.
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Neufeld Learning Systems Inc. May 2006
Source: <http://mdk12.org/instruction/curriculum/mathematics/index.html>

VOLUNTARY STATE CURRICULUM – MATHEMATICS KINDERGARDEN

STANDARD 1.0 KNOWLEDGE OF ALGEBRA, PATTERNS, AND FUNCTIONS – Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.

KINDERGARTEN	UNDERSTANDING NUMERATION PLUS LESSONS
<p>A. Patterns and Functions</p> <ol style="list-style-type: none"> 1. Identify and copy numeric patterns <ol style="list-style-type: none"> a) Use manipulatives with numeric qualities to build patterns 2. Identify, copy, describe, create, and extend non-numeric patterns <ol style="list-style-type: none"> a) Represent patterns kinesthetically such as: clap/snap/clap b) Represent and analyze repeating patterns using no more than 3 objects in the core of the pattern c) Sort a collection of objects according to a rule d) Identify patterns in real life situations e) Recognize the difference between patterns and non-patterns f) Continue patterns 	<p><u>COMPARING AND ORDERING</u> Skill – Locate Numbers on a Number Line Level A Find One Missing Number Find Two Missing Numbers</p> <p><u>COUNTING</u> Skill – Reading and Printing Numerals Level A Introduction : Counting 1 to 10: worksheet #1, #2 Things in a Square #1 Join up to 10 Dots Building a Number Line</p>
<p>B. Expressions, Equations, and Inequalities</p> <ol style="list-style-type: none"> 1. Write and identify expressions <ol style="list-style-type: none"> a) Represent numeric quantities using concrete and pictorial representations to model addition expressions with a value of no more than 10 2. Identify equations and inequalities <ol style="list-style-type: none"> a) Represent relationships by comparing groups of no more than 10 objects to determine more or less b) Model and name the value of the missing part in a part-part-whole situation using no more than 10 manipulatives c) Describe addition using terms such as: and, add, plus, join, equal 	<p><u>OPERATIONS</u> Skill – Introduce Addition Concretely... “and” Level A Addition Using Gumballs #2: Worksheets #1, #2 Addition Using Beans #2: Worksheets #1, #2 Add Number of Sides of Shapes #2: Worksheets #1, #2</p> <p><u>OPERATIONS</u> Skill –Introduce the Symbolism...# + # = Level A Addition Using Gumballs #3: Worksheets #1, #2 Addition Using Beans #3: Worksheets #1, #2 Add Number of Sides of Shapes #3: Worksheets #1, #2</p>

	<p><u>OPERATIONS</u> Skill – Introduce the words... “plus” and “equals” Level A Ways to Make 7: Worksheets #1, #2 Ways to Make 7 : Reverse Order worksheets #1, #2 Make 7: Horizontal & Vertical worksheets #1, #2</p> <p><u>OPERATIONS</u> Skill – Demonstrate Addition Facts ... Making 8 Level A Ways to Make 8: Worksheets #1, #2 Ways to Make 8 : Reverse Order worksheets #1, #2</p> <p><u>OPERATIONS</u> Skill – Demonstrate Addition Facts ... Making 9 Level A Ways to Make 9: Worksheets #1, #2 Ways to Make 9 : Reverse Order worksheets #1, #2</p> <p><u>OPERATIONS</u> Skill – Demonstrate Addition Facts ... Making 10 Level A Ways to Make 10: Worksheets #1, #2 Ways to Make 10 : Reverse Order worksheets #1, #2</p>
<p>C. Numeric and Graphic Representations of Relationships</p> <p>1. Locate points on a number line a) Identify and represent whole numbers up to 10 on a number line using manipulatives, symbols, and one-to-one correspondence</p>	<p><u>COMPARING AND ORDERING</u> Skill – Locate Numbers on a Number Line Level A Find One Missing Number Find Two Missing Numbers</p> <p><u>COUNTING</u> Skill – 1 to 1 Correspondence of # to Objects Level A Keep Track by Marking: Worksheets #1, #2</p>

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VOLUNTARY STATE CURRICULUM – MATHEMATICS KINDERGARDEN

STANDARD 2.0 KNOWLEDGE GEOMETRY – Students will apply the properties of one-, two-, or three-dimensional geometric figures to describe, reason, or solve problems about shape, size, position, or motion of objects.

KINDERGARTEN	UNDERSTANDING NUMERATION PLUS LESSONS
<p>A. Plane Geometric Figures</p> <ol style="list-style-type: none"> 1. Recognize and describe the attributes of plane geometric figures <ol style="list-style-type: none"> a) Sort and regroup everyday objects and geometric figures according to attributes such as: shape, color, size b) Describe plane figures and their attributes such as: shape, color, size c) Identify triangles, circles, squares, and rectangles d) Compare, trace, and reproduce triangles, circles, squares, and rectangles 	<p>COUNTING Skill – Recognize and Count Two-Dimensional Figures Level B/C Counting 2-D Figures #1, #2</p>
<p>B. Solid Geometric Figures</p> <ol style="list-style-type: none"> 1. Recognize, describe, and use the attributes of solid geometric figures <ol style="list-style-type: none"> a) Match, sort, and regroup objects according to attributes b) Describe solid figures c) Identify solid geometric figures in the environment 	<p>COUNTING Skill – Recognize and Count Two-Dimensional Figures Level B/C Counting 2-D Figures #1, #2</p>
<p>C. Transformations</p> <ol style="list-style-type: none"> 1. Begin to recognize a transformation <ol style="list-style-type: none"> a) Use position words such as: over, under, above, on, next to, below, beside, behind b) Use spatial reasoning to solve simple puzzles c) Demonstrate slides using simple objects 2. Analyze geometric figures and pictures <ol style="list-style-type: none"> d) Recognize the concept of symmetry using pictures 	<p>MAT+ <u>Understanding Graphing</u> Topic 4. Transformations What is a Transformation? Introduction to Common Transformations Line of Symmetry – An introduction</p>

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VOLUNTARY STATE CURRICULUM – MATHEMATICS KINDERGARDEN

STANDARD 3.0: KNOWLEDGE OF MEASUREMENT- Students will identify attributes, units, or systems of measurements or apply a variety of techniques, formulas, tools, or technology for determining measurements.

KINDERGARTEN	UNDERSTANDING NUMERATION PLUS LESSONS
<p>A. Measurement Units</p> <p>1. Explore measurement units</p> <p>a) Order, compare, and describe objects by attributes such as: length/height, weight, capacity</p> <p>b) Recognize time by identifying days of the week and by using term such as: yesterday, today, tomorrow, morning, afternoon, night, before, after</p> <p>c) Compare and describe temperature such as: temperature in January as compared to temperature in July</p>	<p><u>COMPARING AND ORDERING</u></p> <p>Skill – Reading and Comparing Temperatures</p> <p>Level C</p> <p>Fahrenheit and Celsius Temperatures: Worksheets #1, #2</p> <p>Compare Temperatures in a Day: Worksheets #1, #2</p>
<p>B. Measurement Tools</p> <p>1. Measure in non-standard units</p> <p>a) Measure length of objects and pictures of objects</p> <p>b) Explore and compare the capacity of containers</p> <p>c) Explore and compare weight of objects</p>	

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STANDARD 4.0: KNOWLEDGE OF STATISTICS – Students will collect, organize, display, analyze, or interpret data to make decisions or predictions

KINDERGARTEN	UNDERSTANDING NUMERATION PLUS LESSONS
<p>A. Data Displays</p> <p>1. Collect, organize, and display data</p> <ul style="list-style-type: none"> a) Collect data by answering a question b) Organize and display data to make real graphs c) Organize and display data to make picture graphs 	<p><u>OPERATIONS</u> Skill – Given Graphs...Perform Operations Level D Operations with Tally Charts: Worksheets #1, #2 Operations with Pictographs: Worksheets #1, #2</p>
<p>B. Data Analysis</p> <p>1. Analyze data</p> <ul style="list-style-type: none"> a) Compare and describe data from real graphs to answer a question b) Compare and describe data from a picture graph to answer a question 	<p><u>OPERATIONS</u> Skill – Given Graphs...Perform Operations Level D Operations with Tally Charts: Worksheets #1, #2 Operations with Pictographs: Worksheets #1, #2</p>

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VOLUNTARY STATE CURRICULUM – MATHEMATICS KINDERGARDEN

STANDARD 6.: KNOWLEDGE OF NUMBER RELATIONSHIPS AND COMPUTATION/ARITHMETIC – Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil, or technology.

KINDERGARTEN	UNDERSTANDING NUMERATION PLUS LESSONS
<p>A. Knowledge of Number and Place Value</p> <p>1. Apply knowledge of whole numbers and place value</p> <ul style="list-style-type: none"> a) Extend concept of number b) Construct relationships between and among quantities using language such as: more than, less than, fewer than, as many as, one more, one less c) Demonstrate cardinality by answer of how many d) Build meaningful relationships by using 5 and 10 frames e) Use concrete materials to build sets 0 to 10 f) Use concrete materials to compose and decompose quantities up to 10 g) Match a numeral to a set h) Count to 31 i) Count backward from 10 j) Use ordinal numbers to indicate position such as: first, second, third, fourth, fifth 	<p>NUM Concept : <u>COMPARING AND ORDERING</u> Skill – Introduce “ Greater Than” & “ Less Than” Level A</p> <ul style="list-style-type: none"> Greater Than Less Than “Greater Than, Less Than” #1 “Greater Than, Less Than, Equal To” <p><u>COMPARING AND ORDERING</u> Skill – Understand “More” and “Less” Level A</p> <ul style="list-style-type: none"> More, More!! Worksheets #1, #2 Less, Less!! Worksheets #1, #2 More or Less...Dots Worksheets #1, #2 More or Less on a Number Line: Worksheets #1, #2 <p><u>COUNTING</u> Skill – Counting Backwards Level A/B</p> <ul style="list-style-type: none"> Counting Backwards Counting Up and Down #1, #2 <p><u>COMPARING AND ORDERING</u> Skill – Use Ordinal Numbers Level A/B</p> <ul style="list-style-type: none"> Ordering Ladybugs The Steps

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KINDERGARTEN	UNDERSTANDING NUMERATION PLUS LESSONS
<p>2. Recognize fractions</p> <p>a) Show initial awareness of fractional parts (halves) using concrete materials</p> <p>3. Recognize and use money</p> <p>a) Identify and name the value of pennies, nickels, and dimes</p> <p>b) Choose the coin named from a given set of mixed coins</p> <p>c) Use money in real-world situations such as a classroom store</p> <p>C. Number Computation</p> <p>1. Analyze number relations and compute</p> <p>a) Model addition by combining sets of concrete objects and describe the results using words and pictures</p> <p>b) Model subtraction by separating sets of concrete objects and describe the results using words and pictures</p> <p>c) Solve a given story problem cooperatively that is based on the combining and separating of models</p>	<p>NUM Concept : <u>COUNTING</u> Skill – Introduce Fractions: Equal Parts Level B Two Equal Parts One Half</p> <p><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</p> <p><u>OPERATIONS</u> Skill – Introduce Addition...concretely... “in all” & “together” Level A Addition Using Gumballs #1: Worksheets #1, #2 Addition Using Beans #1: Worksheets #1, #2 Add Number of Sides of Shapes #1: Worksheets #1, #2</p> <p><u>OPERATIONS</u> Skill – Introduce Addition Concretely... “and” Level A Addition Using Gumballs #2: Worksheets #1, #2 Addition Using Beans #2: Worksheets #1, #2 Add Number of Sides of Shapes #2: Worksheets #1, #2</p> <p><u>OPERATIONS</u> Skill –Introduce the Symbolism...# + # = Level A Addition Using Gumballs #3: Worksheets #1, #2 Addition Using Beans #3: Worksheets #1, #2 Add Number of Sides of Shapes #3: Worksheets #1, #2</p> <p><u>OPERATIONS</u> Skill – Introduce Subtraction Concretely... “take away” Level A Introduction to Subtractions #1: Worksheets #1, #2 Introduction to Subtractions #2: Worksheets #1, #2 Introduction to Subtractions #3: Worksheets #1, #2 Introduction to Subtractions #4: Worksheets #1, #2</p>

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STANDARD 7.0 PROCESSES OF MATHEMATICS – Students demonstrate the processes of mathematics by making connections and applying reasoning to solve and to communicate their findings.

KINDERGARTEN	UNDERSTANDING NUMERATION PLUS LESSONS
<p>A. Problem solving</p> <ol style="list-style-type: none"> 1. Apply a variety of concepts, processes, and skills to solve problems <ol style="list-style-type: none"> a. Identify the question in the problem b. Decide if enough information is present to solve the problem c. Make a plan to solve a problem d. Apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation e. Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation f. Identify alternative ways to solve a problem g. Show that a problem might have multiple solutions or no solution h. Extend the solution of a problem to a new problem situation 	<p>Understanding Numeration PLUS – PROBLEM SOLVING <i>ALL SECTIONS</i></p>
<p>B. Reasoning</p> <ol style="list-style-type: none"> 1. Justify ideas or solutions with mathematical concepts or proofs <ol style="list-style-type: none"> a. Use inductive or deductive reasoning b. Make or test generalizations c. Support or refute mathematical statements or solutions d. Use methods of proof, i.e., direct, indirect, paragraph, or contradiction 	<p>Understanding Numeration PLUS – PROBLEM SOLVING <i>ALL SECTIONS</i></p>
<p>C. Communication</p> <ol style="list-style-type: none"> 1. Present mathematical ideas using words, symbols, visual displays, or technology <ol style="list-style-type: none"> a. Use multiple representations to express concepts or solutions b. Express mathematical ideas orally c. Explain mathematically ideas in written form d. Express solutions using concrete materials e. Express solutions using pictorial, tabular, graphical, or algebraic methods f. Explain solutions in written form g. Ask questions about mathematical ideas or problems h. Give or use feedback to revise mathematical thinking 	<p>Understanding Numeration PLUS – PROBLEM SOLVING <i>ALL SECTIONS</i></p>
<p>D. Connections</p> <ol style="list-style-type: none"> 1. Relate or apply mathematics within the discipline, to other disciplines, and to life <ol style="list-style-type: none"> a. Identify mathematical concepts in relationship to other mathematical concepts b. Identify mathematical concepts in relationship to other disciplines c. Identify mathematical concepts in relationship to life d. Use the relationship among mathematical concepts to learn other mathematical concepts 	<p>Understanding Numeration PLUS – PROBLEM SOLVING <i>ALL SECTIONS</i></p>

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