

CORRELATION
of
the 10 UNDERSTANDING MATH PLUS PROGRAMS
with
California State Board of Education ACADEMIC CONTENT STANDARDS

For Grade 5

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

Grade Five

Mathematics Content Standards.

NUMBER SENSE

1.0 Students compute with very large and very small numbers, positive integers, decimals, and fractions and understand the relationship between decimals, fractions, and percents. They understand the relative magnitudes of numbers:

Content Standard	Understanding Math PLUS computer assisted lessons
<p>1.1 Estimate, round, and manipulate very large (e.g., millions) and very small (e.g., thousandths) numbers.</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 1: The Meaning of Whole Numbers CAN/US Millions Examples 1,2,3,4 The Number Line Billions Example 1 Comparing Numbers Examples 1,2,3,4</p> <p>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</p>
<p>1.2 Interpret percents as a part of a hundred; find decimal and percent equivalents for common fractions and explain why they represent the same value; compute a given percent of a whole number.</p>	<p>MAT+ <u>Understanding Percent</u> Topic 1: The Meaning of Percent In This Topic Percent in the News Percent Means... Introduction Ex. 1 School; Ex. 2 Money Examples: 1 – Barrel Example 2 – Red Squares 3 – Blue Squares 4 – Green Blocks 5 – Ruler Making Sense of Percent 1. Weather 2. Squares 3. Election 4. Photocopier 5. Car Trip</p> <p>Topic 2: Percent to Fraction/ Decimal Expressing Percent as a Fraction Introduction with/without Graphics Fraction in Simplest Form Greatest Common Factor Examples 1,2 Simplifying Fractions Methods 1,2 Examples Examples 1,2,3,4</p> <p>Topic 3: Fraction/Decimal to Percent Decimals to Fractions – Place Value</p>

	<p>Expressing a Decimal as a Percent Examples 1,2,3 Summary and Pattern Percent Nitrogen in Air Batting Averages Expressing a Fraction as a Percent An Example Method 1 – Examples 1,2 Method 2 – Examples 1,2 Lightning Example</p>
<p>1.3 Understand and compute positive integer powers of nonnegative integers; compute examples as repeated multiplication.</p>	<p>MAT+ <u>Understanding Exponents</u> Topic 1: The Meaning of Exponents Introduction... The Money Game Money Grab Game Show Graphs – Game Show Results Graphs – Comparing the Two Results Introduction ... Bacteria Doubling Introduction ... Paper Folding Experiment Pattern Exponents, Powers, Bases Powerful Explosions Introductory Examples Examples 1,2,3,4,5 Examples – Substitution Examples 1,2,3,4 Examples – Order of Operation Examples 1,2,3,4 Practice Questions; Topic Test</p>
<p>1.4 Determine the prime factors of all numbers through 50 and write the numbers as the product of their prime factors by using exponents to show multiples of a factor (e.g., $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3$).</p>	<p>MAT+ <u>Understanding Algebra</u> Topic 3: Patterns, Patterns, Patterns Prime and Composite Prime Numbers</p>
<p>1.5 Identify and represent on a number line decimals.</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 5: Introduction to Decimals Decimals on a Number Line Examples 1,2,3,4,5 Comparing Decimals Examples 1,2,3,4 Ordering Decimals Introduction Examples 1,2,3,4</p>

2.0 Students perform calculations and solve problems involving addition, subtraction, and simple multiplication and division of fractions and decimals:

Content Standard	Understanding Math PLUS computer assisted lessons
<p>2.1 Add, subtract, multiply, and divide with decimals; add with negative integers; subtract positive integers from negative integers; and verify the reasonableness of the results.</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 14: Addition and Subtraction of Decimals Adding Decimals Tenths ... The Pencil Examples 1 through 5 Hundredths ... The Town Examples 1,2,3,4 Method 1 ... Partial Sums Example 1 & 2 – with grids Examples 3 through 6 – without grids Method 2 ... Columns</p>

	<p>Example 1 & 2 – with grids Examples 3 through 6 – without grids Method 3 ... Right to Left Example 1 & 2 – with grids Examples 3 through 6 – without grids</p> <p>Subtracting Decimals Tenths... The Pencil Examples 1,2,3,4,5 Method 1 ... Right to Left Example 1 & 2 – with grids Examples 3 through 6 – without grids Method 2 ... Trade First Example 1 & 2 – with grids Examples 3 through 6 – without grids Method 3... Add Up Example 1 through 4 - with grids Examples 5 through 8 – without grids Method 4 ... Add up to zero Examples 1,2</p> <p>MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 5: Adding Integers Number Line... An Introduction to Addition Examples 1,2,3 Summary... Using a Number Line Writing Positive Integers Examples 1,2,3 Word Problems Temperature Money Car Practice Questions; Topic Test</p> <p>Topic 6: Subtracting Integers Elevators... An Introduction to Subtraction Examples 1,2,3,4 Summary... Using Elevators Summary... Add the Opposite Example Questions Example 1 – With Brackets Example 2 – With Brackets Example 3 – Meaning of ...2-5 Example 4 – Meaning of -7-3 Example 5 – Meaning of -7+9-18 Example 6 – Meaning of -4-9+2-8 Summary from Examples 3 to 6 Going for a Walk Preliminary The Walk David’s Trip Part 1, 2 Summary Word Problems The Sailboat The Bank</p>
<p>2.2 Demonstrate proficiency with division, including division with positive decimals and long division with multidigit divisors.</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 8: Dividing Integers Word Problems Casino Plant Graham’s Walk</p>

	Practice Questions; Topic Test
<p>2.3 Solve simple problems, including ones arising in concrete situations, involving the addition and subtraction of fractions and mixed numbers (like and unlike denominators of 20 or less), and express answers in the simplest form.</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 8: Adding Fractions Pattern Blocks Hexagon 1 Summary Fraction Strips Concepts 1,2 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</p> <p>Topic 9: Subtracting Fractions Pattern Blocks Hexagon 1,2,3 The Clock Example 1,2,3 Fraction Strips Concepts 1,2 Percent Strips Examples 1,2 Decimal Strips Examples 1,2 Subtracting Fractions on a Number Line Examples 1, 2 The Lowest Common Denominator Examples 1,2</p>
<p>2.4 Understand the concept of multiplication and division of fractions.</p> <p>2.5 Compute and perform simple multiplication and division of fractions and apply these procedures to solving problems.</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 10: Multiplying Fractions Pattern Blocks Hexagons 1,2,3 Fractions Strips Concepts 1,2 Word Problems Boris' Money Maria's Trip A Summary The Meaning of "OF"</p> <p>Topic 14: Dividing Fractions Understanding Division Examples with Diagrams Soda Pop Ice Cream Shapes 1 & 2 Patterns from Examples Another Explanation Examples 1 & 2</p>

ALGEBRA AND FUNCTIONS

1.0 Students use variables in simple expressions, compute the value of the expression for specific values of the variable, and plot and interpret the results:

Content Standard	Understanding Math PLUS computer assisted lessons
<p>1.1 Use information taken from a graph or equation to answer questions about a problem situation.</p>	<p>MAT+ <u>Understanding Graphing</u> Topic 1: Reading and Sketching Graphs In This Topic Graphs Without a Scale Concept ...Age and Weight Example 1... Height and Weight Example 2 ... Errors and Years Example 3 ... Pushups and Sit-ups Example 4 ... Nelia’s Bike Ride Example 5 ... Temperature and Time Example6 ...Melissa Eating Popcorn Example 7 ... Glasses of Water Example 8 ... Bottles of Water Example 9 ... Bottlers of Water – Matching Example 10... Age and Weight Example 11...The Bathtub #1, #2 Example 12... The Hot Tub Graphs with a Scale Concept...Distance and Time Example1 ... Wins in Soccer Example 2 ... Books and Days Example 3 ... The Travel Log Example 4 ... Winning in Baseball Example 5 ... Cost and Distance Example 6 ... Ivan’s Ride to the Party Example 7 ... The Cyclists Example 8 ... Baseball Example 9 ... The Beach Example 10... Rate Example 11... Villeneuve Example 12... Volume and Time Example 13... The River Problem Example 14... Angelo’s Walk</p>
<p>1.2 Use a letter to represent an unknown number; write and evaluate simple algebraic expressions in one variable by substitution.</p>	<p>MAT+ <u>Understanding Algebra</u> Topic 4: Patterns, Formulas, Substitution Introduction...Math is Patterns Expressions, Terms, Variables Definitions Summary Patterns to Formulas Example...Hockey Standings Example...Counting Money Example...Angles in a Polygon Substitution is...Math Scrabble Scrabble 1,2,3 Challenge Substitution Examples Examples 1,2,3,4</p>
<p>1.3 Know and use the distributive property in equations and expressions with variables.</p>	
<p>1.4 Identify and graph ordered pairs in the four quadrants of the coordinate plane.</p>	<p>MAT+ <u>Understanding Graphing</u> Topic 3: Points on a Grid Josh’s Neighborhood Concept Number Houses</p>

	Grids on Maps Ordered Pairs Axis Quadrants and Cartesian Plane Order is Important Examples
1.5 Solve problems involving linear functions with integer values; write the equation; and graph the resulting ordered pairs of integers on a grid.	MAT+ <u>Understanding Graphing</u> Topic 6: Linear Relations In This Topic What is a Linear Relation? Graphs of Linear Relations Concept Examples 1 through 6

MEASUREMENT AND GEOMETRY

1.0 Students understand and compute the volumes and areas of simple objects:

Content Standard	Understanding Math PLUS computer assisted lessons
1.1 Derive and use the formula for the area of a triangle and of a parallelogram by comparing it with the formula for the area of a rectangle (i.e., two of the same triangles make a parallelogram with twice the area; a parallelogram is compared with a rectangle of the same area by cutting and pasting a right triangle on the parallelogram).	MAT+ <u>Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Amount of Surface The Driveway – An Introduction to Area Area – Estimation Area of a Rectangle Area of a Parallelogram Area of a triangle
1.2 Construct a cube and rectangular box from two-dimensional patterns and use these patterns to compute the surface area for these objects.	
1.3 Understand the concept of volume and use the appropriate units in common measuring systems (i.e., cubic centimeter [cm ³], cubic meter [m ³], cubic inch [in ³], cubic yard [yd ³]) to compute the volume of rectangular solids.	MAT+ <u>Understanding Measurement and Geometry</u> Topic 4: Solids: Volume and Surface Area Volume of a Solid The Concept Volume of a Prism: Examples 1, 2 Volume of a Cylinder
1.4 Differentiate between, and use appropriate units of measures for, two-and three-dimensional objects (i.e., find the perimeter, area, volume).	MAT+ <u>Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Amount of Surface The Driveway – An Introduction to Area Area – Estimation Area of a Rectangle Area of a Parallelogram Area of a triangle Walk Around a Polygon Joan Walks Perimeter of Various Shapes Perimeter of the Ranch Length of the Metal Strip Find the Perimeter Topic 4: Solids: Volume and Surface Area Volume of a Solid The Concept Volume of a Prism: Examples 1, 2 Volume of a Cylinder

2.0 Students identify, describe, and classify the properties of, and the relationships between, plane and solid geometric figures:

Content Standard	Understanding Math PLUS computer assisted lessons
<p>2.1 Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, and triangles by using appropriate tools (e.g., straightedge, ruler, compass, protractor, drawing software).</p>	<p>MAT+ <u>Understanding Measurement and Geometry</u> Topic 5: Angles and Their Measure In This Topic Lines and Rays Angles...An Introduction The Degree Classifying Angles Classifications Game Memory Game Measuring Angles</p>
<p>2.2 Know that the sum of the angles of any triangle is 180° and the sum of the angles of any quadrilateral is 360° and use this information to solve problems.</p>	<p>MAT+ <u>Understanding Measurement and Geometry</u> Topic 6: Angles and Polygons Angles in Triangles Exploration An Explanation Exterior Angles – Example Angles in Polygons Methods 1,2</p>
<p>2.3 Visualize and draw two-dimensional views of three-dimensional objects made from rectangular solids.</p>	

STATISTICS, DATA ANALYSIS, AND PROBABILITY

1.0 Students display, analyze, compare, and interpret different data sets, including data sets of different sizes:

Content Standard	Understanding Math PLUS computer assisted lessons
<p>1.1 Know the concepts of mean, median, and mode; compute and compare simple examples to show that they may differ.</p>	<p>MAT+ <u>Understanding Graphing</u> Topic 2: Statistics Measures of Central Tendency Introduction The Mean Average The Median Average The Mode Summary Another Example Adding Data Points</p>
<p>1.2 Organize and display single-variable data in appropriate graphs and representations (e.g., histogram, circle graphs) and explain which types of graphs are appropriate for various data sets.</p>	<p>MAT+ <u>Understanding Graphing</u> Topic 2: Statistics Presenting Data Histogram Examples 1 & 2 Circle or Pie Graph Examples 1 & 2</p>
<p>1.3 Use fractions and percentages to compare data sets of different sizes.</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 6: Percents...Fractions...Decimals Expressing a Fraction as a Percent An Example Method 1 Examples 1,2 Method 2 Examples 1,2 Lightning Examples</p>

	Number Line #2 Chart
1.4 Identify ordered pairs of data from a graph and interpret the meaning of the data in terms of the situation depicted by the graph.	MAT+ <u>Understanding Graphing</u> Ordered Pairs Axis Quadrants and Cartesian Plane Order is Important Examples
1.5 Know how to write ordered pairs correctly; for example, (x, y) .	

MATHEMATICAL REASONING

1.0 Students make decisions about how to approach problems:

Content Standard	Understanding Math PLUS computer assisted lessons
1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.	Understanding Math PLUS...all programs
1.2 Determine when and how to break a problem into simpler parts.	Understanding Math PLUS...all programs

2.0 Students use strategies, skills, and concepts in finding solutions:

Content Standard	Understanding Math PLUS computer assisted lessons
2.1 Use estimation to verify the reasonableness of calculated results.	
2.2 Apply strategies and results from simpler problems to more complex problems.	Understanding Math PLUS...all programs
2.3 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.	
2.4 Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.	MAT+ <u>Understanding Equations</u> Topic 5: Word Problems Words and Symbols The Translation Machine Examples 1,2,3,4 The Trick Machine Instructions The Machine Explanation with Picture; with Symbols Area of Walls Chemistry Pools Puzzler – The First Problem Perimeter Problem with Diagram Money Problem with Chart Age Problem with Chart Buying CDs Meat Mixture Coffee Mixture Rate of Work
2.5 Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.	
2.6 Make precise calculations and check the validity of the results from the context of the problem.	

3.0 Students move beyond a particular problem by generalizing to other situations:

Content Standard	Understanding Math PLUS computer assisted lessons
<p>3.1 Evaluate the reasonableness of the solution in the context of the original situation.</p>	
<p>3.2 Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.</p>	<p>MAT+ <u>Understanding Equations</u> Topic 5: Word Problems The Trick Machine Instructions The Machine Explanation with Picture; with Symbols Area of Walls Chemistry Pools Puzzler – The First Problem Perimeter Problem with Diagram Money Problem with Chart Age Problem with Chart Buying CDs Meat Mixture Coffee Mixture Rate of Work Summary: Problem Solving Using Equations Practice Questions; Topic Test</p>
<p>3.3 Develop generalizations of the results obtained and apply them in other circumstances.</p>	