

<b>Everyday Mathematics, Third Grade</b>
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**Correlations of the TEN UNDERSTANDING MATHEMATICS PLUS Programs**  
**By Neufeld Learning Systems Inc.**  
**February 2005**

**Note: a. The Understanding Math PLUS series of programs consist of 10 programs written for Kindergarten to 10<sup>th</sup> Grade.**

**The 10 programs are:**

<b>Understanding Fractions</b>	<b>Understanding Whole Numbers and Integers</b>
<b>Understanding Probability</b>	<b>Understanding Percent</b>
<b>Understanding Exponents</b>	<b>Understanding Equations</b>
<b>Understanding Algebra</b>	<b>Understanding Graphing</b>
<b>Understanding Numeration</b>	
<b>Understanding Measurement and Geometry</b>	

**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 3<sup>rd</sup> grade.

<b>Level</b>	<b>Upper Range of Number</b>
<b>A</b>	<b>10</b>
<b>B</b>	<b>20</b>
<b>C</b>	<b>100</b>
<b>D</b>	<b>1000</b>

Lesson .. 250 lessons are sequenced to build understanding of concepts.

A detailed Lesson Synopsis on the website [www.neufeldmath.com](http://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 4<sup>th</sup> to 10<sup>th</sup> 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](http://www.neufeldmath.com)

*\*Curriculum is correlated with Understanding Math programs in the following manner:*  
**MAT+** (Understanding Math Plus, 4-10) / **Program Title** / **Topic Number & Title** / **Lesson Title**

### **Unit 1: Routines, Review and Assessment**

Lesson 1.1 ⇔ Numbers All Around Museum: to review kinds and uses of numbers

**NUM / COUNTING / Introduce Fraction of a Set / C** / Fraction of a Set  
**NUM / COUNTING / Introduce Decimals / D** / Tenths and Decimals; Ones and Tenths  
**NUM / PLACE VALUE / Identify Place Value Patterns (<99) / C** / Pictures to Numbers

Lesson 1.2⇔Number Grids: to review patterns on number grids

**NUM / COMPARING AND ORDERING / Locate Whole Numbers on a Grid / C** / Numbers on 0 to 100 grid; Missing Numbers to 100

Lesson 1.3 ⇔ Introducing The Student Reference Book

Lesson 1.4 ⇔ Tools for Mathematics: to review how to tell time, measure lengths, use a calculator, and identify 2-dimensional shapes.

**NUM / COMPARING AND ORDERING / Understand Measurement of Time B** / Analog and Digital; Times to the Half Hour; Times to Five Minutes

Lesson 1.5 ⇔ Analyzing and Displaying Data: to review data concepts, collect data ..... compare data

Lesson 1.6 ⇔ Equivalent Names: to review the idea that there are many names for a number.

**NUM / OPERATIONS / Demonstrate Addition Facts / A** / Ways to Make 10  
**NUM / OPERATIONS / Demonstrate Addition Facts – Patterns / B** / Decomposition Tree #2  
**NUM / OPERATIONS / Demonstrate Addition Facts / A** / Bar Machine

Lesson 1.7 ⇔ Finding Differences: to identify number-grid patterns and use them to find differences between pairs of numbers.

**NUM / COUNTING / Skip Counting & Patterns / C** / Patterns in Rows; Skip Count by 2's to 100; Skip Count by 5's to 100; Next by 2's

Lesson 1.8 ⇔ Calculator Routines: to review calculator skills ... place value skills.

Lessons 1.9 & 1.10 ⇒ Money: to review representing amounts of money with coins ... compare amounts of money & solve problems with dollars and cents.  
**NUM / COUNTING / Counting Using Money / B / Pennies, Nickels, Dimes; Coins - count by 10s,5s,1s**  
**NUM / COMPARING AND ORDERING / Working with Whole Numbers >, <, = / B / Make It True .. <20**  
**NUM / COUNTING / Estimating the Number of Objects & Reasonableness / B / Estimating & Counting**

Lessons 1.11 ⇒ Patterns: to explore number patterns  
**NUM / COUNTING / Skip Counting & Patterns / C / Patterns in Rows; Count by 2's to 100; Skip Count by 5's to 100; Next by 2's**  
**NUM / COUNTING / Counting Backwards / B / Counting Up and Down .. 1 to 20**

Lessons 1.12 ⇒ The Length-of-Day Project: to review telling time and finding elapsed time  
**NUM / COMPARING AND ORDERING / Describe Elapsed time / C / Elapsed Time in Hours 1 & 2; Elapsed Time – 5 Minutes 1 & 2**

## **Unit 2: Adding and Subtracting Whole Numbers**

Lessons 2.1 to 2.3 ⇒ Basic Facts and Extensions: to review fact families and to review the relationships between addition and subtraction.  
**NUM / OPERATIONS / Demonstrate Addition Facts ... Making 5-10 / A / Ways to Make 5-10; Ways to Make 5-10 - Reverse Order; Horizontal & Vertical;**  
**NUM / OPERATIONS / Demonstrate Addition Facts ... Patterns / A / Bar Machine**  
**NUM / OPERATIONS / Demonstrate Addition Facts ... Patterns / A & B / Decomposition Tree #1 &2**  
**NUM / OPERATIONS / Demonstrate Addition Facts ... Patterns / C / Patterns in Addition**

Lessons 2.4 to 2.6 ⇒ Problem Solving Strategies: to solve number stories using diagrams and number models (equations).  
**NUM / PROBLEM SOLVING / Strategies / Draw a Picture**  
**NUM / OPERATIONS / Demonstrate Addition Facts ... Patterns / A & B / Decomposition Tree #1 &2**

Lessons 2.7 to 2.9 ⇒ Computational Strategies: to continue the development of addition and subtraction algorithms (partial sums and trade-first) to parts and totals strategies.  
**NUM / OPERATIONS / Add 2 Digit Numbers...Concretely / C / Addition Without / With Regrouping**  
**NUM / OPERATIONS / Add 2 Digit Numbers ...Abstractly / C / Addition Without / With Regrouping**

**NUM / OPERATIONS / Add 3 Digit Numbers ...Concretely / D / Addition Without / With Regrouping**

**NUM / OPERATIONS / Subtract 2 Digit Numbers...Concretely / C / Subtraction Without / With Regrouping**

**NUM / OPERATIONS / Subtract 3 Digit Numbers...Abstractly / D / Subtraction Without / With Regrouping**

**NUM / OPERATIONS / Fact Families .. Add & Subtraction / B / Doubles - Add & Subtract; Relate Addition & Subtraction**

**NUM / OPERATIONS / Fact Families .. Add & Subtraction / A / Fact Families**

**NUM / OPERATIONS / Fact Families .. Add & Subtraction / C / Check Subtraction by Addition**

### **Unit 3: Linear Measures and Area**

Lessons 3.1 and following ⇒ Measures: comparing unit attributes.

**MAT+ / Understanding Measurement and Geometry / Topic 1 / Measurement in the News**

Lessons 3.1 to 3.3 ⇒ Measuring Lengths: developing the need for standardized units for measurements and introduce US and metric units for linear measure.

**MAT+ / Understanding Measurement and Geometry / Topic 1 – An Introduction to Measurement / Searching for the standard unit; Related Units from metric prefixes; Establishing Benchmarks**

Lessons 3.4 to 3.5 ⇒ Perimeter: relating perimeter and polygon relationships and patterns

**MAT+ / Understanding Measurement and Geometry / Topic 2-Perimeter and Area of Polygons / Walk Around a Polygon: Joan Walks, Perimeter of Various Shapes, Examples 1,2,3; Perimeter of the Ranch**

Lessons 3.5 to 3.7 ⇒ Area: to use tiling concepts to cover surface and develop more efficient measuring techniques.

**MAT+ / Understanding Measurement and Geometry / Topic 2-Perimeter and Area of Polygons / Amount of Surface: The Driveway – An Introduction to Area; Area – Estimation; Area of a Rectangle; Relationship – Area and Perimeter: The Information, The Graph; Given Area and Perimeter – Create Shapes: Examples 1 through 4; Practice Questions**

Lessons 3.8 ⇒ Relationship of Circumference to Diameter: to gather evidence that circumference of a circle is approximately 3 times greater than the diameter.

**MAT+ / Understanding Measurement and Geometry / Topic 3 – The Circle / In This Topic; Circle All Around Us!; Radius, Circumference, Diameter; PI...A Special Number: Introduction, How do we Measure Circumference?, Measuring Circles, Summary; Circumference of a Circle: Circumference, Examples 1 through 4**

## Unit 4: Multiplication and Division

Lessons 4.1, 4.3 & 4.4 ⇒ Number Stories: to create language ties with operations to authentic use

Lessons 4.2, 4.4 & 4.8 ⇒ Arrays: to use multiples of equal groups in rectangular arrays in the development of multiplication and division algorithms.

**NUM / OPERATIONS / Patterns in Multiplication / C /** Multiplication Table - Groups of 2, Groups of 3, Groups of 4, Groups of 5, Groups of 5 to 0

**NUM / OPERATIONS / Introduction to Arrays / C /** Introduction to Arrays; Build Arrays; Introduce Arrays with Multiplication; Build Arrays with Multiplication

**NUM / OPERATIONS / Introduce Multiplication Concretely / C /** Multiplication - Repeated Addition

Lessons 4.3 & 4.4 ⇒ Number Models: to develop concepts of number disassembly using models that illustrate quotients and remainders.

**NUM / OPERATIONS / Introduce Multiplication Concretely / C /** Grouping Eggs into Bowls; Grouping Chairs into Rows; Eggs and Bowls - Introduce X; Chair and Rows - Introduce X

**NUM / OPERATIONS / Introduction to Division / C /** Equal Groups of Eggs; Sharing Oranges Equally; Division Introduction – Eggs; Division Introduction- Oranges; Division - How Many Groups?; Division - How Many Groups?

**NUM / OPERATIONS / Introduce Division Facts ... 2, 3, 4, 5 / C /** Division - Groups of 2, Groups of 3, Groups of 4, Groups of 5

**NUM / OPERATIONS / Fact Families .. Multiply and Divide / C /** Fact Families .. Multiply & Divide

Lessons 4.5 & 4.7 ⇒ Fact Power: to build fact families within patterns.

**NUM / OPERATIONS / Demonstrate Commutative Property / C /** Multiplication - Any Order

**NUM / OPERATIONS / Introduce Multiplication Facts ... 2,3,4,5 / C /** Multiplication: Groups of 2, Groups of 3, Groups of 4, Groups of 5

**NUM / OPERATIONS / Introduce Multiplication by 1 and by 0 / C /** Multiplication: Groups of 1, Groups of 0

**NUM / OPERATIONS / Patterns in Multiplication / C /** Multiplication Table - Groups of 2, Groups of 3, Groups of 4, Groups of 5, Groups of 5 to 0

## Unit 5: Place Value in Whole Numbers and Decimals

Lessons 5.1 & 5.2 ⇒ Whole Number Review: to review values assigned to digits designated by position.

**NUM / PLACE VALUE / Model Numbers Grouped in Packages / C /** Ones and Groups of Ten

**NUM / PLACE VALUE / Identify Place Value Patterns (<20) / C /** Pictures to Numbers (under 20); Tens & Ones (under 20) to Pictures; Tens Numbers (under 20) to Pictures

Lessons 5.3 to 5.5 ⇒ Extension to Larger Whole Numbers

**NUM / PLACE VALUE / Identify Place Value Patterns (<100) / C /** Tens Pictures to Numbers (under 99); Tens & Ones (under 99) to Pictures; Numbers(under 20) to Pictures

**NUM / PLACE VALUE / Identify Place Value Patterns (<100) / D /** 2 digit Numbers- Different Ways

**NUM / PLACE VALUE / Identify Place Value Patterns (<1000) / D /** Understanding Place Value

Lessons 5.7 to 5.11 ⇒ Decimals: to extend place value concepts from whole numbers to fraction / decimal numeration.

**NUM / COUNTING / Introduce Fractions ... equal parts / B /** Two Equal Parts; Three Equal Parts; Four Equal Parts

**NUM / COUNTING / Introduce Decimals / D /** Tenths and Decimals; Ones and Tenths

## **Unit 6: Geometry**

Lessons 6.11 & 6.12 ⇒ Three-Dimensional Shapes: to initiate the development of 2-D to 3-D space by combining a variety of planes.

**MAT+ / Understanding Measurement and Geometry / Topic 4 – Solids- Volume and Surface Area /** In This Topic; Classifying Solids: A Solid is..., Recall Polygons, A Polyhedron is, A Prism is, Some Special Pyramids, A Cylinder is, A Cone is, Platonic Solids

Lessons 6.1 & 6.2 ⇒ Points, Segments, Rays and Lines: to develop the basic geometric abstractions.

**MAT+ / Understanding Measurement and Geometry / Topic 5 – Angles and Their Measure /** In This Topic; Lines and Rays; Angles – An Introduction; the Degree; Classifying Angles: Classifications, Memory Game; Measuring Angles; Practice Questions; Topic Test

Lessons 6.3 to 6.6 ⇒ Forming Figures from Rays and Segments: to generate a family of polygons by changing angle / line segment attributes and simple translations.

Lessons 6.9 ⇒ Line Symmetry: to develop line(s) of symmetry in a variety of shapes.

**MAT+ / Understanding Graphing / Topic 4 – Transformations /** In This Topic; What is a Transformation?; Introduction to Common Transformations; Translations – An Introduction, Slide #1, #2, #3, #4; Reflections – An Introduction, Flip #1, #2, #3, #4; Rotations – An Introduction, Turn #1, #2, #3, #4; The Transformation Machine: Examples 1 through 5; Lines of Symmetry – An Introduction: Introduction, Examples 1 through 4; Symmetry Match: Puzzle 1,2; Tessellations: Introduction, Examples 1 through 5; Tangrams: Introduction, Examples 1,2,3; Translations: Object to Image, We Say, We Write, Reflection Mapping Rule, Examples 1,2,3; Rotations: Object to Image, We Say, We Write,

Rotation Mapping Rule, Examples 1,2,3; Dilatations: Object to Image, We Say, We Write, Rotation Mapping Rule, Examples 1,2; Examples 1 & 2; Practice Questions; Topic Test

## **Unit 7: Multiplication and Division**

Lessons 7.1 to 7.3  $\Rightarrow$  Automaticity of Basic Number Facts: to extend the operation patterns initiated (in unit 4)

**NUM / OPERATIONS / Introduce Multiplication Concretely / C /** Grouping Chairs into Rows; Chair and Rows - Introduce X; Multiplication - Repeated Addition

**NUM / OPERATIONS / Introduce Multiplication Sentences / C /** Multiplication Sentences #1 & 2

**NUM / OPERATIONS / Introduce Multiplication by 1 and by 0 / C /** Multiplication: Groups of 1; Multiplication: Groups of 0

**NUM / OPERATIONS / Introduce Multiplication Facts ... 6,7,8,9,10 / D /** Multiplication: Groups of 6, Groups of 7, Groups of 8, Groups of 9, Groups of 10

**NUM / OPERATIONS / Introduce Division Facts ... 6, 7, 8, 9 / D /** Division - Groups of 6, Groups of 7, Groups of 8, Groups of 9

**NUM / OPERATIONS / Fact Families .. Multiply and Divide / C /** Fact Families .. Multiply & Divide

Lessons 7.4 & 7.5  $\Rightarrow$  Parentheses: to initiate the use of symbols to resolve number models (sentences) with more than one operation.

**MAT+ / Understanding Whole Numbers and Integers / Topic 9 – Order of Operations /** Order in Addition: Trials 1,2, Conclusion, Examples 1 & 2; Order in Multiplication: Trials 1,2, Conclusion, Examples 1 & 2; Why Use Order of Operations?: BEDMAS; Example Questions 1 through 10; Word Problems: Shipping, Babysitting, Garbage; Practice Questions; Topic Test

Lessons 7.6 & 7.8  $\Rightarrow$  Extended Facts: to enhance lateral development of basic multiplication and division facts through strategies.

**NUM / OPERATIONS / Patterns in 10 X 10 Multiplication Table / D / X** Table - Patterns in Rows; X Table - Patterns in Columns; X Table - Other Patterns; X Table - User Picks; X Table - Computer Picks

Lessons 7.7  $\Rightarrow$  Estimation and Mental Math with Multiples

**MAT+ / Understanding Whole Numbers and Integers / Topic 3 – Multiplying and Dividing Whole Numbers /** Multiples of 10, 100, 1000: Patterns in Multiplication by 10, Patterns in Multiplication by 100, Patterns in Multiplication by 1000, Examples 1,2,3

Lessons 7.9  $\Rightarrow$  Ratios and Geometric Figures

## Unit 8: Fractions

Lessons 8.1 to 8.3 ⇒ Review of Fraction Concepts

**NUM / COUNTING / Introduce Fractions ... equal parts / B /** Two Equal Parts; Three Equal Parts; Four Equal Parts

**NUM / COMPARING AND ORDERING / Compare Fractions / D /** Compare Fractions

**MAT+ / Understanding Fractions / Topic 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 Eighths, Seven Tenths; Write the Fraction: Questions 1 through 4

Lessons 8.3 to 8.4 ⇒ Equivalent Fractions

**MAT+ / Understanding Fractions / Topic 3 – Equivalent Fractions /** Introduction: Square, Triangle; Pattern Blocks: Hexagon 1,2; Fraction Strips: Concepts 1,2; The Clock: Introduction 1,2, Examples; Equivalent Fractions on a Number Line

Lessons 8.5 ⇒ Comparing Fractions: to compare fractions using region models

**MAT+ / Understanding Fractions / Topic 3 – Equivalent Fractions /** Comparison of Fractions

Lessons 8.6 ⇒ Fractions Greater Than One

**MAT+ / Understanding Fractions / Topic 13 – Improper Fractions and Mixed Numbers /** The Concept: Packages, Clock; Improper Fractions and Mixed Numbers – What Are They? ; Introductory Problem

## Unit 9: Multiplication and Division

Lessons 9.1 ⇒ Multiplication and Division of 10, 100 and 1000

**NUM / OPERATIONS / Patterns in 10 X 10 Multiplication Table / D / X** Table - Patterns in Rows; X Table - Patterns in Columns; X Table - Other Patterns; X Table - User Picks; X Table - Computer Picks

Lessons 9.2 to 9.5 ⇒ Translations from Mental Math to Formal Algorithms

Lessons 9.6 ⇒ Factors of a Number

**NUM / OPERATIONS / Introduction to Division / Introduce Division Facts (2 to 9) / D /** Groups of 2 to 9

Lessons 9.7 and 9.8 ⇒ Multidigit Quotients

Lessons 9.10 ⇒ Array Multiplication

**NUM / OPERATIONS / Introduction to Arrays / C /** Introduction to Arrays; Build Arrays; Introduce Arrays with Multiplication

Lessons 9.11 and 9.12 ⇒ Products of 2-Digit Numbers

**MAT+ / Understanding Whole Numbers and Integers / Topic 3 – Multiplying and Dividing Whole Numbers** / The 10x10 Multiplication Table: User Picks, Computer Picks; The 12x12 Multiplication Table: Associative Property, Examples 1,2; Multiples of 10, 100, 1000: Patterns in Multiplication by 10, Patterns in Multiplication by 100, Patterns in Multiplication by 1000, Examples 1,2,3

Lessons 9.13 ⇒ Positive and Negative Numbers

**MAT+ / Understanding Whole Numbers and Integers / Topic 4 – The Meaning of Integers** / Integers Around Us: Temperature, Helicopter, Submarine, Elevator; The Integer Line; Opposite Integers; Absolute Values; Comparing Integers; Example Questions

## **Unit 10: Measurement And Data**

Lessons 10.1, 10.4 & 10.6 ⇒ Review of Length

**MAT+ / Understanding Measurement and Geometry / Topic 1 – An Introduction to Measurement** / Measurements with a Ruler: Introduction to the Ruler, Centimeters #1, #2, Inches #1, #2; Calculating Distances: Using Centimeters, Examples 1 through 6, Using Inches, Examples 1 through 6

Lessons 10.2, 10.3 & 10.5 ⇒ Volume

**MAT+ / Understanding Measurement and Geometry / Topic 4 – Solids-Volume and Surface Area** / Volume of a Solid: The Concept; Volume of a Prism, Volume of a Cylinder, Volume of a Pyramid

Lessons 10.7 to 10.10 ⇒ Formal Methods for Finding Mean of a Set of Data

**MAT+ / Understanding Graphing / Topic 2 – Statistics** / Measures of Central Tendency: Introduction, The Mean Average, The Median Average, The Mode, Summary, Another Example, Adding Data Points

Lessons 10.11 ⇒ Coordinate Grids

**MAT+ / Understanding Graphing / Topic 3 – Points on a Grid** / In This Topic; Josh's Neighbourhood: Concept, Number Houses; Grids on Maps; Ordered Pairs: Axis, Quadrants, Find a Point, Order in Important, Examples; Shapes, Battleship

## **Unit 11: Probability / End-of-Year Review**

Lessons 11.1, 11.2 & 11.4 to 11.7 ⇒ Why Study Probability?

**MAT+ / Understanding Probability / Topic 1 – An Introduction to Probability** / The Language of Chance; Impossible to Certain: Activities 1 & 2; \\Probability Lines: Lines 1 & 2; Experiments with Spinners: Experiments 1 through 6; The Spinner Game: Boards 1 & 2; IT's in the Bag; Tree Diagrams: Meals, Socks; Practice Questions; Topic Test

**MAT+ / Understanding Probability / Topic 2 – What’s the Chance? /**  
Probability: What is it? Introduction 1, Introduction 2; Probability Examples 1 through 12; The Probability Scale: Examples, Summary, Follow Up, Soccer Example; Experimental Probability: Introduction; Examples 1 & 2; Practice Questions