

**CORRELATION**  
**of**  
**the 10 UNDERSTANDING MATH PLUS PROGRAMS & UNDERSTANDING NUMERATION PLUS PROGRAMS**  
**with**  
**South Carolina MATHEMATICS CURRICULUM STANDARDS**  
**Grades 6 to 8 ALGEBRA**

**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:**

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

Level	Upper Range of Number
<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)

*Neufeld Learning Systems Inc., March 2006*

*Source: <http://www.myschools.com/offices/cso/standards/math/default.cfm>*

## Grades 6–8: Algebra

### **STANDARD I. Understand patterns, relations, and functions.**

#### **EXPECTATION A. Represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic rules.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
*1. Describe, extend, and write rules for a wide variety of patterns.	<b>MAT+ Understanding Algebra Topic 3. Patterns, Patterns, Patterns</b> Introduction – Math is Pattern Geometric Patterns Examples 1 through 8 Number Patterns Examples 1 through 6	1. Describe, extend, analyze, and create a wide variety of patterns to investigate relationships and to solve problems.	<b>MAT+ Understanding Algebra Topic 3. Patterns, Patterns, Patterns</b> Number and Geometric Patterns Examples 1, 2 Patterns to Formulas Examples 1,2,3		

#### **EXPECTATION B. Relate and compare different forms of representations for a relationship.**

6	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
	1. Use different forms of representing information (e.g., graphical, symbolic, tabular).	<b>MAT+ Understanding Algebra Topic 2. Tiles and Algebra</b> Introduction to Tiles Pictures to Words to Algebraic Expressions	1. Describe the merits and limitations of graphical, symbolic, and tabular representations.	

**EXPECTATION C. Identify functions as linear or nonlinear and contrast their properties from tables, graphs, or equations.**

6	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
	1. Examine tables and graphs to determine if there is a constant rate of change between the quantities.	<b>MAT+ <u>Understanding Graphing</u></b> <b>Topic 5. Relations, Equations, and Functions</b> Functions What is a Functions? – Examples 1,2,3 Vertical Line Test Examples 1,2,3	1. Examine tables, graphs, or simple equations to classify relationships as linear or nonlinear.	<b>MAT+ <u>Understanding Equations</u></b> <b>Topic 1. Tiles, Balances, and Equations</b> Definitions The Meaning of “Solving an Equation” Solve by Systematic Trials Recall Tile Concepts Balances...An Introduction Tiles, Balances, and Equations

**STANDARD II. Represent and analyze mathematical situations and structures using algebraic symbols.**

**EXPECTATION A. Develop an initial conceptual understanding of different uses of variables.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
*1. Use order of operations to evaluate numerical expressions.	<b>MAT+</b> <u><b>Understanding Whole Numbers and Integers</b></u> <b>Topic 9. Order of Operations</b> 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 Examples Questions 1 through 10	1. Explain the use of a variable as a quantity that can change its value, as a quantity on which other values depend, and as generalization of patterns.	<b>MAT+</b> <u><b>Understanding Algebra</b></u> <b>Topic 4. Patterns, Formulas, Substitution</b> Introduction...Math is Patterns Expressions, Terms, Variables Definitions Summary Patterns to Formulas Example 1,2,3	*1. Evaluate simple algebraic expressions for given values of variables by using the substitution principle and the rules for order of operations.	<b>MAT+</b> <u><b>Understanding Algebra</b></u> <b>Topic 4. Patterns, Formulas, Substitution</b> Substitution is...Math Scrabble Scrabble 1,2,3 Challenge Substitution Examples 1 through 4

**EXPECTATION B. Explore relationships between symbolic expressions and graphs of lines, paying particular attention to the meaning of intercept and slope.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Write simple equations and inequalities accurately to represent relationships.	<p><b>MAT+ Understanding Equations</b>  <b>Topic 2. Solving One-Step Equations</b>                      Our Problem                      Concepts – Examples with Tiles                      Concepts – Examples without Tiles</p> <p><b>Topic 7. Solving Inequalities</b>                      Comparing Integers                      Inequalities                      What are They?                      Inequality vs. Equation                      Summary of Relationships                      Solving Inequalities                      Examples 1 through 6</p>	1. Analyze quantitative changes by comparing and contrasting numerical patterns in tables with their respective graphs in the coordinate plane.	<p><b>MAT+ Understanding Graphing</b>  <b>Topic 7. Slope of a Line</b>                      Introduction to Slope                      Slope when Driving                      Ski Slope                      Slope of a Roof                      Slope: Order, Steepness Factor, Definition                      Introductory                      Examples 1 through 4                      Formula</p>	1. Explain the impact of coefficients and constants on linear equations as they reflect simple applications.	<p><b>MAT+ Understanding Graphing</b>  <b>Topic 6. Linear Relations</b>                      What is a Linear Relation?                      Graphs of Linear Relations                      Examples</p>
		2. State the coordinates of the x and y intercepts from a graph.	<p><b>MAT+ Understanding Graphing</b>  <b>Topic 8. Equations of a Straight Line</b>                      Graph <math>y = mx + b</math>                      Examples 1,2,3,4                      Patterns to Summary                      Examples 5,6,7,8                      Slope y-intercept</p>		

			Equation Concept Examples 1,2,3,4		
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**EXPECTATION C.** Use symbolic algebra to represent situations and to solve problems, especially those that involve linear relationships.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
		1. Use variables to describe numerical expressions and relationships.	<b>MAT+ Understanding Graphing Topic 6. Linear Relations</b> What is a Linear Relation? Graphs of Linear Relations Examples	1. Write or model a linear equation to solve a simple applied problem.	<b>MAT+ Understanding Graphing Topic 8. Equation of a Straight Line</b> Word Problems & Applications

**EXPECTATION D. Recognize and generate equivalent forms for simple algebraic expressions and solve linear equations.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Use commutative, associative, and distributive properties to examine equivalence of a variety of simple algebraic expressions.	<b>MAT+ Understanding Equations</b> <b>Topic 2. Solving One-Step Equations</b> Our Problem Concepts – Examples with Tiles Concepts – Examples without Tiles	1. Recognize and apply the additive and multiplicative inverses.		*1. Simplify a variety of algebraic expressions using properties of real numbers and rules for order of operations.	<b>MAT+ Understanding Algebra</b> <b>Topic 5. Adding Expressions</b> Our Problem Adding Expressions with X and Y Tiles Adding Expressions with X - Squared Tiles Adding Expressions without Tiles  <b>Topic 6. Subtracting Expressions</b> Our Problem Subtracting Expressions with X and Y Tiles Subtracting Expressions with X - Squared Tiles Subtracting Expressions without Tiles
		2. Use models and numbers to solve one-step linear equations and inequalities in one variable.	<b>MAT+ Understanding Graphing</b> <b>Topic 8. Equation of a Straight Line</b> Word Problems &	*2. Using strategies that involve inverse operations, solve one- and two-step linear equations and inequalities in one	<b>MAT+ Understanding Equations</b> <b>Topic 2. Solving One-Step Equations</b> Our Problem

			Applications	variable.	Concepts – Examples with Tiles Concepts – Examples without Tiles  <b>Topic 3. Solving Two-Step Equations</b> Our Problem Concepts – Examples with Tiles Concepts – Examples without Tiles
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**STANDARD III. Use mathematical models to represent and understand quantitative relationships.**

**EXPECTATION A. Model and solve contextualized problems using various representations, such as graphs, tables, and equations.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Use graphs and tables to solve applied problems.	<b>MAT+</b> <u><b>Understanding Graphing</b></u> <b>Topic 2. Statistics</b> Presenting Data <i>All Sections</i>	*1. Use graphs, tables, and equations to solve applied problems involving tips, discounts, sales tax, and simple interest.	<b>MAT+</b> <u><b>Understanding Percent</b></u> <b>Topic 7. Percent in Business</b> Discount Sales Tax Commission Simple Interest	*1. Use one or more representations to model and to analyze the relationship in applied problems to determine if it is linear or nonlinear.	<b>MAT+</b> <u><b>Understanding Graphing</b></u> <b>Topic 8. Equation of a Straight Line</b> Word Problems & Applications

**STANDARD IV. Analyze change in various contexts.**

**EXPECTATION A. Use graphs to analyze the nature of changes in quantities in linear relationships.**

6	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
	1. From a graph, describe a linear relationship as positive or negative.	<b>MAT+ <u>Understanding Graphing</u></b> <b>Topic 7. Slope of a Line</b> Positive and Negative Slopes Examples 1,2,3,4	1. Use tables and graphs to model and analyze linear relationships between variables.	<b>MAT+ <u>Understanding Graphing</u></b> <b>Topic 6. Linear Relations</b> The Taxi Example – Setup Equation, Graph Equation The Elastic Example– Setup Equation, Graph Equation Lightening Example– Setup Equation, Graph Equation Line of Best Fit