



CORRELATIONS
THE UNDERSTANDING MATH SERIES of PROGRAMS
With
NORTH CAROLINA MATHEMATICS CURRICULUM
GRADE 8

PROGRAMS

The Understanding Math Series of Programs consist of 10 programs written for Kindergarten to Tenth grade. The ten programs are:

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| Understanding Numeration (K-3) English/Spanish | | |
| Understanding Fractions (4-10) | Understanding Probability (4-10) | Understanding Exponents (4-10) |
| Understanding Algebra (4-10) | Understanding Graphing (4-10) | Understanding Equations (4-10) |
| Understanding Percent (4-10) | Understanding Measurement and Geometry (4-10) | Understanding Whole Numbers and Integers (4-10) |

UNDERSTANDING NUMERATION

The Understanding Numeration program has been developed for levels Kindergarten to Third grade. It is available in both English only and English/Spanish. Navigating through Understanding Numeration will require the user to select the following in the listed order:

1. Select a CONCEPT – There are 5 concepts to choose from e.g. Operations
2. Select a SKILL – Within each Concept there are several Skills to choose from
3. Select a LEVEL and LESSON – Within a Skill the series of Lessons have been organized by Levels A through D

Lessons are sequenced through the levels to build understanding of mathematics concepts from the concrete to the abstract. There are off-computer support sheets available for each lesson and can be selected from within the program.

A detailed Lesson Synopsis is available at www.neufeldmath.com/synopsis to assist teachers in lesson planning.

UNDERSTANDING MATH

Understanding Math consists of 9 highly interactive programs developed for fourth to tenth grade. All concepts are developed from the concrete to the abstract using a variety of approaches. The programs can be implemented in a variety of teaching situations; whole class lessons with one computer and data projector, small group centers, and student centered computer lab settings. The lessons can be used in remediation, intervention and enrichment. All Topics within each program end with randomly generated Practice Questions and Topic Tests. Student results from the Topic Tests can be tracked for analysis and assessment. Resources are available at www.neufeldmath.com which include correlations, support sheets and word banks.



Strands: Number and Operations, Measurement, Geometry, Data Analysis and Probability, Algebra

COMPETENCY GOAL 1: The learner will understand and compute with real numbers.

Objectives:

1.01 Develop number sense for the real numbers.

a. Define and use irrational numbers.	
b. Compare and order.	
c. Use estimates of irrational numbers in appropriate situations.	

1.02 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil.

STRAND	UNDERSTANDING MATH LESSONS
	<u>Understanding Math</u> ALL SECTIONS

COMPETENCY GOAL 2: The learner will understand and use measurement concepts.

Objectives:

2.01 Determine the effect on perimeter, area or volume when one or more dimensions of two- and three-dimensional figures are changed.

STRAND	UNDERSTANDING MATH LESSONS
	<p><u>Understanding Measurement and Geometry</u> Section 2. Perimeter and Area of Polygons Relationship – Area and Perimeter The Information The Graph: Length and Perimeter, Length and Area Given Area and Perimeter – Create Shape Examples 1, 2, 3, 4</p> <p>Section 4. Solids...Volume and Surface Area Slicing: From a Solid to a Flat Surface Practice Questions 5 questions (randomly generated) Topic Test 10 questions (randomly generated)</p>



2.02 Apply and use concepts of indirect measurement.

STRAND	UNDERSTANDING MATH LESSONS
	<p><u>Understanding Measurement and Geometry</u> Section 1. An Introduction to Measurement Benchmarks - Metric Introduction Examples 4 questions (randomly generated) Benchmarks – US Standard Introduction Practice 4 questions (randomly generated)</p>

COMPETENCY GOAL 3: The learner will understand and use properties and relationships in geometry.

Objectives:

3.01 Represent problem situations with geometric models.

STRAND	UNDERSTANDING MATH LESSONS
	<p><u>Understanding Measurement and Geometry</u> Section 2. Perimeter and Area of Polygons Relationship – Area and Perimeter The Information The Graph: Length and Perimeter, Length and Area Given Area and Perimeter – Create Shape Examples 1, 2, 3, 4</p> <p>Section 4. Solids...Volume and Surface Area Slicing: From a Solid to a Flat Surface Practice Questions 5 questions (randomly generated) Topic Test 10 questions (randomly generated)</p>

3.02 Apply geometric properties and relationships, including the Pythagorean theorem, to solve problems.

STRAND	UNDERSTANDING MATH LESSONS
	<p><u>Understanding Exponents</u> Section 6. Pythagorean Theorem In This Topic The Right Triangle Math or Magic? Introduction Omar's Rope Trick #1, #2 Our Rope Trick Squares on a Grid Examples 1, 2, 3, 4 Squares on the Sides of a Right Triangle Triangles #1, #2, #3 The Pattern In General Theorem</p>

3.03 Identify, predict, and describe dilations in the coordinate plane.

STRAND	UNDERSTANDING MATH LESSONS
	<p><u>Understanding Graphing</u> Section 4. Transformations Dilations Object to Image We Say, We Write Dilation Mapping Rule Examples Examples 1, 2</p>

COMPETENCY GOAL 4: The learner will understand and use graphs and data analysis.

Objectives:

4.01 Collect, organize, analyze, and display data (including scatterplots) to solve problems.

STRAND	UNDERSTANDING MATH LESSONS
	<u>Understanding Graphing</u> Section 2. Statistics Scatter Plot Example 1... The T-Shirt Tailor Example 2... Matching

4.02 Approximate a line of best fit for a given scatterplot; explain the meaning of the line as it relates to the problem and make predictions.

STRAND	UNDERSTANDING MATH LESSONS
	<u>Understanding Graphing</u> Section 2. Statistics Scatter Plot Example 1... The T-Shirt Tailor Example 2... Matching

4.03 Identify misuses of statistical and numerical data.

STRAND	UNDERSTANDING MATH LESSONS
	<u>Understanding Graphing</u> Section 2. Statistics Misleading Statistics Examples 1, 2

COMPETENCY GOAL 5: The learner will understand and use linear relations and functions.

Objectives:

5.01 Develop an understanding of function.

STRAND	UNDERSTANDING MATH LESSONS
a. Translate among verbal, tabular, graphic, and algebraic representations of functions.	<u>Understanding Graphing</u> Section 5. Relations, Equations, and Functions Practice Questions 10 questions (randomly generated) Topic Test 5 questions (randomly generated)
b. Identify relations and functions as linear or nonlinear.	<u>Understanding Graphing</u> Section 5. Relations, Equations, and Functions Vertical Line Test Examples 1, 2, 3

STRAND	UNDERSTANDING MATH LESSONS
<p>c. Find, identify, and interpret the slope (rate of change) and intercepts of a linear relation.</p>	<p><u>Understanding Graphing</u> Section 7. Slope of a Line In This Topic Introductions to Slope Slope When Driving A Ski Slope Slope of a Roof Slope Order Steepness Factor Definition Introductory Examples Examples 1, 2, 3, 4 Formula Parallel Lines Introduction Examples 1, 2, 3 Perpendicular Lines Introduction Examples 1, 2, 3 Positive and Negative Slope Examples 1, 2, 3, 4 Pattern Special Slopes Examples 1, 2, 3, 4 Pattern Sketch Line, Given Point and Slope Examples 1, 2, 3, 4</p> <p>Section 8. Equation of a Straight Line Slope, Y–intercept Equations Concept Examples 1, 2, 3, 4 Exercise: Slope, Y-intercept Concept Examples 1, 2, 3, 4</p>

STRAND	UNDERSTANDING MATH LESSONS
d. Interpret and compare properties of linear functions from tables, graphs, or equations.	<u>Understanding Graphing</u> Section 5. Relations, Equations, and Functions Practice Questions 10 questions (randomly generated) Topic Test 5 questions (randomly generated)

5.02 Write an equation of a linear relationship given: two points, the slope and one point on the line, or the slope and y-intercept.

STRAND	UNDERSTANDING MATH LESSONS
	<u>Understanding Graphing</u> Section 8. Equation of a Straight Line Slope, Y-intercept Equations Concept Examples 1, 2, 3, 4 Exercise: Slope, Y-intercept Concept Examples 1, 2, 3, 4

5.03 Solve problems using linear equations and inequalities; justify symbolically and graphically.

STRAND	UNDERSTANDING MATH LESSONS
	<u>Understanding Equations</u> Section 7. Solving Inequalities Solving Inequalities Examples 1, 2, 3, 4, 5, 6 Solving Compound Inequalities Examples 1, 2 Graphing Linear Inequalities in Two Variables Concepts 1, 2

5.04 Solve equations using the inverse relationships of addition and subtraction, multiplication and division, squares and square roots, and cubes and cube roots.

STRAND	UNDERSTANDING MATH LESSONS
	<p><u>Understanding Exponents</u> Section 5. Square Root Squaring Numbers Examples 1, 2 Square Roots Radical Signs Square Roots of Negative Numbers Example Questions 1. Radicals First 2. The Four Equations 3. Lawn Question 4. Make a Square Estimating Square Roots Examples 1, 2 Estimating Square Roots on the Number Line Practice Questions 10 questions (randomly generated)</p>

