

CORRELATION
of
the 10 UNDERSTANDING MATH PLUS PROGRAMS
with
Atlantic Provinces Math Outcomes

Grade 6
October 2005

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

Outcomes:

GCO A Students will demonstrate number sense and apply number theory concepts.

Standard	Understanding Math PLUS Program and Lesson
<p>A1 represent large numbers in a variety of forms</p>	<p>MAT+ Understanding Whole Numbers and Integers Topic 1: The Meaning of Whole Numbers CAN/US Millions Examples Examples 1,2,3,4 The Number Line Billions Example 1 Comparing Large Numbers Examples 1,2,3,4 Ordering Large Numbers Examples 1,2,3,4</p>
<p>A2 represent fractions and decimals</p>	<p>MAT+ Understanding Fractions Topic 5: Introduction to Decimals Introduction to Decimals Tenths and Decimals Examples 1,2,3,4 Ones and Tenths Examples 1,2,3,4 Decimals on a Number Line Examples 1,2,3,4,5</p>
<p>A3 write and interpret ratios, comparing part-to-part and part-to-whole</p> <p>A4 demonstrate understanding of equivalent ratios</p> <p>A5 demonstrate an understanding of the concept of percent as a ratio</p>	<p>MAT+ Understanding Percent Topic 4: Ratios and Proportions Ratios in the News What is a Ratio Examples 1. Fraction Strip 2. Balls 3. Students 4. Gears Writing Ratios Concept Examples 1,2,3,4</p>
<p>A6</p>	<p>MAT+ Understanding Whole Numbers and Integers</p>

<p>demonstrate an understanding of the meaning of a negative integer</p>	<p>Topic 4: The Meaning of Integers Integers Around Us Temperature Helicopter Submarine Elevator The Integer Line</p>
<p>A7 read and write whole numbers in a variety of forms</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 1: The Meaning of Whole Numbers CAN/US Represent Numbers in Many Ways Examples 1, 2, 3, 4, 5</p>
<p>A8 demonstrate an understanding of the place-value system</p>	<p>MAT+ <u>Understanding Whole Numbers and Integers</u> Topic 1: The Meaning of Whole Numbers CAN/US Place Value to 999 999 Examples Examples 1,2,3,4,5 The Number Line Examples 1, 2</p>
<p>A9 relate fractional and decimal forms of numbers</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 5: Introduction to Decimals Introduction to Decimals Tenths and Decimals Examples 1,2,3,4 Ones and Tenths Examples 1,2,3,4</p>
<p>A10 determine factors and common factors</p>	<p>MAT+ <u>Understanding Fractions</u> Topic 3: Equivalent Fractions Greatest Common Factor 12 and 18 30 and 40 70 and 42</p>
<p>A11 distinguish between prime and composite numbers</p>	<p>MAT+ <u>Understanding Algebra</u> Topic 3: Patterns, Patterns, Patterns Prime and Composite Prime Numbers Composite Numbers</p>

GCO B Students will demonstrate operation sense and apply operation principles and procedures in both numeric and algebraic situations.

<p>B1 compute products of whole numbers and decimals</p>	<p>MAT+ Understanding Whole Numbers and Integers Topic 3: Multiplying and Dividing Whole Numbers Multiply by a Single Digit Multiplier Partial Products Partial Products - Examples 1,2,3 – with blocks Partial Products – Examples 4,5,6 – without blocks Partial Products – Questions 1,2,3 Distributive Method Distributive Method – Examples 1,2,3 Distributive Method – Questions 1,2,3 Lattice Method Lattice Method – Examples 1,2,3 Lattice Method – Questions 1,2,3 The Standard Method The Standard Method– Examples 1,2,3 The Standard Method– Questions 1,2,3</p>
<p>B2 model and calculate the products of two decimals</p>	
<p>B3 compute quotients of whole numbers and decimals</p>	<p>MAT+ Understanding Whole Numbers and Integers Topic 3: Multiplying and Dividing Whole Numbers Divide by a Single Digit Divisor Fair Sharing Fair Sharing – Example 1 – with blocks Fair Sharing – Example 2 – without blocks Fair Sharing – Questions 1 through 6</p>
<p>B4 model and calculate the quotients of two decimals</p>	
<p>B5 add and subtract simple fractions using models</p>	<p>MAT+ Understanding Fractions 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</p>

	<p>Adding Fractions on a Number Line Examples 1, 2, 3</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</p>
<p>B6 demonstrate an understanding of the function nature of input-output situations</p>	
<p>B7 solve and create relevant addition, subtraction, multiplication, and division problems involving whole numbers</p>	<p>MAT+ Understanding Whole Numbers and Integers Topic 2: Adding and Subtracting Whole Numbers Whole Numbers Around Us Example 1 – kilometers Example 2 – quarters Example 3 – baseball cards Example 4 –dollars Example 5 – pennies Example 6 – water in a jug</p> <p>Topic 3: Multiplying and Dividing Whole Numbers Whole Numbers Around Us Example 1 – Orange Example 2 – Bananas Example 3 – Cycling Example 4 – Baseball Cards Example 5 – Cookies Example 6 – Running</p>
<p>B8 solve and create relevant addition, subtraction, multiplication, and division problems involving decimals</p>	<p>MAT+ Understanding Fractions Topic 14: Addition and Subtraction of Decimals Decimals Around Us</p>

	<p>Length in Metric Units The Tools Examples 1,2,3,4,5</p> <p>Pencils Examples 1,2,3,4,5</p> <p>Money Examples 1,2,3,4,5</p>
<p>B9 estimate products and quotients involving whole numbers only, whole numbers and decimals, and decimals only</p>	
<p>B10 divide numbers by 0.1, 0.01, and 0.001 mentally</p>	
<p>B11 calculate sums and differences in relevant contexts by using the most appropriate method</p> <p>B12 calculate products and quotients in relevant contexts by using the most appropriate method</p>	<p>MAT+ Understanding Whole Numbers and Integers Topic 2: Adding and Subtracting Whole Numbers Whole Numbers Around Us Example 1 – kilometers Example 2 – quarters Example 3 – baseball cards Example 4 – dollars Example 5 – pennies Example 6 – water in a jug</p> <p>Topic 3: Multiplying and Dividing Whole Numbers Whole Numbers Around Us Example 1 – Orange Example 2 – Bananas Example 3 – Cycling Example 4 – Baseball Cards Example 5 – Cookies Example 6 – Running</p>

GCO C Students will explore, recognize, represent, and apply patterns and relationships, both informally and formally.

<p>C1 solve problems involving patterns</p>	<p>MAT+ Understanding Algebra Topic 3: Patterns, Patterns, Patterns Number and Geometric Patterns Examples 1, 2</p>
<p>C2 use patterns to explore division by 0.1, 0.01, and 0.001</p>	

<p>C3 recognize and explain how changes in base or height will affect areas of rectangles, parallelograms, or triangles</p>	<p><u>MAT+ 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</p>
<p>C4 recognize and explain how an increase in height, width, or length of a rectangular prism changes its volume</p>	<p><u>MAT+ 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</p>
<p>C5 recognize and explain how the change in one term of a ratio affects the other term</p>	<p><u>MAT+ Understanding Percent</u> Topic 4: Ratios and Proportions Writing Ratios Concept Examples 1, 2, 3, 4</p>
<p>C6 represent equivalent ratios using tables and graphs</p>	
<p>C7 represent square and triangular numbers concretely, pictorially, and symbolically</p>	<p><u>MAT+ Understanding Exponents</u> <u>MAT+ 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</p>

<p>C8 solve simple linear equations using open frames</p>	<p><u>MAT+ Understanding Graphing</u> Topic 6: Linear Relations In This Topic What is a Linear Relation? Graphs of Linear Relations Concept Examples 1 through 6</p>
<p>C9 demonstrate understanding of the use of letters to replace open frames</p>	<p><u>MAT+ Understanding Algebra</u> Topic 4: Patterns, Formulas, Substitution Introduction...Math is Patterns Expressions, Terms, Variables Definitions</p>

GCO D Students will demonstrate an understanding of and apply concepts and skills associated with measurement.

<p>D1 use the relationships among particular SI units to compare objects</p>	
<p>D2 describe mass measurements in tonnes</p>	
<p>D3 demonstrate an understanding of the relationship between capacity and volume</p>	
<p>D4 estimate and measure angles using a protractor D5 draw angles of given sizes</p>	<p><u>MAT+ Understanding Measurement and Geometry</u> Topic 5: Angles and Their Measure Measuring Angles</p>
<p>D6 continue to solve measurement problems involving length, capacity, area, volume, mass, and time</p>	<p><u>MAT+ Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Amount of Surface Relationship – Area and Perimeter Squares Rectangles Topic 4: Solids: Volume and Surface Area</p>

		Volume of a Solid The Concept Volume of a Prism: Examples 1, 2
D7	demonstrate an understanding of the relationships among the base, height, and area of a parallelogram	MAT+ <u>Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Area of a Parallelogram
D8	demonstrate an understanding of the relationship between the area of a triangle and the area of a related parallelogram	MAT+ <u>Understanding Measurement and Geometry</u> Topic 2: Perimeter and Area of Polygons Area of Area of a triangle a Parallelogram
D9	demonstrate an understanding of the relationships among the three dimensions of a rectangular prism and its volume and its surface area	MAT+ <u>Understanding Measurement and Geometry</u> Topic 4: Solids: Volume and Surface Area Surface Area of a Solid The Concept Volume of a Solid The Concept Volume of a Prism: Examples 1, 2

GCO E Students will demonstrate spatial sense and apply geometric concepts, properties, and relationships.

E1	describe and represent the various cross-sections of cones, cylinders, pyramids, and prisms	MAT+ <u>Understanding Measurement and Geometry</u> Topic 4: Solids: Volume and Surface Area Classifying Solids A Solid is... Recall Polygons A Polyhedron is... A Prism is... Some Special Pyramids A Cylinder is... A Cone is... Platonic Solids
E2	make and interpret orthographic drawings of 3-D shapes made with cubes	MAT+ <u>Understanding Measurement and Geometry</u> Topic 8 : Projective Geometry Orthographic Projections: Introduction The Cube Tool Introduction Tutorial Play with Tool
E3		MAT+ <u>Understanding Measurement and Geometry</u>

<p>make and apply generalizations about the sum of the angles in triangles and quadrilaterals</p>	<p>Topic 6: Angles and Polygons Angles in Polygons Methods 1,2</p>
<p>E4 make and apply generalizations about the diagonal properties of trapezoids, kites, parallelograms, and rhombi</p>	
<p>E5 sort the members of the quadrilateral “family” under property headings</p>	
<p>E6 recognize, name, describe, and represent similar figures</p>	
<p>E7 make generalizations about the planes of symmetry of 3-D shapes</p>	
<p>E8 make generalizations about the rotational symmetry property of all members of the quadrilateral “family” and of regular polygons</p>	<p>MAT+ Understanding Graphing Topic 4: Transformations Line of Symmetry – An Introduction Introduction Examples 1 through 6 Symmetry Match Puzzle 1,2</p>
<p>E9 recognize and represent dilatation images of 2-D figures and make</p>	<p>MAT+ Understanding Graphing Topic 4: Transformations Dilatations Object to Image We Say, We Write Dilatation Mapping Rule Examples</p>
<p>E10 predict and represent the result of combining transformations</p>	

GCO F Students will solve problems involving the collection, display, and analysis of data.

<p>F1 choose and evaluate appropriate samples for data collection F2 identify various types of data sources</p>	<p>MAT+ Understanding Graphing Topic 2: Statistics Data... What is it? Examples of Data</p>
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	<p>Example 1 – Fast Food Earnings Example 2 – Infant’s Walk Example 3– Canada and U.S. Forecast Example 4 – King of the Strike Out Example 5 – U.S. Stake in India Example 6 – Allergy Troubles A Summary: Examples</p>
<p>F3 plot coordinates in four quadrants</p>	<p><u>MAT+ Understanding Graphing</u> Topic 3: Points on a Grid Josh’s Neighborhood Concept Number Houses Grids on Maps Ordered Pairs Axis Quadrants and Cartesian Plane</p>
<p>F4 use bar graphs, double bar graphs, and stem-and-leaf plots to display data</p>	<p><u>MAT+ Understanding Graphing</u> Topic 2: Statistics In This Topic An Introduction Tally Chart Pictograph #1, #2 Bar Graph #1, #2 Line Graph #1, #2 Presenting Data Stem-and-Leaf Diagram Examples 1 & 2</p>
<p>F5 use circle graphs to represent data proportionately F6 interpret data represented in scatterplots</p>	<p><u>MAT+ Understanding Graphing</u> Topic 2: Statistics Presenting Data Circle or Pie Graph Examples 1 & 2 Scatter Plot Examples 1 & 2</p>
<p>F7 make inferences from data displays</p>	<p><u>MAT+ Understanding Graphing</u> Topic 2: Statistics Collecting Data Throw a Die Throw 2 Dice Voting</p>

<p>F8 demonstrate an understanding of the differences among mean, median, and mode</p>	<p>Primary Data – Gathering Methods Secondary Data – Gathering Methods</p> <p>MAT+ Understanding Graphing Topic 2: Statistics Measures of Central Tendency Introduction The Mean Average The Median Average The Mode Summary Another Example</p>
<p>F9 explore relevant issues for which data collection assists in reaching conclusions</p>	

GCO G Students will represent and solve problems involving uncertainty.

<p>G1 conduct simple simulations to determine empirical probabilities</p> <p>G2 evaluate the reliability of sampling results</p> <p>G3 analyze simple probabilistic claims</p> <p>G4 determine theoretical probabilities</p> <p>G5 identify events that could be associated with a particular theoretical probability</p>	<p>MAT+ Understanding Probability Topic 1 : An Introduction to Probability The Spinner Game Board 1 Board 2 IT's in the Bag Tree Diagrams Meals</p> <p>Topic 2: What's the Chance Probability What is it? Introductions 1 & 2 Spinner 1 Spinner 2 The Bag Probability Examples 1. Coin Toss 2. Picking One Ball 3. Picking Two Balls 4. Travel Example 5. Number Example 6. Rabbit Example 7. Mailing Letters 8. Forest Ahmed's Maze</p>
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	<p>The Probability Scale Examples Summary Follow Up Soccer Example Experimental Probability Introduction Examples 1,2 Practice Questions; Topic Test</p>
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