

**CORRELATION**  
of  
**the Understanding Numeration PLUS & Understanding Math PLUS programs**  
with  
**Louisiana Department of Education: Comprehensive Curriculum**  
**Grade 8 Mathematics**  
**January 2007**

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

**The 10 programs are:**

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| 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.

<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 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](http://www.neufeldmath.com)

**Unit 1: Fractions, Measures, and Models**

This unit focuses on number theory and the use of rational numbers in problem-solving contexts. Order of operations is reviewed in situations involving fractions, decimals, and integers. Circle graphs are created based on the central angle measurements to display data sets.

Expectation or Standard	Understanding Math PLUS and/or Understanding Numeration PLUS Lessons
<p><b>Activity 1: Compare and Order!</b> (GLE: 1)</p> <p><b>Activity 3: Target!</b> (GLEs: 1, 5)</p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Fractions</u>  <b>Topic 5. Introduction to Decimals</b>            Comparing Decimals            Examples 1, 2, 3, 4            Ordering Decimals            Introduction            Examples 1, 2, 3, 4</p> <p><b>Topic 15. Multiplication and Division of Fractions</b>            Fractions to Decimals Division Table            5 Divided by 7            3 Divided by 8            1 Divided by 11            2 Divided by 9            2 Divided by 3            8 Divided by 9            11 Divided by 12            9 Divided by 5            Compare Fractions            Compare Fractions... Method 1            Compare Fractions... Method 2            Decimals to Fractions            Place Value            Example 1            Example 2            Example 3            Example 4            Example 5            My Day            Practice Questions</p>
<p><b>Activity 2: Grouping Dilemma!</b> (GLE: 5)</p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Whole Numbers and Integers</u>  <b>Topic 3. Multiplying and Dividing Whole Numbers</b></p>

	<p>Multiplication Facts          Groups of 6          Groups of 7          Groups of 8          Groups of 9</p>
<p><b>Activity 4: Missing! (GLE: 6)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Fractions</u></b>  <b>Topic 7. Ratios and Proportions</b>          What is a Proportion?          Proportions          Example 1          Example 2 - Lemonade          Example 3 - Marbles          Example 4 - Scale Drawing</p> <p><b><u>Understanding Graphing</u></b>  <b>Topic 2. Statistics</b>          Measures of Central Tendency          The Mean Average          The Median average          The Mode          Summary          Another Example</p>

<p><b>Activity 5: London, Paris, Rome or . . .? (GLE: 36)</b></p> <p><b>Activity 6: Bull’s Eye (GLEs: 1, 3)</b></p> <p><b>Activity 7: How good were my estimates? (GLE: 3, 36)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 2. Statistics</b>  Circle or Pie Graphs  Example 1... Radio Station  Example 2... Health Survey</p> <p><b><u>Understanding Fractions</u></b>  <b>Topic 6. Percent...Fractions...Decimals</b>  Expressing a Decimal as a Percent  Examples 1, 2, 3  Summary and Pattern  % Nitrogen in the Air  Batting Averages  Expressing a Fraction as a Percent  An Example  Method 1  Examples 1, 2  Method 2  Examples 1, 2  Lightning Example  Number Line #2  Chart  Practice Questions</p> <p><b>Topic 7. Ratios and Proportions</b>  What is a Ratio?  Example 1 - Fraction Strip  Example 2 - Balls  Example 3 - Students  Example 4 - Gears  Writing Ratios  Concept  Examples 1, 2, 3, 4  Ratios and Your Body  Golden Ratio  Measuring Your Body</p>
<p><b>Activity 8: How Much . . . About? (GLEs: 3, 6)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Percent</u></b>  <b>Topic 6. Problems Involving Percent</b>  Finding the Whole  Recall Proportion</p>

	<p>School Population: Method 1... Using Proportions  School Population: Method 2  Grades Problem: Method 1... Using Proportions  Grades Problem: Method 2  Finding the Percent  Theatre Problem  Car Problem</p>
<p><b>Activity 9: Order! (GLE: 1, 6)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Fractions</u></b>  <b>Topic 8. Adding Fractions</b>  Adding Fractions on a Number Line  Examples 1, 2, 3  The Lowest Common Denominator  Examples 1, 2  Word Problems  Alexander's Friends  Eating Candy  Goal Scoring  Taking a Walk</p>
<p><b>Activity 10: How Much did I Start With? (GLE: 6)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Percent</u></b>  <b>Topic 2. Percent to Fraction/Decimal</b>  Expressing Percent as a Fraction  Introduction without Graphics  Introduction with Graphics  Fraction in Simplest Form  Greatest Common Factor  Examples 1, 2  Simplifying Fractions  Methods 1, 2  Examples  Examples 1, 2, 3, 4  The Watering Can  Expressing Percent as a Decimal  Introduction  Examples 1, 2, 3  Number Line  Practice Questions</p>
<p><b>Activity 11: My Dream House (GLE: 6)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Fractions</u></b>  <b>Topic 10. Multiplying Fractions</b></p>

	<p>Order in Multiplying Examples 1, 2 Multiplying Fractions with Large Numbers Examples 1, 2 Practice Questions</p> <p><b>Topic 15. Multiplication and Division of Decimals</b> Recall the Basics Multiply by Repeated Addition Example 1, 2 Special Case: Multiply a Decimal by a Whole Number Example 1 with Blocks Example 2 with Blocks Multiply by Partial Products – Area Example 1, 2, 3 with Blocks Example 4, 5, 6 without Blocks Question 1, 2, 3 Distributive Method Example 1, 2, 3 Question 1, 2, 3 Standard Method Example 1, 2, 3 Question 1, 2, 3 Preliminaries to Division Graphic Example Multiplication Table Summary of Decimals Partial Quotients Example 1, 2, 3, 4 Fair Sharing – Long Division Example 1, 2 Question 1, 2, 3</p>
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**Unit 2: Rates, Ratios, and Proportions**

This unit focuses on proportional relationships and solutions of problems involving rates, ratios and percentages. This level of proficiency includes work with similar triangles and the lengths of corresponding sides. There is some exploration of combinations and permutations in this unit.

<b>Expectation or Standard</b>	<b>Understanding Math PLUS and/or Understanding Numeration PLUS Lessons</b>
<b>Activity 1: My Future Salary (GLE: 8)</b>	
<b>Activity 2: How Much Improvement? (GLE: 8)</b> <b>Activity 3: Which is greater? (GLE: 8)</b> <b>Activity 4: How much? (GLE: 8)</b> <b>Activity 5: Fours a Winner! (GLE: 8)</b>	<p><b>Understanding Math PLUS</b>  <b>Understanding Percent</b></p> <p><b>Topic 2. Percent to Fraction/Decimals</b>  Expressing Percent as a Fraction  Introduction without Graphics  Introduction with Graphics  Fraction in Simplest Form  Greatest Common Factor  Examples 1, 2  Simplifying Fractions  Methods 1, 2  Examples  Examples 1, 2, 3, 4  The Watering Can  Expressing Percent as a Decimal  Introduction  Examples 1, 2, 3  Number Line  Practice Questions  Topic Test</p> <p><b>Topic 3. Fraction/Decimals to Percent</b>  Decimals to Fractions – Place Value  Expressing a Decimal as a Percent  Examples 1, 2, 3  Percent Change  Percent Increase  Percent Decrease  Percent Increase or Decrease  Number Line  Chart  My Day</p> <p><b>Topic 5. Percent of a Number</b>  The Concept  Examples  1. Money Example</p>

	<ul style="list-style-type: none"> <li>2. Service Charge</li> <li>3. Bird Example</li> <li>4. Marathon Race</li> <li>5. Freezing</li> <li>6. Pie Chart</li> </ul> <p>The Bouncing Ball  Grades  What if?  Calculate  Pass or Fail?  Practice Questions</p>
<b>Activity 6: The Better Buy? (GLE: 9)</b>	
<b>Activity 7: Refreshing Dance! (GLE: 9)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Fractions</u></b>  <b>Topic 7. Ratios and Proportions</b>  Ratios and Your Body  Golden Ratio  Measuring Your Body</p>
<b>Activity 8: Similar Triangles (GLEs: 7, 29)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 5. Angles and their Measure</b>  Angles... An Introduction  The Degree  Classifying Angles  Classifications  Memory Game  Measuring Angles  Practice Questions</p>
<b>Activity 9: Proportional Reasoning (GLEs: 7, 29)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Percent</u></b>  <b>Topic 4. Ratios and Proportions</b>  Proportions  Example 1  Example 2 – Lemonade  Example 3 – Marbles  Example 4 – Trout  Example 5 – Tree Height  Example 6 – Map  Example 7 – Scale Drawing</p>

	<p><b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 6. Angles and Polygons</b>  Angles in Triangles  Exploration  An Explanation</p>
<b>Activity 10: Scaling the Trail! (GLE: 7)</b>	
<b>Activity 11: Fast Food Ratios! (GLE: 7)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Percent</u></b>  <b>Topic 4. Ratios and Proportions</b>  What is a Ratio?  Examples</p> <ol style="list-style-type: none"> <li>1. Fraction Strip</li> <li>2. Balls</li> <li>3. Students</li> <li>4. Gears</li> </ol> <p>Writing Ratios  Concept  Examples 1, 2, 3, 4</p>
<b>Activity 12: How Many Outfits are on Sale? (GLEs: 41, 43)</b>	
<b>Activity 13: Combination or Permutation? (GLEs: 7, 42, 43)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Percent</u></b>  <b>Topic 4. Ratios and Proportions</b>  What is a Ratio?  Examples</p> <ol style="list-style-type: none"> <li>1. Fraction Strip</li> <li>2. Balls</li> <li>3. Students</li> <li>4. Gears</li> </ol> <p>Writing Ratios  Concept  Examples 1, 2, 3, 4</p> <p><b>Topic 5. Percent of a Number</b>  The Bouncing Ball  Grades  What if?  Calculate  Pass or Fail?  Practice Questions</p>

	Topic Test
<b>Activity 14: Tour Cost! (GLEs: 7, 42)</b>	<b><u>Understanding Math PLUS</u></b>
<b>Activity 15: Minimum Wage! (GLE: 9)</b>	<b><u>Understanding Math PLUS</u></b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Presenting Data Stem-and-Leaf Diagram Example 1... Ages of Fans Example 2... Heights of Students Bar Graph Example 1... Energy Example 2... Lengths of Rivers Histogram Example 1... Heights of Students Example 2... Roll a Die Line Graph Example 1... Life Expectancy Example 2... Software Profits Circle or Pie Graphs Example 1... Radio Station Example 2... Health Survey Scatter Plot Example 1... The T-Shirt Tailor Example 2... Matching

**Unit 3: Geometry and Measurement**

The content of this unit focuses on the properties of transformations on the coordinate grid; the relationships among angles formed by parallel lines; the use of nets to help students visualize three dimensional solids; and applications of the Pythagorean Theorem and its converse.

Expectation or Standard	Understanding Math PLUS and/or Understanding Numeration PLUS Lessons
<p>Activity 1: Transformations! (GLEs: 23, 24, 25)</p> <p>Activity 2: Transform Me! (GLEs: 23, 24, 25, 26)</p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 2. Perimeter and Area of Polygons</b>            Polygons... What Are They?            Concept            A Triangle is            A Quadrilateral is            A Pentagon is            A Hexagon is            An Octagon is            Classify Polygons            Walk Around a Polygon</p> <p><b><u>Understanding Graphing</u></b>  <b>Topic 4. Transformations</b>            The Transformation Machine            Examples 1, 2, 3, 4, 5            Line of Symmetry - An Introduction            Introduction            Examples 1, 2, 3, 4            Symmetry Match            Puzzle 1, 2            Tessellations            Introduction            Examples            Examples 1, 2, 3, 4, 5            Tangrams            Introduction            Examples 1, 2, 3            Translations            Object to Image            We Say            We Write            Reflection Mapping Rule            Examples            Examples 1,            Rotations            Object to Image</p>

	<p>We Say  We Write  Rotation Mapping Rule  Examples  Examples 1, 2  Dilatations  Object to Image  We Say  We Write  Dilatation Mapping Rule  Examples  Examples 1, 2</p>
<p><b>Activity 3: The Bisection! (GLE: 23)</b></p>	<p><u><b>Understanding Math PLUS</b></u>  <u><b>Understanding Graphing</b></u>  <b>Topic 3. Points on a Grid</b>  In This Topic  Josh’s Neighborhood  Concept  Number Houses  Grids on Maps  Ordered Pairs  Axis  Quadrants and Cartesian Plane  Find a Point  Order is Important  Examples  Shapes  Battleship</p> <p><u><b>Understanding Measurement and Geometry</b></u>  <b>Topic 7. Constructions</b>  Before You Begin  In This Topic  Perpendicular Bisector</p>
<p><b>Activity 4: Rectangles and Diagonals! (GLEs: 26, 30)</b></p>	
<p><b>Activity 5: Developing the Theorem (GLE: 31)</b></p> <p><b>Activity 6: The Theorem (GLE: 31)</b></p> <p><b>Activity 7: Is this Table a Rectangle? (GLEs: 30, 31)</b></p>	<p><u><b>Understanding Math PLUS</b></u>  <u><b>Understanding Exponents</b></u>  <b>Topic 6. Pythagorean Theorem</b>  In This Topic  The Right Triangle  Math or Magic?  Introduction</p>

	<p>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 Pythagorean Theorem  The Pattern  In General  Theorem  Example Questions  Example 1... Pole Example  Example 2... Tower Example  Example 3... Walking Example  Example 4... Lake Example  Example 5... Geometric Example  Practice Questions</p>
<p><b>Activity 8: Chords and Triangles! (GLEs: 24, 28)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 5. Angles and their Measure</b>  Angles... An Introduction  The Degree  Classifying Angles  Classifications  Memory Game  Measuring Angles  Practice Questions  Topic Test</p>
<p><b>Activity 9: How Big is This Room Anyway? (GLE: 30)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 2. Perimeter and Area of Polygons</b>  Walk Around a Polygon  Joan Walks  Length of the Metal Strip  Find the Perimeter  Amount of Surface  The Driveway... An Introduction to Area  Area – Estimation  Area of a Rectangle  Concept  Examples 1, 2  Area of a Parallelogram  Concept</p>

	<p>Examples 1, 2  Area of a Triangle  Concept  Examples 1, 2</p>
<p><b>Activity 10: Scale Drawings (GLE: 30)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 8. Projective Geometry</b>  An Introduction  Toothpicks on Isometric Dot Paper  Toothpick to Cube  The Views  Using Isometric Grid Paper  Orthographic Projections: Introduction  The Cube Tool  Introduction  Tutorial  Play with Tool  Given Solid – Build it  Examples 1, 2, 3, 4, 5, 6  Given Views – Build it  Examples 1, 2, 3, 4, 5, 6</p>
<p><b>Activity 11: Netting the Cubes! (GLE: 27)</b>   <b>Activity 12: The Net! (GLEs: 27, 31)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 2. Perimeter and Area of Polygons</b>  Walk Around a Polygon  Joan Walks  Length of the Metal Strip  Find the Perimeter  Amount of Surface  The Driveway... An Introduction to Area  Area – Estimation  Area of a Rectangle  Concept  Examples 1, 2  Area of a Parallelogram  Concept  Examples 1, 2  Area of a Triangle  Concept  Examples 1, 2</p>

<p><b>Activity 13: The Converse of the Pythagorean Theorem (GLE: 31)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Exponents</u></b>  <b>Topic 6. Pythagorean Theorem</b>  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 Pythagorean Theorem  The Pattern  In General  Theorem  Example Questions  Example 1... Pole Example  Example 2... Tower Example  Example 3... Walking Example  Example 4... Lake Example  Example 5... Geometric Example  Practice Questions</p>
<p><b>Activity 14: Folding squares (GLEs: 23,28)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 7. Constructions</b>  In This Topic  Perpendicular Bisector</p>
<p><b>Activity 15: Angle Relationships (GLEs: 23, 28)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 6. Angles and Polygons</b>  In This Topic  Parallel Lines  Example with Parallel Lines  Examples 1, 2  Angles in Triangles  Exploration  An Explanation  Exterior Angles – Example</p>
<p><b>Activity 16: Mapping my Way! (GLE: 30)</b></p>	
<p><b>Activity 17: How Big was it Anyway? (GLE: 30)</b></p>	

**Activity 18: A Numberless Graph! (GLE: 33)**

**Understanding Math PLUS**

**Understanding Graphing**

**Topic 1. Reading and Sketching Graphs**

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

Example 6... Melissa Eating Popcorn

Example 7... Glasses of Water

Example 8... Bottles of Water

Example 9... Bottles of Water... Matching

Example 10... Age and Weight

Example 11... The Bathtub #1

Example 12... The Bathtub #2

Example 13... The Hot Tub

**Unit 4: Measurement and Geometry**

In this unit, basic 2- and 3-dimensional shapes, their surface areas, and their volumes are explored. Conversions of volume within the same system and comparisons of relative sizes of units of volume across systems are made. The rate of change of derived measures such as density, velocity, and monetary conversion rates are connected to algebraic relationships. Similar analyses of rates of change of sides, areas, and volumes of similar triangles are also revisited. Such analyses are also applied to the lengths of sides, areas, and volumes of similar triangles due to changes in one of the three measures. Data patterns and predictions are made in this unit, as well as, comparing combinations and permutations. Single and multiple event probabilities are explored.

<b>Expectation or Standard</b>	<b>Understanding Math PLUS and/or Understanding Numeration PLUS Lessons</b>
<b>Activity 1: Volume and Surface Area (GLE: 17)</b>	<u>Understanding Math PLUS</u> <u>Understanding Measurement and Geometry</u> <b>Topic 4. Solids...Volume and Surface Area</b> Classifying Solids A Solid is... Recall Polygons A Polyhedron is... A Prism is... Some Special Pyramids A Cylinder is... A Cone is... Platonic Solids
<b>Activity 2: Rectangular prisms (GLE: 17)</b>	<u>Understanding Math PLUS</u> <u>Understanding Measurement and Geometry</u> <b>Topic 4. Solids...Volume and Surface Area</b> Surface Area of a Solid The Concept Surface Area of a Pyramid
<b>Activity 3: What's the Probability? (GLE: 45)</b>	<u>Understanding Math PLUS</u> <u>Understanding Probability</u> <b>Topic 2. What's the Chance?</b> Probability Examples <ol style="list-style-type: none"> <li>1. Coin Toss</li> <li>2. Picking One Ball</li> <li>3. Picking Two Balls</li> <li>4. Travel Example</li> <li>5. Number Example</li> <li>6. Rabbit Example</li> <li>7. Mailing Letters</li> <li>8. Forest</li> <li>9. Ahmed's Maze</li> </ol>

	<p>The Probability Scale  Examples  Summary  Follow Up  Soccer Example  Experimental Probability  Introduction  Examples 1, 2  Practice Questions</p>
<p><b>Activity 4: Odd Volumes, is it Fair? (GLEs: 17, 43)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 4. Solids... Volume and Surface Area</b>  Volume of a Solid  The Concept  Volume of a Prism: Examples 1, 2</p>
<p><b>Activity 5: Cylinders (GLEs: 17, 21)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 3. The Circle</b>  Circumference of a Circle  Circumference  Example 1 – Egg  Example 2 – The Well  Example 3 – The Rolling Coin  Example 4 – The Semi-Circle</p> <p><b>Topic 4. Solids... Volume and Surface Area</b>  Volume of a Cylinder</p>
<p><b>Activity 6: Pyramids and Cones (GLE: 17)</b></p> <p><b>Activity 7: Comparing Cones: (GLE: 17)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 3. The Circle</b>  Radius, Circumference, Diameter  PI... A Special Number  Introduction  How do we Measure Circumference?  Measuring Circles  Summary  Circumference of a Circle  Circumference  Example 1 – Egg  Example 2 – The Well  Example 3 – The Rolling Coin</p>

	<p>Example 4 – The Semi-Circle</p> <p><b>Topic 4. Solids...Volume and Surface Area</b>  Volume of a Solid  The Concept  Volume of a Prism: Examples 1, 2  Volume of a Cylinder</p>
<p><b>Activity 8: Common Containers (GLEs: 17, 19, 20, 21, 22)</b></p> <p><b>Activity 9: Changing Volume? (GLEs: 18, 19, 32, 48)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 1. An Introduction to Measurement</b>  Metric and U.S.A Standard Measurement Systems  Searching for the Standard Unit  Related Units from Metric Prefixes  Metric Prefixes at Work  Converting Between Metric Units  <b>Topic 4. Solids...Volume and Surface Area</b>  Volume of a Solid  The Concept  Volume of a Prism: Examples 1, 2  Volume of a Cylinder  Volume of a Pyramid  Volume of a Cone  Volume of a Sphere  Summary  Practice Questions</p>
<p><b>Activity 10: Using Algebra to Make Conversions (GLE: 18)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Algebra</u></b>  <b>Topic 4. Patterns, Formula, Substitution</b>  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  Practice Questions  Topic Test</p>

<p><b>Activity 11: Rate of Change – Density (GLE: 18)</b></p> <p><b>Activity 12: Rate of Change – Velocity (GLE: 18)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 9. Ratios for Areas and Volumes</b>  In This Topic  Ratios for Areas and Volumes  Introduction  Area Ratios  Volume Ratios  Practice Questions</p>
<p><b>Activity 13: Volume of a Prism (GLEs: 17, 29)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 4. Solids... Volume and Surface Area</b>  Introduction  Tutorial  Play with Tool  Given Solid – Build it  Examples 1, 2, 3, 4, 5, 6  Given Views – Build it  Examples 1, 2, 3, 4, 5, 6  Given Volume – Build it  Examples 1, 2, 3, 4, 5, 6</p>
<p><b>Activity 14: Data Patterns (GLE: 19, 39)</b></p>	
<p><b>Activity 15: Changing dimensions (GLEs: 17, 22, 32)</b></p> <p><b>Activity 16: (GLEs: 20, 32, 33)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Measurement and Geometry</u></b>  <b>Topic 4. Solids... Volume and Surface Area</b>  Summary  Practice Questions</p>

**Unit 5: Algebra and Integers**

The unit focus is on determining relationships of patterns. Representations of these relationships are made using tables, graphs and equations. Equation solutions and descriptions of how rates of change in one variable affect the rate of change in the other variable are also explored as graphs are analyzed and slopes are discussed. The collecting and analyzing of data into appropriate displays including box-and-whiskers plots are explored. The unit includes explanations of factors that affect measures of central tendency.

Expectation or Standard	Understanding Math PLUS and/or Understanding Numeration PLUS Lessons
<p><b>Activity 1: Camping Sounds! (GLEs: 12, 13)</b></p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Algebra</u>  <b>Topic 4. Patterns, Formula, Substitution</b>            Substitution is... Math Scrabble            Scrabble 1, 2, 3            Challenge            Substitution Examples            Examples 1, 2, 3, 4            Practice Questions            Topic Test</p> <p><u>Understanding Graphing</u>  <b>Topic 6. Linear Relations</b>            What is a Linear Relation?            Graphs of Linear Relations            Concept            Examples 1, 2, 3, 4, 5, 6            The Taxi Example – Setup Equation – Graph Equation            The Elastic Example – Setup Equation – Graph Equation            Lightning Example – Setup Equation – Graph Equation</p>
<p><b>Activity 2: Beaming Buildings! (GLEs: 10, 11, 12, 13, 14, 39)</b></p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Algebra</u>  <b>Topic 3. Patterns, Patterns, Patterns</b>            Geometric Patterns            Examples 1, 2, 3, 4, 5, 6, 7, 8            Number Patterns            Examples 1, 2, 3, 4, 5, 6            Number and Geometric Patterns            Examples 1, 2            Patterns to Formulas            Examples 1, 2, 3</p>
<p><b>Activity 3: From Table to Graph to Conjecture (GLEs: 2, 11, 13, 14, 16)</b></p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Measurement and Geometry</u>  <b>Topic 3. The Circle</b></p>

	<p>Area of a Circle  Recall Area  Area Exploration #1  Area Exploration #2  Example 1 – Wheel  Example 2 – Pizza  Example 3 – The Semi-Circle  Example 4 – The Dog’s Run  Example 5 – The Hockey Rink</p>
<p><b>Activity 4: Speed, Time and Distance (GLEs: 10, 14, 15, 34, 40)</b></p> <p><b>Activity 5: Linear Equations—Fuel Consumption (GLEs: 10, 11, 13, 14)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 6. Linear Relations</b>  What is a Linear Relation?  Graphs of Linear Relations  Concept  Examples 1, 2, 3, 4, 5, 6  The Taxi Example – Setup Equation – Graph Equation  The Elastic Example – Setup Equation – Graph Equation  Lightning Example – Setup Equation – Graph Equation</p>
<p><b>Activity 6: Graphs to Situations! (GLEs: 11, 15, 16, 35)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 3. Points on a Grid</b>  Grids on Maps  Ordered Pairs  Axis  Quadrants and Cartesian Plane  Find a Point  Order is Important  Examples  Shapes  Battleship  Topic Test</p>
<p><b>Activity 7: Real-Life Inequalities: (GLEs: 11, 12)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Equations</u></b>  <b>Topic 7. Solving Inequalities</b>  Comparing Integers  The Integer Line  Example 1... Greater Than; Example 2... Less Than  Explanation  Example 3... Greater Than; Example 4... Less Than  Greater Than or Less Than  Inequalities</p>

	<p>What Are They?          Inequality vs. Equation          Summary of Relationships          Inequality on the Number Line          Examples 1, 2, 3, 4          Solving Inequalities          Examples 1, 2, 3, 4, 5, 6          Solving Compound Inequalities          Examples 1, 2</p>
<p><b>Activity 8: T-Shirt Auction (GLEs: 2, 35, 37, 40)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Fractions</u></b>  <b>Topic 15. Multiplying and Dividing Decimals</b>          Distributive Method          Example 1          Example 2          Example 3          Question 1          Question 2          Question 3          Standard Method          Example 1          Example 2          Example 3          Question 1          Question 2          Question 3</p>
<p><b>Activity 9: Promoting the Auction! (GLEs: 2, 5, 34)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 2. Statistics</b>          44 Data... What is it?          Examples of Data          Example 1... Fast Food Earnings          Example 2... Infant's Walk          Example 3... Canada and U.S.A. Forecast          Example 4... King of the Strike Out          Example 5... U.S.A. Stake in India          Example 6... Allergy Troubles          A Summary: Examples          Statistics... What is it?          Collecting Data          Throw a Die          Throw 2 Dice</p>

	<p>Voting  Primary Data - Gathering Methods  Secondary Data - Gathering Methods  Presenting Data  Stem-and-Leaf Diagram  Example 1... Ages of Fans  Example 2... Heights of Students  Bar Graph  Example 1... Energy  Example 2... Lengths of Rivers  Histogram  Example 1... Heights of Students  Example 2... Roll a Die  Line Graph  Example 1... Life Expectancy  Example 2... Software Profits  Circle or Pie Graphs  Example 1... Radio Station  Example 2... Health Survey  Scatter Plot  Example 1... The T-Shirt Tailor  Example 2... Matching</p>
<p><b>Activity 10: Rate of Change (GLEs: 10, 14, 15, 16)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 7. Slope of a Line</b>  In This Topic  Introduction to Slope  Slope when Driving  A Ski Slope  Slope of Roof  Slope: Order, Steepness Factor, Definition  Introductory Examples  Examples 1, 2, 3, 4  Formula  Parallel Lines  Examples 1, 2, 3</p>
<p><b>Activity 11: Computing Using Scientific Notation (GLEs: 2, 4, 5)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Exponents</u></b>  <b>Topic 4. Scientific Notation</b>  Why Use Scientific Notation?  Scientific Notation for Large Numbers  Introduction</p>

	<p>Chart  The Rule  The Steps  Scientific Notation for Small Numbers  Introduction  Chart  The Steps  Examples</p> <ol style="list-style-type: none"> <li>1. Number Question</li> <li>2. Park Question</li> <li>3. Sun Question</li> <li>4. Kitchen Question</li> </ol>
<p><b>Activity 12: Make My Answer Correct! (GLE: 5)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Exponents</u></b>  <b>Topic 1. The Meaning of Exponents</b>  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  Practice Questions</p> <p><b>Topic 2. Exponents in Formulas</b>  The Power Key  An Introduction  Power with a Positive Base  Power with a Negative Base  Adding Two Powers: Long Way  Adding Two Powers: Short Way</p> <p><b><u>Understanding Whole Numbers and Integers</u></b>  <b>Topic 4. The Meaning of Integers</b>  The Integer Line  Opposite Integers  Examples 1, 2  Absolute Values  Examples 1, 2  Comparing Integers  Examples 1, 2, 3, 4  Example Questions</p>

	Examples 1, 2, 3, 4, 5, 6
<b>Activity 13: Graphing Solutions to Linear Equations and Inequalities (GLE: 12)</b> <b>Activity 14: Formula Madness! (GLEs: 2, 5, 12)</b>	<u><b>Understanding Math PLUS</b></u> <u><b>Understanding Graphing</b></u> <b>Topic 6. Linear Equations</b> Graphs of Linear Relations Concept Examples 1, 2, 3, 4, 5, 6 The Taxi Example – Setup Equation – Graph Equation The Elastic Example – Setup Equation – Graph Equation Lightning Example – Setup Equation – Graph Equation
<b>Activity 15: Celsius to Fahrenheit to Formula! (GLEs: 15, 16)</b>	
<b>Activity 16: Constant and Varying Rates of Change (GLE: 15)</b>	

**Unit 6: Growth and Patterns**

This unit examines the nature of changes to the input variables in function settings through the use of tables and sequences. There is emphasis on recognizing and differentiating between linear and exponential change and developing the expression for the  $n$ th term for a given arithmetic or geometric sequence.

Expectation or Standard	Understanding Math PLUS and/or Understanding Numeration PLUS Lessons
<p><b>Activity 1: Find that Rule!</b> (GLEs: 39, 46, 47)</p> <p><b>Activity 2: Use That Rule!</b> (GLE: 46)</p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Measurement and Geometry</u>  <b>Topic 2. Perimeter and Area of Polygons</b>                      Relationship – Area and Perimeter                      The Information                      The Graph                      Given Area and Perimeter – Create Shape                      Example 1                      Example 2                      Example 3                      Example 4                      Problems Section                      Length of Fence                      Area of a Wall                      The Tablecloth                      Practice Questions                      Topic Test</p>
<p><b>Activity 3: Make Up a Rule!</b> (GLE: 46)</p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Algebra</u>  <b>Topic 3. Patterns, Patterns, Patterns</b>                      Geometric Patterns                      Examples 1, 2, 3, 4, 5, 6, 7, 8                      Number Patterns                      Examples 1, 2, 3, 4, 5, 6                      Number and Geometric Patterns                      Examples 1, 2                      Patterns to Formulas                      Examples 1, 2, 3</p>
<p><b>Activity 4: Real Rules!</b> (GLEs: 46, 47)</p> <p><b>Activity 5: Name That Term!</b> (GLEs: 46, 47)</p> <p><b>Activity 6: How Much Do I Get?</b> (GLE: 13, 46)</p> <p><b>Activity 7: Generally Speaking!</b> (GLE: 47)</p>	<p><u>Understanding Math PLUS</u>  <u>Understanding Algebra</u>  <b>Topic 4. Patterns, Formulas, Substitution</b>                      Patterns to Formulas                      Example... Hockey Standings                      Example... Counting Money                      Example... Angles in a Polygon                      Substitution is... Math Scrabble</p>

<b>Activity 8: Are You Sure? (GLE: 47)</b>	Scrabble 1, 2, 3 Challenge Substitution Examples Examples 1, 2, 3, 4 Practice Questions Topic Test
<b>Activity 9: Playing Around with Fibonacci! (GLE: 39)</b>	
<b>Activity 10: From Collection of data to Equations! (GLEs: 14, 38, 39, 44)</b>	<b><u>Understanding Math PLUS</u></b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Scatter Plot Example 1... The T-Shirt Tailor Example 2... Matching  <b><u>Understanding Equations</u></b> <b>Topic 1. Tiles, Balances, and Equations</b> Definitions Introduction Summary Parts 1, 2 The Meaning of “Solving an Equation” Solve by Systematic Trials Recall Tile Concepts Balances... An Introduction Tiles, Balances and Equations Practice Questions Topic Test

**Unit 7: What Are the Data?**

This unit focuses on representations of data using appropriate graphs and displays. Concepts of range, quartiles and shapes of distributions are explored as appropriate graphic displays are explored.

<b>Expectation or Standard</b>	<b>Understanding Math PLUS and/or Understanding Numeration PLUS Lessons</b>
<b>Activity 1: Getting to Know You! (GLEs: 34, 36, 39)</b>	<u>Understanding Math PLUS</u> <u>Understanding Graphing</u> <b>Topic 2. Statistics</b> Collecting Data Throw a Die Throw 2 Dice Voting Primary Data - Gathering Methods Secondary Data - Gathering Methods Presenting Data
<b>Activity 2: Scattered, Clustered, or Common? (GLEs: 34, 36, 38, 39)</b>	<u>Understanding Math PLUS</u> <u>Understanding Graphing</u> <b>Topic 2. Statistics</b> Scatter Plot Example 1... The T-Shirt Tailor Example 2... Matching
<b>Activity 3: How Old Are Your Siblings? (GLEs: 37, 39, 40)</b>	<u>Understanding Math PLUS</u> <u>Understanding Graphing</u> <b>Topic 2. Statistics</b> Box and Whisker Plots Concepts Examples 1, 2
<b>Activity 4: Who's got the quickest REACTION TIME? (GLEs: 34, 36, 39)</b>	<u>Understanding Math PLUS</u> <u>Understanding Graphing</u> <b>Topic 2. Statistics</b> Circle or Pie Graphs Example 1... Radio Station Example 2... Health Survey
<b>Activity 5: Making Appropriate Graphs (GLEs: 34, 36, 39)</b>  <b>Activity 6: Match That Data! (GLE: 35)</b>  <b>Activity 7: Circle Graphs (GLE: 36)</b>  <b>Activity 8: Stem-Leaf (GLEs: 39, 40)</b>	<u>Understanding Math PLUS</u> <u>Understanding Graphing</u> <b>Topic 2. Statistics</b> Bar Graph Example 1... Energy Example 2... Lengths of Rivers Histogram Example 1... Heights of Students

	<p>Example 2... Roll a Die  Line Graph  Example 1... Life Expectancy  Example 2... Software Profits  Circle or Pie Graphs  Example 1... Radio Station  Example 2... Health Survey  Scatter Plot  Example 1... The T-Shirt</p>
<b>Activity 9: Box and Whiskers (GLEs: 37, 40)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 2. Statistics</b>  Box and Whisker Plots  Concepts  Examples 1, 2</p>
<b>Activity 10: Line of Best Fit (GLEs: 38, 39)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 7. Slope of a Line</b>  In This Topic  Introduction to Slope  Slope when Driving  A Ski Slope  Slope of Roof  Slope: Order, Steepness Factor, Definition  Introductory Examples  Examples 1, 2, 3, 4</p> <p><b>Topic 2. Statistics</b>  Line Graph  Example 1... Life Expectancy  Example 2... Software Profits</p>
<b>Activity 11: A Stable Measure (GLE: 40)</b>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Graphing</u></b>  <b>Topic 2. Statistics</b>  Measures of Central Tendency  Introduction  The Mean Average  The Median average  The Mode  Summary</p>

	Another Example Adding Data Points
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**Unit 8: Examining Chances**

This unit examines sampling with and without replacement and the need for randomness in statistical situations and how this affects games of chance. Permutations and combinations are used in situations that describe counts for elementary ordering and grouping. Single- and multiple-event probability situations explore the role of mutually exclusive, independent, and non-mutually exclusive, dependent events.

Expectation or Standard	Understanding Math PLUS and/or Understanding Numeration PLUS Lessons
<p><b>Activity 1: Selecting a Sample (GLE: 41)</b></p> <p><b>Activity 2: Let Me Count the Ways! (GLE: 42)</b></p> <p><b>Activity 3: How Many Ways? (GLEs: 42, 43)</b></p> <p><b>Activity 4: What does the Cookie Thief Look Like? (GLE: 43)</b></p> <p><b>Activity 5: Braille Combinations! (GLEs: 42, 43)</b></p> <p><b>Activity 6: Experimental Probabilities (GLE: 44)</b></p>	<p><u>Understanding Math PLUS</u> <u>Understanding Probability</u> <b>Topic 2. What’s the Chance?</b> Probability What is it? Introduction 1 Introduction 2 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     9. Ahmed’s Maze The Probability Scale Examples Summary Follow Up Soccer Example Experimental Probability Introduction Examples 1, 2 Practice Questions Topic Test</p>
<p><b>Activity 7: Independent Events (GLE: 45)</b></p>	<p><u>Understanding Math PLUS</u> <u>Understanding Probability</u> <b>Topic 7. Independent Events</b> In this topic</p>

	<p>What Are They?  Examples</p> <ol style="list-style-type: none"> <li>1. Toss Two Coins</li> <li>2. Replacing Marbles</li> </ol> <p>Probability</p> <ol style="list-style-type: none"> <li>1. Coin and Die</li> <li>2. Balls</li> <li>3. Letter Tiles</li> </ol> <p>Patterns and Summary</p> <ol style="list-style-type: none"> <li>1. Summary</li> <li>2. Spinner</li> <li>3. Cards</li> </ol> <p>Practice Questions</p>
<p><b>Activity 8: Dependent Events (GLE: 45)</b></p> <p><b>Activity 9: Is It Fair? (GLE: 45)</b></p>	<p><b><u>Understanding Math PLUS</u></b>  <b><u>Understanding Probability</u></b>  <b>Topic 8. Dependent Events</b></p> <p>In this topic</p> <p>What Are They?  Independent Events  Dependent Events</p> <p>Examples</p> <ol style="list-style-type: none"> <li>1. Keep the First Marble</li> <li>2. Choose the Flowers</li> </ol> <p>Probability</p> <ol style="list-style-type: none"> <li>1. Keep the First Ball</li> <li>2. Keep the First Tile</li> <li>3. Plant the First Flower</li> </ol> <p>Patterns and Summary</p> <ol style="list-style-type: none"> <li>1. Summary</li> <li>2. Money</li> <li>3. Socks</li> <li>4. Names</li> </ol>
<p><b>Activity 10: Who Did It? (GLEs: 41, 44)</b></p>	