Impact Mathematics: Algebra and More for the Middle Grades
Course 2 Volumes A & B

Correlations of the TEN UNDERSTANDING MATHEMATICS Programs
By Neufeld Learning Systems
September 2004

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

The 10 programs are:

Understanding Fractions **Understanding 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

Chapter 1: Understanding Expressions

Lesson 1.1: Variables and Expressions

- To use variables to write expressions

MAT / Understanding Algebra / Topic 3 / Introduction…Math is Pattern; Expressions, Terms, Variable: Definitions, Summary; Examples – Patterns to Formulas; Substitution is …Math Scrabble; Substitution Examples 1 through 4; Practice Questions

- To understand the order of operations

MAT / Understanding Fractions / Topic 11 / Order in Addition; Order in Multiplication; Why Use Order of Operations? BEDMAS; Examples Questions; Practice Questions

- To practice using expressions to represent specific situations

MAT / Understanding Algebra / Topic 4 / Our Problem; Adding Expressions with X and Y Tiles; Adding Expressions with X-Squared Tiles; Adding Expressions without Tiles; Practice Questions with/without Tiles

MAT / Understanding Algebra / Topic 5 / Our Problem; Subtracting Expression with X and Y Tiles; Subtracting Expressions with X-Squared Tiles; Subtracting Expressions without Tiles; Practice Questions with/without Tiles

- To use flowcharts to build expressions
- To solve equations using backtracking

Lesson 1.2: Expressions and Formulas

- To practice using variables to write expressions

MAT / Understanding Algebra / Topic 3 / Expressions, Terms, Variable: Definitions, Summary; Examples – Patterns to Formulas; Substitution is …Math Scrabble; Substitution Examples 1 through 4; Practice Questions

- To use expressions to solve problems

MAT / Understanding Algebra / Topic 4 / Our Problem; Adding Expressions with X and Y Tiles; Adding Expressions with X-Squared Tiles; Adding Expressions without Tiles; Practice Questions with/without Tiles

MAT / Understanding Algebra / Topic 5 / Our Problem; Subtracting Expression with X and Y Tiles; Subtracting Expressions with X-Squared Tiles; Subtracting Expressions without Tiles; Practice Questions with/without Tiles

- To develop and use formulas to find specific quantities

MAT / Understanding Exponents / Topic 2 / An Introductions to Formulas; Area Formulas Involving Exponents; Examples with Area Formulas

- To use a spreadsheet to make a chart

Lesson 1.3: The Distributive Property

- To understand and apply the distributive property
- To remove parentheses by multiplying

MAT / Understanding Algebra / Topic 6 / Our Problem: Recall Tile Concepts: Multiplying Monomials and Polynomials; Multiplying Binomials; Examples…True or False; Practice Questions

- To insert parentheses by factoring expressions

MAT / Understanding Algebra / Topic 7 / Our Problem; Common Factoring; Factoring Trinomials; Difference of Squares; Factoring by Grouping – Concept; Summary; Practice Questions; Topic Test

- To perform numerical calculations using the distributive property

Chapter 2: Geometry in Three Dimensions

Lesson 2.1: Block Patterns

- To continue a block pattern given the first three stages
- To describe block patterns visually and numerically
- To describe block patterns with algebraic expressions

Understanding Algebra / Topic 3 / Examples – Patterns to Formulas

Lesson 2.2: Visualizing and Measuring

- To draw front, top, and side views of block structures
- To understand the difference between the three views (usually taught in middle school) which do not describe a unique structure and the three views used by engineers that do describe a unique structure
- To understand volume as the number of blocks that make up a structure

MAT / Understanding Measurement and Geometry / Topic 8 / Toothpicks on Isometric Dot Paper: Toothpick to Cube, The Views, using Isometric Grip Paper; Orthographic Projections: Introduction; Given Solid – Build it; Given Views – Build it; Given Volume – Build it; Given Area – Build it; Practice Questions

Lesson 2.3: Surface Area and Volume

- To find the volume of an prism as *area of base times height*

MAT / Understanding Measurement and Geometry / Topic 4 / Volume of a Solid: The Concept, Volume of a Prism – Examples 1,2

- To understand that for a given volume of any prism, the cube is the rectangular prism with the minimum surface area

MAT / Understanding Measurement and Geometry / Topic 4 / 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

- To articulate some applications of surface area and volume, in particular, the relationship of surface area per unit volume and what it tells you about heat loss

Lesson 2.4: Nets and Solids

- To decide if a given net will fold into a closed three-dimensional solid
- To create nets that will fold into given shapes
- To use information about the nets of a object to find surface area and volume

Chapter 3: Exploring Exponents

Lesson 3.1: Stretching and Shrinking Machines

- To model the behavior of exponents using stretching and shrinking machines
- To understand and apply the product laws of exponents

MAT / Understanding Exponents / Topic 3 / In This Topic; Multiplication of Powers with the Same Base: Expanding the Exponents, The Pattern, In General

Lesson 3.2: Shrinking and Super Machines

- To model the behavior of exponents using stretching and shrinking machines

- To understand and apply the quotient laws of exponents

MAT / Understanding Exponents / Topic 3 / Division of Powers with the Same Base: Expanding the Exponents, The Pattern, In General

- To understand and apply the power of a power law of exponents

MAT / Understanding Exponents / Topic 3 / Raising a Power to an Exponent: Expanding the Exponents, The Pattern, In General

Lesson 3.3: Growing Exponentially

- To develop a sense of exponential growth and exponential decay
- To describe examples of exponential increase and exponential decrease
- To compare exponential growth with other kinds of growth (linear, quadratic, and so on)

Lesson 3.4: Describing Large Numbers

- To understand the relative difference between a million and a billion
- To multiply and divide numbers by powers of 10
- To write numbers using scientific notation

MAT / Understanding Exponents / Why us Scientific Notation?; Scientific Notation for Large Numbers; Scientific Notation for Small Numbers; Examples 1 through 4; Practice Questions; Topic Test

- To use a calculator to work with numbers in scientific notation

MAT / Understanding Exponents / Topic 2 / The Power Key: An Introduction, Power with a Positive/Negative Base, Adding Two Powers – Long way/Short way

MAT / Understanding Exponents / Topic 4 / Scientific Notation for Large Numbers; Scientific Notation for Small Numbers; Examples; Practice Questions

Chapter 4: Working with Signed Numbers

Lesson 4.1: Adding and Subtracting with Negative Numbers

- To add and subtract signed numbers
- To use number sense when working with signed numbers
- To predict the sign of a sum or difference involving negative and positive numbers

MAT / Understanding Integers / Topic 2 / Writing Positive Integers; Word Problems; Practice Questions

MAT / Understanding Integers / Topic 3 / Example Questions; Going for a Walk; Word Problems; Practice Questions

Lesson 4.2: Multiplying and Dividing with Negative Numbers

- To multiply and divide with signed numbers
- To predict the sign of a product or quotient involving signed numbers
- To develop number sense with signed numbers

MAT / Understanding Integers / Topic 4 / Order in Multiplication; Summary #1…Signs; Negative X Negative…Note Patterns; Summary #2…Signs; Examples Questions; Word Problems; Practice Questions

MAT / Understanding Integers / Topic 5 / Division to Multiplication; The Division Table; The Inverse of Multiplication; Summary #1, #1…Signs; Examples Questions; Word Problems; Practice

Lesson 4.3: Plotting Points in Four Quadrants

- To create and interpret four-quadrant graphs

- To use the distinguishing characteristics of points in the four quadrants and on the two axes to analyze graphs

MAT / Understanding Graphing / Topic 3 / Ordered Pairs: Axis, Quadrants and Cartesian Plane, Find a Point, Order is Important, Examples

- To think more flexibly about operations with signed numbers

Lesson 4.4: Finding Distances

- To understand a variety of ways to compare lengths of line segments on a graph

MAT / Understanding Graphing / Topic 6 / What is a Linear Relations?; Graphs of Linear Relations; The Taxi Example; The Elastic Example; Lightening Example; Line of Best Fit; Practice Questions

- To apply the Pythagorean theorem or distance formula when finding lengths of line segments of a graph
- To describe how the Pythagorean theorem and distance formula are related

MAT / Understanding Exponents / Topic 6 / The Right Triangle; Math or Magic?; Squares on a Grid; Squares on the Sides of a Right Triangle; The Pythagorean Theorem; Examples Questions; Practice Questions

Lesson 4.5: Negative Numbers as Exponents

- To relate negative exponents to both multiplication by fractions and repeated division
- To evaluate simple expressions with negative exponents
- To apply laws of exponents to expressions with negative exponents
- To write numbers in scientific notation with negative exponents

MAT / Understanding Exponents / Topic 3 / In This Topic; Multiplication of Powers with the Same Base; Division of Powers with the Same Base; Raising a Power to an Exponent; Raising a Product to an Exponent; A Power with Exponent 0; A Power with a NEGATIVE Exponent; Summary of Exponent Rules; Powers with Rational Bases; Examples Questions; Practice Questions; Topic Test

Chapter 5: Looking at Linear Relations

Lesson 5.1: Understanding and Describing Rates

- To develop strategies for describing rates
- To recognize rates presented in symbolic and graphic forms
- To develop strategies for comparing proportional and non-proportional relationships
- To represent proportional and non-proportional relationships in words, tables, symbols, and graphs
- To get hands-on experience with collecting data
- To determine the nature of the relationship between two variables

MAT / Understanding Percent / Topic 4 / Ratios in the News; What is a Ratio? Examples 1 through 4; Writing Ratios: Concept, Examples 1 through 4; What is Proportion?; Proportions – Examples 1 through 7; Ratios and Your Body; Practice Questions; Topic Test

Lesson 5.2: Speed and the Slope Connection

- To relate speed to the slope of a graph of distance over time
- To develop an understanding of negative slope and negative constant term
- To gain skill in recognizing proportional and non-proportional relationships between distance and time
- To recognize linear relationships from different forms: symbolic rules, graphs, patterns, and tables
- To easily convert one form of representation into another

MAT / Understanding Graphing / Topic 6 / What is a Linear Relations?; Graphs of Linear Relations; The Taxi Example; The Elastic Example; Lightening Example; Line of Best Fit; Practice Questions
MAT / Understanding Graphing / Topic 7 / Introduction to Slope; Slope: Order, Steepness Factor;

Lesson 5.3: Recognizing Linear Relationships

- To recognize linear relationships in a variety of representations: symbolic rules, graphs, visual patterns, and tables
- To translate from one representation to another
- To recognize the symbolic representation of a linear relationship in more than one form

MAT / Understanding Graphing / Topic 6 / What is a Linear Relations?; Graphs of Linear Relations; The Taxi Example; The Elastic Example; Lightening Example; Line of Best Fit; Practice Questions

- To explain the connection between the constant difference, the slope of the graph, and the symbolic representation of the relationship (the *a* in y = ax +b)
- To determine *b* in the rule y = ax + b from a graph (the y-intercept, the intersection with the vertical axis)

MAT / Understanding Graphing / Topic 7 / Introduction to Slope; Slope: Order, Steepness Factor; Definition; Introductory Examples; Formula; Parallel Lines; Perpendicular Lines; Positive and Negative Slopes; Special Slopes; Sketch Line Given Point and Slope; Slopes of Parallel Lines; Slopes of Perpendicular Lines; Practice Questions

Lesson 5.4: Tricks of the Trade

- To learn that in a table showing the relationship between two variables, if the change in both variables in constant, then the two are linearly related; that if the change in *one* quantity is constant but the change in the other is *not* constant, then the quantities are not linearly related
- To solidify understanding of the connection between the constant difference, the slope of the graph, and the symbolic representation of the relationship
- To apply the concepts of a negative slope and a negative constant term
- To learn how to determine *b* in the rule y = ax+b from a graph (the y-intercept, the intersection with the vertical axis), and a by checking the output of the rule when the input is 0

MAT / Understanding Graphing / Topic 8 / Graph y = mx + b; Slop y-intercept Equation; Slope – Point Form of the Equation; Parallel and Perpendicular Lines; Slope-Point Form of the Equation; Example to Summarize; Word Problems/ Applications: The Taxi – Cases 1,2, Find Equation, Graph Equation, Interpret Equation, Summary; The Walker; Basketball; Food; Point of Intersection of Two Lines; Examples 1,2; Practice Questions

Chapter 6: Solving Equations

Lesson 6.1: Two Solution Methods Revisited

- To solve linear equations using guess-check-and-improve or backtracking strategies
- To use variables to write algebraic expressions for a variety of situations and numerical relationships

MAT / Understanding Graphing / Topic 8 / Graph y = mx + b; Slop y-intercept Equation; Slope – Point Form of the Equation; Parallel and Perpendicular Lines; Slope-Point Form of the Equation; Example to Summarize; Word Problems/ Applications: The Taxi – Cases 1,2, Find Equation, Graph Equation, Interpret Equation, Summary; The Walker; Basketball; Food; Point of Intersection of Two Lines; Examples 1,2; Practice Questions

Lesson 6.2: A Model for Solving Equations

- To introduce the balance model for solving equations
- To develop strategies for solving equations through operations with the balance model
- To extend the techniques of solving balance puzzles to equations-solving techniques that are independent of the model
- To provide experience in assigning variables and translating problems into algebraic sentences

MAT / Understanding Equations / Topic 1 / Definitions; The Meaning of "Solving an Equations"; Solve by Systematic Trials; Recall Tile Concepts; Balances…An Introduction; Tiles, Balances and Equations; Practice Questions

MAT / Understanding Equations / Topic 2 / Concepts – Examples with Tiles; Concepts – Examples without Tiles; Practice Questions

MAT / Understanding Equations / Topic 3 / Concepts – Examples with Tiles; Concepts – Examples without Tiles; Practice Questions

Lesson 6.3: Thinking with Symbols

- To solve equations without using the balance puzzle model
- To express a balance puzzle as an algebraic equation
- To represent an equation as a balance puzzle
- To solve simple word problems by writing and solving equations

MAT / Understanding Equations / Topic 4 / Our Problem; Concepts – Examples with Tiles; Concepts – Examples without Tiles: Examples 1 through 5; Summary; Literal Equations: What are they? How do you solve them? Why solve literal equations? A perimeter example, A temperature example; Practice Questions

MAT / Understanding Equations / Topic 5 / Words and Symbols; The Translation Machine: Examples 1,2,3,4; The Trick Machine: Instructions, The Machine, Explanation with Pictures, Explanation with Symbols; Area of Walls; Chemistry; Pool Puzzler – The First Problem; Perimeter Problem with Diagram; Money Problem with Chart; Age Problem with Chart; Buying Cds; Meat Mixture; Coffee Mixture; Rate of Work; Summary: Problem Solving Using Equations; Practice Questions

Lesson 6.4: Simplifying Equations

- To add and subtract parenthetical expressions
- To solve equations by adding, multiplying, or dividing both sides by the same quantity
- To describe variable quantities that appear in typical word problems, including those that refer to signed numbers

MAT / Understanding Equations / Topic 4 / Our Problem; Concepts – Examples with Tiles; Concepts – Examples without Tiles: Examples 1 through 5; Summary; Literal Equations: What are they? How do you solve them? Why solve literal equations? A perimeter example, A temperature example; Practice Questions

MAT / Understanding Equations / Topic 5 / Words and Symbols; The Translation Machine: Examples 1,2,3,4; The Trick Machine: Instructions, The Machine, Explanation with Pictures, Explanation with Symbols; Area of Walls; Chemistry; Pool Puzzler – The First Problem; Perimeter Problem with Diagram; Money Problem with Chart; Age Problem with Chart; Buying Cds; Meat Mixture; Coffee Mixture; Rate of Work; Summary: Problem Solving Using Equations; Practice Questions

Lesson 6.5: Using Expressions

- To apply the principles of generating equivalent expressions to solving and creating number puzzles and explaining why the work
- To rewrite complicated linear equations in a form that can easily be graphed
- To write multiple forms of an equation to describe a graph

MAT / Understanding Graphing / Topic 8 / Graph y = mx + b; Slop y-intercept Equation; Slope – Point Form of the Equation; Parallel and Perpendicular Lines; Slope-Point Form of the Equation; Example to Summarize; Word Problems/ Applications: The Taxi – Cases 1,2, Find Equation, Graph

Equation, Interpret Equation, Summary; The Walker; Basketball; Food; Point of Intersection of Two Lines; Examples 1,2; Practice Questions

Chapter 7: Similarity

Lesson 7.1: Are They the Same?

- To identify congruent figures, angles, and segments by matching or measuring
- To identify corresponding sides and angles of similar or congruent polygons
- To identify equivalent ratios
- To test for similarity by identifying corresponding sides with equivalent ratios and equal corresponding angles

MAT / Understanding Measurement and Geometry / Topic 9 / In This Topic; Ratios for Areas and Volumes: Introduction, Area Ratios, Volume Ratios; Practice Questions; Topic Test

Lesson 7.2: Polygon Similarity and Congruence

- To understand that the triangle is the polygon having the least number of sides and that it is a rigid figure
- To know that triangles are congruent if corresponding sides are equal and similar, if corresponding sides are proportional, or if corresponding angles are equal
- To know that equal correspondent sides is not a sufficient condition ofr polygons other than triangles to be congruent
- To know that neither proportional corresponding sides nor equal corresponding angles guarantees similarity in polygons other than triangles

MAT / Understanding Measurement and Geometry / Topic 6 / Angles in Triangles: Exploration, An Explanation, Exterior Angles; Angles in Polygons: Methods 1,2, Exterior Angles in Polygon; Practice Questions

Lesson 7.3: Area and Perimeter

- To recognize that two similar figures are related by two scale factors, on the multiplicative reciprocal of the other
- To understand that the ratio of the perimeters of similar figures is equal to the scale factor
- To understand that the ratio of the areas of similar figures is equal to the square of the scale factor

MAT / Understanding Measurement and Geometry / Topic 9 / In This Topic; Ratios for Areas and Volumes: Introduction, Area Ratios, Volume Ratios; Practice Questions; Topic Test

- To calculate the perimeter of a figure given the perimeter of a similar figure and the scale factor
- To calculate the area of a figure given the area of a similar figure and the scale factor
- To calculate the scale factor of two similar figures if the perimeters of areas of known

MAT / Understanding Measurement and Geometry / Topic 2 / Walk Around a Polygon; Amount of Surface; Problems Section; Practice Questions; Topic Test

Lesson 7.4: Volume and Surface Area of Similar Figures

- To create similar block structures given a particular scale factor
- To understand the relationships among volume, surface area, and scale factor of similar three-dimensional figures

MAT / Understanding Measurement and Geometry / Topic 8 / An Introduction; Toothpicks on Isometric Dot Paper; Orthographic Projections: Introductions; The Cube Tool; Given Solid – Build it; Given Views – Build it; Given Volume – Build it; Given Area – Build it; Practice Questions

- To calculate surface area and volume of one or two similar figures given the scale factor and the area of volume of the other

MAT / Understanding Measurement and Geometry / Topic 2 / Amount of Surface; Problems Section; Practice Questions; Topic Test

- To use the ratio of volumes or surface areas of two similar figures to calculate the scale factor

MAT / Understanding Measurement and Geometry / Topic 9 / In This Topic; Ratios for Areas and Volumes: Introduction, Area Ratios, Volume Ratios; Practice Questions; Topic Test

Chapter 8: Ratio and Proportion

Lesson 8.1: Comparing with Ratios and Rates

- To recognize and express ratios in different situations
- To recognize equivalent ratios
- To compare ratios by converting to common units
- To solve problems involving unit rates

MAT / Understanding Percent / Topic 4 / Ratios in the News; What is a Ratio? Examples 1 through 4; Writing Ratios: Concept, Examples 1 through 4

Lesson 8.2: Using Proportions

- To recognize proportions as pairs of equivalent ratios
- To use equivalent ratios to find the missing part of a proportion
- To set up and use proportions to solve problems
- To use proportions and similar triangles to calculate distance

MAT / Understanding Percent / Topic 4 / What is Proportion?; Proportions – Examples 1 through 7; Ratios and Your Body; Practice Questions; Topic Test

Lesson 8.3: Percentages and Proportions

- To recognize percents as ratios with a common scale of 100
- To recognize percents as a convenient way to compare ratios
- To solve percent problems using proportions

MAT / Understanding Percent / Topic 4 / Ratios in the News; What is a Ratio? Examples 1 through 4; Writing Ratios: Concept, Examples 1 through 4; What is Proportion?; Proportions – Examples 1 through 7; Ratios and Your Body; Practice Questions; Topic Test
MAT / Understanding Percent / Topic 6 / In This topic; **Understanding Percent / Topic 6 /** Steps in Solving Problems; Finding the Whole: Recall Proportion, School Population: Method 1 – Using Proportions, School Population: Method 2, Grades Problem: Method 1 – Using Proportions, Grades Problem: Method 2, Bike Sale: Method 1 – Using Proportions, Bike Sale: Method 2

- To calculate percent increase and decrease

MAT / Understanding Percent / Topic 3 / Percent Change: Percent Increase, Percent Decrease, Percent Increase or Decrease

Lesson 8.4: Interpreting and Applying Proportions

- To interpret comparisons that use ratios and percentages
- To estimate large quantities based on a small sample size

Chapter 9: Interpreting Graphs

Lesson 9.1: Graphing Change over Time

- To describe a graph for a situation and to describe a situation that a graph might represent
- To understand that constant change is represented by a straight-line graph

- To use slopes to compare growth, analyze speed, and determine direction of motion
- To predict values from graphs of non-constant growth

MAT / Understanding Graphing / Topic 7 / Introduction to Slope; Slope: Order, Steepness Factor; Definition; Introductory Examples; Formula; Parallel Lines; Perpendicular Lines; Positive and Negative Slopes; Special Slopes; Sketch Line Given Point and Slope; Slopes of Parallel Lines; Slopes of Perpendicular Lines; Practice Questions

Lesson 9.2: Graphs and Equations

- To make a table of values and draw a graph for a given relationship
- To interpret graphs
- To recognize graphs that are in the same family

MAT / Understanding Graphing / Topic 2 / Presenting Data: Stem-and-Leaf Diagram; Bar Graph; Histogram; Line Graph; Circle or Pie Graphs; Scatter Plots; Measures of Central Tendency: The Mean Average, The Median Average, The Mode, Summary, Another Example, Adding Data Points

- To predict from graphs of non-constant growth

- To solve problems using quadratic, exponential and inverse relationships

MAT / Understanding Graphing / Topic 9 / Introductory Examples; Definitions; The Role a *a*; The Role of *c*; The Role of *b*; Summary and Pattern; Intercepts of a Quadratic Function; Maximize Cage Area; Maximize Potato Income; Bob's Beach ball; Practice Questions; Topic Test

Lesson 9.3: Repeating Relationships

- To complete a table and make a graph for a periodic relationship
- To interpret repetitive distance-time graphs of walking motions
- To explain deviations in a repetitive pattern
- To use the regularity of a cycle to make predictions

MAT / Understanding Graphing / Topic 1 / Graphs with a Scale: Concept…Distance and Time, Examples 1 through 9; Discrete Data; Continuous Data; Extrapolation; Practice Questions

Chapter 10: Data and Probability

Lesson 10.1: Dependence

- To answer questions about a single random drawing
- To extend the random drawing model to sequential drawings, with and without replacement
- To determine experimental probability

MAT / Understanding Probability / Topic 8 / In This Topic; What are They?; Examples 1,2; Probability: 1. Keep the First Ball, 2. Keep the First Tile, 3. Plant the First Flower; Patterns and Summary; Practice Questions; Topic Test

Lesson 10.2: Applying Probability

- To understand that a fair game is one in which all participants have the same chance of winning
- To determine from the probabilities of the outcomes and the scoring system whether a game is fair
- To assign points to game outcomes so that the games are fair
- To rewrite the rules of an unfair game so that the game is fair

Lesson 10.3: Sampling and Making Predictions

- To predict the characteristics of an entire population from a representative sample
- To appreciate some of the limitations inherent in using small or restricted samples
- To analyze a representative population for a survey

MAT / Understanding Graphing / Topic 2 / Data…What is it?; An Introduction – Examples of Data 1 through 6; Statistics – What is it?; Collecting Data: Throw a Die, Throw 2 Dice, Voting, Primary Data, Secondary Data – Gathering Methods

Lesson 10.4: Statistical Tools and Graphs

- To interpret line graphs, pie charts, histograms, stem-and-leaf plots, bar graphs, and box-and-whisker plots

MAT / Understanding Graphing / Topic 2 / Presenting Data: Stem-and-Leaf Diagram; Bar Graph; Histogram; Line Graph; Circle or Pie Graphs; Scatter Plots; Box and Whisker Plots

- To describe the information that is included and the information that is left out of any display of a given data set
- To choose an appropriate way to display various sets of data
- To construct a display that appropriately depicts a given data set

MAT / Understanding Graphing / Topic 1 / Graphs without a Scale: Concept…Age and Weight: Examples 1 through 12; Graphs with a Scale: Concept…Distance and Time, Examples 1 through 9; Discrete Data; Continuous Data; Extrapolation; Practice Questions

MAT / Understanding Graphing / Topic 2 / Data…What is it?; An Introduction – Examples of Data 1 through 6; Collecting Data: Throw a Die, Throw 2 Dice, Voting, Primary Data, Secondary Data – Gathering Methods; Presenting Data: Stem-and-Leaf Diagram; Bar Graph; Histogram; Line Graph; Circle or Pie Graphs; Scatter Plots; Measures of Central Tendency: The Mean Average, The Median Average, The Mode, Summary, Another Example, Adding Data Points