

CORRELATION
of
the 10 UNDERSTANDING MATH PLUS PROGRAMS & UNDERSTANDING NUMERATION PLUS PROGRAMS
with
South Carolina MATHEMATICS CURRICULUM STANDARDS
Grades 3–5: Data Analysis and Probability

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

STANDARD I. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

EXPECTATION A. Design investigations to address a question and consider how data-collection methods affect the nature of the data set.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Write questions about objects and events that can be investigated by collecting data.	MAT+ Understanding Graphing Topic 2. Statistics 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	1. Develop strategies for administering a simple survey to obtain unbiased results.		1. Compare data sets collected in different ways to address a given question and then determine how the methods of collection affected the data sets.	MAT+ Understanding Graphing Topic 1. Reading and Sketching Graphing Discrete Data Continuous Data Extrapolation Practice Questions

EXPECTATION B. Collect data using observations, surveys, and experiments.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Collect data using observations.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics Collecting Data Throw a Die Throw 2 Dice Voting	1. Systematically collect data using surveys.		1. Collect data using observations, surveys, and experiments.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics Collecting Data Throw a Die Throw 2 Dice Voting Primary Data - Gathering Methods Secondary Data - Gathering Methods

EXPECTATION C. Represent data using tables and graphs such as line plots, bar graphs, and line graphs.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
<p>*1. Construct line (dot) plots for data sets.</p> <p>*2. Read and interpret information from tables, pictographs, bar graphs, and line (dot) plots.</p>	<p>MAT+ Understanding Graphing Topic 2. Statistics In This Topic An Introduction Tally Chart Pictograph #1 Pictograph #2 Bar Graph #1 Bar Graph #2 Line Graph #1 Line Graph #2</p>	<p>*1. Construct bar graphs for collected data sets with scale increments of one or greater.</p>	<p>MAT+ Understanding Graphing Topic 2. Statistics Presenting Data Bar Graph Example 1... Energy Example 2... Lengths of Rivers</p>	<p>1. Determine appropriate horizontal and vertical scales for data sets and then how to represent zero on a graph.</p>	
		<p>*2. Read and interpret information from tables, line graphs, and bar graphs.</p>	<p>MAT+ Understanding Graphing Topic 2. Statistics In This Topic An Introduction Tally Chart Pictograph #1 Pictograph #2 Bar Graph #1 Bar Graph #2 Line Graph #1 Line Graph #2</p>	<p>*2. Construct and interpret tables and line graphs for data sets from applied situations.</p>	<p>MAT+ Understanding Graphing Topic 2. Statistics Presenting Data Line Graph Example 1... Life Expectancy Example 2... Software Profits</p>
				<p>3. Explain what type of graph may be appropriate for a given data set.</p>	<p>MAT+ Understanding Graphing Topic 2. Statistics Practice Questions</p>

EXPECTATION D. Recognize the differences in representing categorical and numerical data.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Define and give examples of categorical data.	<p>MAT+ <u>Understanding Graphing</u> Topic 2. Statistics A Summary: Examples Statistics... What is it?</p>	1. Describe types of graphs that may be used to represent categorical data.	<p>MAT+ <u>Understanding Graphing</u> 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</p>	*1. Compare the types of graphs that may be used for categorical data with the types that may be used for numerical data.	<p>MAT+ <u>Understanding Graphing</u> Topic 2. Statistics 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 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>

		2. Describe types of graphs that may be used to represent numerical data.	MAT+ <u>Understanding Graphing</u> Topic 1. Reading and Sketching Graphs Graphs with a Scale Concept... Distance and Time Example 1... Wins in Soccer Example 2... Books and Days Example 3... The Travel Log Example 4... Winning in Baseball Example 5... Cost and Distance Example 6... Ivan's Ride to the Party Example 7... The Cyclists Example 8... Baseball Example 9... The Beach Example 10... Rate Example 11... Villeneuve Example 12... Volume and Time Example 13... The River Problem Example 14... Angelo's Walk		
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STANDARD II. Select and use appropriate statistical methods to analyze data.

EXPECTATION A. Describe the shape and important features of a set of data and compare related data sets, with an emphasis on how the data are distributed.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Describe the shape of a line (dot) plot or bar graph of a numerical data set (i.e., where the data are concentrated, values for which there are no data, the range, and data points with unusual values).	<p>MAT+ <u>Understanding Graphing</u> Topic 2. Statistics 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</p>	1. Compare the shapes of graphs of two different numerical data sets that address the same question for different populations.		*1. Describe the features of a data set, including measures of center, range, and outliers.	

EXPECTATION B. Use measures of center, focusing on the median, and understand what each does and does not indicate about the data set.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
*1. Find the median and mode of a data set and explain what each indicates about the data set.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics Measures of Central Tendency Introduction The Median average The Mode	1. Use the mode to describe a set of categorical data.		*1. Find the mean, median, and mode of a numerical data set and explain what each indicates about the data set.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics Measures of Central Tendency Introduction The Mean Average The Median average The Mode Summary Another Example Adding Data Points

EXPECTATION C. Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Compare the tabular, line (dot) plot, and bar graph representations of a given data set and explain the benefits of each.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics <i>All Sections</i>	1. Compare the line graph and bar graph representations of a given data set and explain the benefits of each.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics <i>All Sections</i>	*1. Compare the different types of graphs (bar graph, line [dot] plot, line graph and pictograph) to represent a given data set and explain the benefits of each.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics <i>All Sections</i>

STANDARD III. Develop and evaluate inferences and predictions that are based on data.

EXPECTATION A. Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
1. Use line (dot) plots and bar graphs to make conjectures about populations based on data sets.		*1. Use line graphs to make conjectures about populations based on data sets.		1. Make and justify predictions based on data from a variety of applied situations. 2. Consider alternative explanations to the conjectures formed on the basis of presentations of data and then design further studies to test the conjectures.	MAT+ <u>Understanding Graphing</u> Topic 2. Statistics <i>All Sections</i>

STANDARD IV. Understand and apply basic concepts of probability.

EXPECTATION A. Describe events as likely or unlikely and discuss the degree of likelihood using such words as *certain*, *equally likely*, and *impossible*.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
*1. Identify common events as likely, unlikely, certain, or impossible.	MAT+ <u>Understanding Probability</u> Topic 1. What's Possible? The Language of Chance Possible Outcomes... What Are They? Possible Outcomes... Examples 1. Coin 2. Picking One Ball 3. Picking Two Balls 4. Eye Test 5. Coin and Die 6. Travel 7. Rabbits 8. Forest	1. Record the outcomes of a multiple-stage event (e.g., tossing two coins), explain the method used, and determine whether the outcomes are equally likely.	MAT+ <u>Understanding Probability</u> Topic 2. What's the Chance? Probability What is it? Introduction 1 Introduction 2 Probability Examples 1. Coin Toss		

EXPECTATION B. Predict the probability of outcomes of simple experiments and test the predictions.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
<p>*1. Record the possible outcomes for a simple event (e.g., tossing a coin) and systematically keep track of the outcomes when the event is repeated many times.</p>	<p>MAT+ <u>Understanding Probability</u> Topic 2. What's the Chance? Probability What is it? Introduction 1 Introduction 2 Probability Examples 1. Coin Toss</p>	<p>1. Using models, determine the probability of a given simple event. 2. Construct tree diagrams to list the possible outcomes for multiple-stage events (e.g., tossing two coins).</p>	<p>MAT+ <u>Understanding Probability</u> Topic 2. What's the Chance? 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</p>	<p>*1. Determine the probability of a simple single-stage and a two-stage event.</p>	<p>MAT+ <u>Understanding Probability</u> Topic 3. Dice Probabilities Roll One Die Your Experiment Computer's Experiment Theoretical Experiment Patterns Summary Roll Two Dice Your Experiment Computer's Experiment</p>
				<p>2. Create a problem statement involving probability based on information from a given problem situation. (Students will not be required to solve the problem created.)</p>	

EXPECTATION C. Understand that the measure of the likelihood of an event can be represented by a number from 0 to 1.

3	Understanding Math PLUS and/or Understanding Numerations PLUS	4	Understanding Math PLUS and/or Understanding Numerations PLUS	5	Understanding Math PLUS and/or Understanding Numerations PLUS
		*1. Give examples of events for which the probability is a fraction between 0 and 1 inclusive and explain.		1. Understand when the probability of an event is 0 or 1 and give examples in each case.	
				2. Explain why the sum of the probabilities of the outcomes of an experiment must equal 1.	