

**CORRELATION**  
of  
**the 10 UNDERSTANDING MATH PLUS PROGRAMS & UNDERSTANDING NUMERATION PLUS PROGRAMS**  
with  
**South Carolina MATHEMATICS CURRICULUM STANDARDS**

**Grades 6 to 8 DATA ANALYSIS AND PROBABILITY**

**Note: a.** The Understanding Math PLUS series of programs consist of 10 programs written for Kindergarten to 10<sup>th</sup> 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 3<sup>rd</sup> grade.

Level	Upper Range of Number
<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 4<sup>th</sup> to 10<sup>th</sup> 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)

## Grades 6–8: Data Analysis and Probability

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

**EXPECTATION A.** Formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8
1. Given a problem situation involving one population, collect, analyze, and interpret data.	<b>MAT+ <u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Data...What is it? Examples of Data 1 through 6 Summary	1. Given a problem situation involving two populations, collect, analyze, and interpret data.	<b>MAT+ <u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Collecting Data Throw a Die Throw Two Dice Voting Primary Data-Gathering Methods Secondary Data- Gathering Methods	

**EXPECTATION B.** Select, create, and use appropriate graphical representations of data, including histograms, box plots, and scatterplots.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Organize and display data in a variety of ways including frequency tables, histograms, and stem-and-leaf plots.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Presenting Data Stem-and-Leaf Diagram Bar Graph Histogram	1. Organize, display, and interpret data in a variety of ways including box-and-whisker plots.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Box and Whisker Plots Concepts Examples 1,2	1. Use a matrix to organize and describe data.	
		2. Construct circle graphs and interpret the meaning.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Circle or Pie Graphs Examples 1,2	2. Create and use a scatterplot and estimate its line of fit.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Scatterplot Examples 1,2
				3. Explain what type of graph would be appropriate for a given data set.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> <i>All Sections</i>

**STANDARD II. Select and use appropriate statistical methods to analyze data.**

**EXPECTATION A. Find, use, and interpret measures of center and spread, including mean and interquartile range.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Create and solve problems involving the mean, median, mode, and range of a set of data.	<b>MAT+</b> <u><b>Understanding Graphing</b></u> <b>Topic 2. Statistics</b> Measures of Central Tendency Introduction The Mean Average The Median Average The Mode Summary Another Example	1. Compute, describe, and interpret the interquartile range.		1. Determine which measure of center is the most appropriate for a given situation and explain the reasoning used.	

**EXPECTATION B. Discuss and understand the correspondence between data sets and their graphical representations, especially histograms, stem-and-leaf plots, box plots, and scatterplots.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Interpret histograms and stem-and-leaf plots.  *2. Describe the relationship between a data set and its corresponding histogram or stem-and-leaf plot.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Stem-and-Leaf Diagram Examples 1,2 Histogram Examples 1,2	*1. Describe the relationship between a data set and its corresponding box plot or circle graph.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Circle or Pie Graphs Examples 1,2	1. Explain how different graphical representations of data can bias the interpretation of these data.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Misleading Statistics Examples 1,2

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

**EXPECTATION A. Use observations about differences between two or more samples to make conjectures about the populations from which the samples were taken.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Analyze and list the differences between two data sets.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Data...What is it? Examples of Data 1 through 6 Summary	1. Make inferences and predictions based on the analysis of sample data.	<b>MAT+</b> <b><u>Understanding Graphing</u></b> <b>Topic 2. Statistics</b> Data...What is it? Examples of Data 1 through 6 Summary		

**EXPECTATION B.** Make conjectures about possible relationships between two characteristics of a sample on the basis of scatterplots of the data and approximate lines of fit.

6	7	8	Understanding Math PLUS Program & Topic
		*1. Use a scatterplot and its line of fit to determine if a positive relationship, a negative relationship, or no relationship exists between two sets of data and then use them to make predictions.	<b>MAT+ Understanding Graphing</b> <b>Topic 2. Statistics</b> Scatter Plot Example 1... The T-Shirt Tailor Example 2... Matching

**EXPECTATION C.** Use conjectures to formulate new questions and plan new studies to answer them.

6	7	8	Understanding Math PLUS Program & Topic
		1. Formulate a hypothesis and then design and carry out an experiment to test it.	
		2. Formulate new areas of investigation based on the results of prior experiments.	

**STANDARD IV. Understand and apply basic concepts of probability.**

**EXPECTATION A. Understand and use appropriate terminology to describe complementary and mutually exclusive events.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
1. Identify and describe complementary events.		1. Identify and describe mutually exclusive events.			

**EXPECTATION B.** Use proportionality and a basic understanding of probability to make and test conjectures about the results of experiments and simulations.

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
<p>1. Create a sample space for one- or two-stage events and represent it in the form of a list, chart, picture, or tree diagram.</p> <p>*2. From a given sample space, determine, and interpret the probability of an event.</p>	<p><b>MAT+</b> <b><u>Understanding Probability</u></b> <b>Topic 1. What's Possible?</b> <i>All Sections</i></p> <p><b>Topic 2. What's the Chance?</b> Probability What is it? Introductions 1,2 Examples 1 through 9 The Probability Scale</p>	<p>1. Investigate and describe the difference between the probability of an event found through simulation and the theoretical probability of that same event.</p>	<p><b>MAT+</b> <b><u>Understanding Probability</u></b> <b>Topic 3. Dice Probability</b> Role One Die Your Experiment Computer's Experiment Theoretical Experiment Summary Role Two Dice Your Experiment Computer's Experiment Theoretical Experiment Summary</p>	<p>1. Make inferences and convincing arguments based on analysis of theoretical or experimental probability.</p>	<p><b>MAT+</b> <b><u>Understanding Probability</u></b> <b>Topic 2. What's the Chance?</b> Experimental Probability Introduction Examples 1,2</p>

**EXPECTATION C. Compute probabilities for simple compound events, using such methods as organized lists, tree diagrams, and area models.**

6	Understanding Math PLUS Program & Topic	7	Understanding Math PLUS Program & Topic	8	Understanding Math PLUS Program & Topic
<p>1. Making a tree diagram or using models, determine the number of possible outcomes in two-stage events.</p>	<p><b>MAT+ Understanding Probability</b>  <b>Topic 2. What's the Chance?</b>            Probability            What is it?            Introductions 1,2            Examples 1 through 9</p>	<p>1. Using the fundamental counting principle or other techniques, determine the number of possible outcomes in a multistage event.</p> <p>*2. Compute the probability of two independent events.</p>	<p><b>MAT+ Understanding Probability</b>  <b>Topic 7. Independent Events</b>            In This Topic            What Are They?            Examples            1. Toss Two Coins            2. Replacing Marbles            Probability            1. Coin and Die            2. Balls            3. Letter Tiles            Patterns and Summary            1. Summary            2. Spinner            3. Cards</p>	<p>*1. Compute the probability of two dependent events.</p>	<p><b>MAT+ Understanding Probability</b>  <b>Topic 8 Dependent Events</b>            In This Topic            What Are They?            Independent Events            Dependent Events            Examples            1. Keep the First Marble            2. Choose the Flowers            Probability            1. Keep the First Ball            2. Keep the First Tile            3. Plant the First Flower            Patterns and Summary            1. Summary            2. Money            3. Socks            4. Names</p>
				<p>2. Determine the odds of a given event.</p>	