Mathematics: New York State Core Curriculum (2005) and the NCTM Curriculum Focal Points
Statistics and Probability Alignment by Grade Level (Pre-K-8)

NCTM Curriculum Focal Points	NY Mathematics Core Curriculum 2005
PreKindergarten	
Connections to the Focal Points ***Data Analysis***: Children learn the foundations of data analysis by using objects' attributes that they have identified in relation to geometry and measurement (e.g., size, quantity, orientation, number of sides or vertices, color) for various purposes, such as describing, sorting, or comparing. For example, children sort geometric figures by shape, compare objects by weight ("heavier," "lighter"), or describe sets of objects by the number of objects in each set.	PK.S.1 Data: Sort and organize objects by one attribute (e.g., color, size, or shape) PK.S.2 Data: Use physical objects to make graphs PK.S.3 Data: Count and compare groups formed (quantify groups formed) PK.S.4 Data: Describe the attributes of objects
Kindergarten	
Connections to the Focal Points ***Data Analysis:*** Children sort objects and use one or more attributes to solve problems. For example, they might sort solids that roll easily from those that do not. Or they might collect data and use counting to answer such questions as, "What is our favorite snack?" They re-sort objects by using new attributes (e.g., after sorting solids according to which ones roll, they might re-sort the solids according to which ones stack easily).	K.S.1 Data: Gather data in response to questions posed by the teacher and students K.S.2 Data: Help to make simple pictographs for quantities up to 10, where one picture represents 1 K.S.3 Data: Sort and organize objects by two attributes (e.g., color, size, or shape) K.S.4 Data: Represent data using manipulatives K.S.5 Data: Identify more, less, and same amounts from pictographs or concrete models
Grade 1	
Connections to the Focal Points ***Measurement*** and ***Data Analysis:*** Children strengthen their sense of number by solving problems involving measurements and data. Measuring by laying multiple copies of a unit end to end and then counting the units by using groups of tens and ones supports children's understanding of number lines and number relationships. Representing measurements and discrete data in picture and bar graphs involves counting and comparisons that provide another meaningful connection to number relationships.	1.S.1 Data: Pose questions about themselves and their surroundings 1.S.2 Data: Collect and record data related to a question 1.S.3 Data: Display data in simple pictographs for quantities up to 20 with units of one 1.S.4 Data: Display data in bar graphs using concrete objects with intervals of one 1.S.5 Data: Use Venn diagrams to sort and describe data 1.S.6 Data: Interpret data in terms of the words: most, least, greater than, less than, or equal to 1.S.7 Data: Answer simple questions related to data displayed in pictographs (e.g., category with most, how many more in a category compared to another, how many all together in two categories) 1.S.8 Prediction: Discuss conclusions and make predictions in terms of the words likely and unlikely 1.S.9 Prediction: Construct a question that can be answered by using information from a graph

Mathematics: New York State Core Curriculum (2005) and the NCTM Curriculum Focal Points
Statistics and Probability Alignment by Grade Level (Pre-K-8)

NCTM Curriculum Focal Points	NY Mathematics Core Curriculum 2005
Grade 2	
	2.S.1 Data: Formulate questions about themselves and their surroundings 2.S.2 Data: Collect and record data (using tallies) related to the question 2.S.3 Data: Display data in pictographs and bar graphs using concrete objects or a representation of the object 2.S.4 Data: Compare and interpret data in terms of describing quantity (similarity or differences) 2.S.5 Prediction: Discuss conclusions and make predictions from graphs
Grade 3	
Connections to the Focal Points ***Data Analysis:*** Addition, subtraction, multiplication, and division of whole numbers come into play as students construct and analyze frequency tables, bar graphs, picture graphs, and line plots and use them to solve problems.	3.S.1 Data: Formulate questions about themselves and their surroundings 3.S.2 Data: Collect data using observation and surveys, and record appropriately 3.S.3 Data: Construct a frequency table to represent a collection of data 3.S.4 Data: Identify the parts of pictographs and bar graphs 3.S.5 Data: Display data in pictographs and bar graphs 3.S.6 Data: State the relationships between pictographs and bar graphs 3.S.7 Data: Read and interpret data in bar graphs and pictographs 3.S.8 Prediction: Formulate conclusions and make predictions from graphs
Grade 4	
Connections to the Focal Points ***Data Analysis:*** Students continue to use tools from grade 3, solving problems by making frequency tables, bar graphs, picture graphs, and line plots. They apply their understanding of place value to develop and use stem-and-leaf plots.	4.S.1 Data: Design investigations to address a question from given data 4.S.2 Data: Collect data using observations, surveys, and experiments and record appropriately 4.S.3 Data: Represent data using tables, bar graphs, and pictographs 4.S.4 Data: Read and interpret line graphs 4.S.5 Prediction: Develop and make predictions that are based on data 4.S.6 Prediction: Formulate conclusions and make predictions from graphs

Mathematics: New York State Core Curriculum (2005) and the NCTM Curriculum Focal Points
Statistics and Probability Alignment by Grade Level (Pre-K-8)

NCTM Curriculum Focal Points	NY Mathematics Core Curriculum 2005
Grade 5	
. **Connections to the Focal Points** ***Data Analysis:*** Students apply their understanding of whole numbers, fractions, and decimals as they construct and analyze double-bar and line graphs and use ordered pairs on coordinate grids.	5.S.1 Data: Collect and record data from a variety of sources (e.g., newspapers, magazines, polls, charts, and surveys) 5.S.2 Data: Display data in a line graph to show an increase or decrease over time 5.S.3 Data: Calculate the mean for a given set of data and use to describe a set of data 5.S.4 Prediction: Formulate conclusions and make predictions from graphs 5.S.5 Probability: List the possible outcomes for a single-event experiment 5.S.6 Probability: Record experiment results using fractions/ratios 5.S.7 Probability: Create a sample space and determine the probability of a single event, given a simple experiment (e.g., rolling a number cube)
Grade 6	
	6.S.1 Data: Develop the concept of sampling when collecting data from a population and decide the best method to collect data for a particular question 6.S.2 Data: Record data in a frequency table 6.S.3 Data: Construct Venn diagrams to sort data 6.S.4 Data: Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph) 6.S.5 Data: Determine the mean, mode and median for a given set of data 6.S.6 Data: Determine the range for a given set of data 6.S.7 Data: Read and interpret graphs 6.S.8 Prediction: Justify predictions made from data 6.S.9 Probability: List possible outcomes for compound events 6.S.10 Probability: Determine the probability of dependent events 6.S.11 Probability: Determine the number of possible outcomes for a compound event by using the fundamental counting principle and use this to determine the probabilities of events when the outcomes have equal probability

Mathematics: New York State Core Curriculum (2005) and the NCTM Curriculum Focal Points
Statistics and Probability Alignment by Grade Level (Pre-K-8)

NCTM Curriculum Focal Points	NY Mathematics Core Curriculum 2005
Grade 7	
Connections to the Focal Points ***Data Analysis:*** Students use proportions to make estimates relating to a population on the basis of a sample. They apply percentages to make and interpret histograms and circle graphs. ***Probability:*** Students understand that when all outcomes of an experiment are equally likely, the theoretical probability of an event is the fraction of outcomes in which the event occurs. Students use theoretical probability and proportions to make approximate predictions.	7.S.1 Data: Identify and collect data using a variety of methods 7.S.2 Data: Display data in a circle graph 7.S.3 Data: Convert raw data into double bar graphs and double line graphs 7.S.4 Data: Calculate the range for a given set of data 7.S.5 Data: Select the appropriate measure of central tendency 7.S.6 Data: Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs or circle graph) 7.S.7 Prediction: Identify and explain misleading statistics and graphs 7.S.8 Probability: Interpret data to provide the basis for predictions and to establish experimental probabilities 7.S.9 Probability: Determine the validity of sampling methods to predict outcomes 7.S.10 Probability: Predict the outcome of an experiment 7.S.11 Probability: Design and conduct an experiment to test predictions 7.S.12 Probability: Compare actual results to predicted results
Grade 8	
Data Analysis and Number and Operations and Algebra: **Analyzing and summarizing data sets** Students use descriptive statistics, including mean, median, and range, to summarize and compare data sets, and they organize and display data to pose and answer questions. They compare the information provided by the mean and the median and investigate the different effects that changes in data values have on these measures of center. They understand that a measure of center alone does not thoroughly describe a data set because very different data sets can share the same measure of center. Students select the mean or the median as the appropriate measure of center for a given purpose. **Connections to the Focal Points** ***Data Analysis***: Building on their work in previous grades to organize and display data to pose and answer questions, students now see numerical data as an aggregate, which they can often summarize with one or several numbers. In addition to the median, students determine the 25th and 75th percentiles (1st and 3rd quartiles) to obtain information about the spread of data. They may use box-and-whisker plots to convey this information. Students make scatterplots to display bivariate data, and they informally estimate lines of best fit to make and test conjectures.	