M3.E Data Analysis and Probability

M3.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M3.E.1.1	Answer questions based on data shown on tables, charts, bar graphs or pictographs. ***Reference: 2.6.3.B, 2.7.3.D, 2.11.3.B***	**M3.E.1.1.1**	Analyze data shown on tables, charts, bar graphs or pictographs using the concepts of largest, smallest, most often, least often and middle.
		M3.E.1.1.2	Describe, interpret and/or answer questions based on data shown in tables, charts, bar graphs and pictographs.

M3.E Data Analysis and Probability

M3.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M3.E.1.2	Organize or display data using tables, charts, bar graphs or pictographs. ***Reference: 2.6.3.A, 2.7.3.C***	**M3.E.1.2.1**	Graph data or complete a graph given the data (bar graph or pictograph – grid is provided).
		M3.E.1.2.2	Translate information from one type of display to another (e.g., convert tally chart to bar graph). Limit to tally charts, bar graphs, tables and pictographs.

M3.E Data Analysis and Probability

M3.E.2 Select and/or use appropriate statistical methods to analyze data.

Not assessed at Grade 3.

M3.E Data Analysis and Probability

M3.E.3 Understand and/or apply basic concepts of probability or outcomes.

M3.E.3.1	Predict and/or measure the likelihood of events. ***Reference: 2.7.3.A***	**M3.E.3.1.1**	Make a prediction based on data or chance.
		M3.E.3.1.2	Determine the likelihood of an event (more/most likely, less/least likely, equally likely or impossible).

M5.E Data Analysis and Probability

M5.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M5.E.1.1	Organize, display and/or interpret data using pictographs, tallies, tables, charts, line, bar and circle graphs and Venn diagrams. ***Reference: 2.6.5.A, 2.6.5.C***	**M5.E.1.1.1**	Display and/or interpret data shown in tallies, tables, charts, pictographs, bar graphs, line graphs and circle graphs using a title, appropriate scale, and labels. • Circle graphs for open-ended items must show a center point and tic marks (circle graph data must be based on 100 – percents are given). • Venn diagram – *interpret* data with a maximum of 3 overlapping categories. • Venn diagram – *display* data with a maximum of 10 elements and 2 overlapping categories (diagram of circles provided for open-ended items). • A grid will be provided to display data on bar graphs or line graphs.

M5.E Data Analysis and Probability

M5.E.2 Select and/or use appropriate statistical methods to analyze data.

M5.E.2.1	Describe data sets using mean, median, mode and/or range. ***Reference: 2.6.5.B***	**M5.E.2.1.1**	Determine the mean/average (answer is a whole number), median (answer is a whole number or average of 2 numbers) and range of data (up to 10 numbers).
		M5.E.2.1.2	Identify the mode in a set of data (up to 10 numbers).

M5.E Data Analysis and Probability

M5.E.3 Understand and/or apply basic concepts of probability or outcomes.

M5.E.3.1	Predict or determine all possible combinations, outcomes and/or calculate the probability of a simple event. ***Reference: 2.7.5.E, 2.7.5.H, 2.7.5.J***	**M5.E.3.1.1**	Predict or determine why some outcomes are certain, more likely, less likely, equally likely, or impossible (information should be represented by pictographs, circle graphs, bar graphs, charts and/or tables).
		M5.E.3.1.2	Determine the probability of an outcome (e.g., a coin toss, a roll of a number cube) and express as a fraction without reduction.
		M5.E.3.1.3	Find all possible combinations using a maximum of 18 total arrangements.

M8.E Data Analysis and Probability

M8.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M8.E.1.1	Choose, display or interpret data (tables, charts, graphs, etc.). ***Reference: 2.6.5.A, 2.6.8.E, 2.7.8.D***	**M8.E.1.1.1**	Choose the correct representation for a set of data.
		M8.E.1.1.2	Display and/or interpret data shown in bar/double bar graphs, line/double line graphs, circle graphs and histograms. • Use a title, appropriate scale, labels and key where appropriate. • Circle graphs for open-ended items must show a center point and tic marks (protractor not necessary to display data in a circle graph).
		M8.E.1.1.3	Interpret data shown in stem-and-leaf or box-and-whisker plots.

M8.E Data Analysis and Probability
M8.E.2 Select and/or use appropriate statistical methods to analyze data.

M8.E.2.1	Describe, compare and/or contrast different plots of data using measures of central tendency. ***Reference: 2.6.8.A***	**M8.E.2.1.1**	Determine the mean (average), median, mode, range and/or quartiles of a set of data.
		M8.E.2.1.2	Choose which measure of central tendency is appropriate for a given situation.

M8.E Data Analysis and Probability
M8.E.3 Understand and/or apply basic concepts of probability or outcomes.

M8.E.3.1	Calculate the probability of an event. ***Reference: 2.7.8.E***	**M8.E.3.1.1**	Compute probabilities for mutually exclusive and independent events (written as a fraction in simplest form).

M8.E Data Analysis and Probability
M8.E.3 Understand and/or apply basic concepts of probability or outcomes.

M8.E.3.2	Determine the number of combinations and/or permutations for an event. ***Reference: 2.7.8.A***	**M8.E.3.2.1**	Calculate/show the number of permutations and/or combinations for an event using up to four choices (e.g., organized list, etc.).

M8.E Data Analysis and Probability
M8.E.4 Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.

M8.E.4.1	Draw conclusions, make inferences and/or evaluate hypotheses based on statistical and data displays. ***Reference: 2.6.8.C, 2.7.8.E***	**M8.E.4.1.1**	Fit a line to a scatter plot and/or describe any correlation between the two variables (positive, negative, strong, weak or none).
		M8.E.4.1.2	Make predictions based on survey results or graphs (bar, line, circle, scatterplots, etc.).

M11.E Data Analysis and Probability
M11.E.1 Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M11.E.1.1	Appropriately display and/or use data in problem-solving settings. ***Reference: 2.6.11.A, 2.6.8.E***	**M11.E.1.1.1**	Create and/or use appropriate graphical representations of data, including box-and-whisker plots, stem-and-leaf plots, scatter plots, line/double line, bar/double bar and circle graphs.
		M11.E.1.1.2	Answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, line and double line graphs, bar and double bar graphs and circle graphs).

M11.E Data Analysis and Probability
M11.E.2 Select and/or use appropriate statistical methods to analyze data.

M11.E.2.1	Use measures of central tendency to describe a set of data. ***Reference: 2.6.8.A, 2.6.11.A***	**M11.E.2.1.1**	Find/select/use the appropriate measure of central tendency (mean, mode or median) of a set of data given or represented on a table, line plot, or stem-and-leaf plot.
		M11.E.2.1.2	Calculate and/or interpret the range, quartiles and interquartile range of sets of data.
		M11.E.2.1.3	Describe how outliers affect measures of central tendency.

M11.E Data Analysis and Probability
M11.E.3 Understand and/or apply basic concepts of probability or outcomes.

M11.E.3.1	Apply probability and/or odds to practical situations. ***Reference: 2.7.11.A. 2.7.11.E***	**M11.E.3.1.1**	Determine probabilities for independent, dependent or compound events and represent probability in multiple forms (i.e., fraction, decimal, percent).
		M11.E.3.1.2	Determine, convert and/or compare the probability and/or odds of a simple event.

M11.E Data Analysis and Probability
M11.E.3 Understand and/or apply basic concepts of probability or outcomes.

M11.E.3.2	Apply counting techniques in problem-solving settings. ***Reference: 2.7.8.A***	**M11.E.3.2.1**	Determine the number of permutations and/or combinations.

M11.E Data Analysis and Probability

M11.E.4 Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.

M11.E.4.1	Make predictions using data displays and probability. ***Reference: 2.7.8.E, 2.6.11.D***	**M11.E.4.1.1**	Estimate or calculate to make predictions based on a circle, line or bar graph.
		M11.E.4.1.2	Use probability to predict outcomes.

M11.E Data Analysis and Probability

M11.E.4 Develop and evaluate inferences and predictions or draw conclusions based on data or data displays.

M11.E.4.2	Analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions. ***Reference: 2.6.11.C, 2.6.11.D***	**M11.E.4.2.1**	Draw and/or write an equation for a line of best-fit for a scatter plot.
		M11.E.4.2.2	Make predictions using the equations of best-fit lines of scatter plots.