8th Grade UNIT 12 OVERVIEW: Investigating Bivariate Data – Scatter Plots and Two-Way Tables

Unit Outcomes At the end of this unit, your student should be able to:	**Key Vocabulary** Terms to deepen the student's understanding
✓ Create scatter plots and identify a scatter plot as having a positive, negative or no correlation. ✓ Informally fit a straight line given a scatter plot and use the line to make predictions. ✓ Approximate a line of best fit on a scatter plot ✓ Use a line of best fit to make predictions. ✓ Write equations for lines of best fit in slope-intercept form. ✓ Interpret the meaning of the slope and y-intercept in the equation of a line of best fit. ✓ Construct two-way tables. ✓ Informally look for and describe associations between two categorical variables in two-way tables. ✓ Determine relative frequencies and describe possible associations between variables.	✓ Bivariate Data ✓ Categorical Data ✓ Clustering ✓ Frequency ✓ Line of Best Fit ✓ Linear Association ✓ Linear Equation ✓ Linear Model ✓ Negative Association ✓ No Association ✓ Non-Linear Association ✓ Outliers ✓ Positive Association ✓ Relative Frequency ✓ Scatterplot ✓ Two-Way Tables
Key Standards Addressed Connections to Common Core/NC Essential Standards	**Where This Unit Fits** Connections to prior and future learning
8.SP.1 - Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. 8.SP.2 - Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. 8.SP.3 - Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*	**Coming into this unit, students should have a strong foundation in:** ✓ Recognizing slope-intercept form of a line and defining the slope and y-intercept graph a line given the equation, determining the slope of the line, and the y-intercept of the line. ✓ Using effective strategies for writing linear equations from verbal, numerical, or graphical information. ✓ Applying linear equations to real-world situations. **This unit builds to the following future skills and concepts:** ✓ Understanding that patterns of association can be seen in bivariate categorical data ✓ Distinguishing between correlation and causation ✓ Representing data in two-way frequency tables and on a scatter plot ✓ Distinguishing between situations that can be modeled with linear functions and with exponential functions

8th Grade UNIT 12 OVERVIEW: Investigating Bivariate Data – Scatter Plots and Two-Way Tables

8.SP.4 - Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two-categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	
Additional Resources Materials to support understanding and enrichment	**"Learning Checks"** Questions Parents Can Use to Assess Understanding
✓ Teaching videos made by Wake County teachers ✓ WCPSS YouTube Channel – Math Playlist ✓ Scatter Plot Overview ✓ Scatter Plot Video ✓ Constructing Scatter Plots Video ✓ Constructing Scatter Plots Practice ✓ Line of Best Fit Overview ✓ Line of Best Fit Video ✓ Line of Best Fit Practice ✓ Correlation Overview ✓ Correlation Practice	✓ If there is a positive correlation between data, does it matter which set of data is represented on the x-axis? Explain. ✓ How do you determine whether there is a positive, negative, or no association between two quantities? ✓ How can you use a line of best fit to make predictions? ✓ What types of variables could you use to create a scatter plot that has no correlation? ✓ Why do you not draw a line of best fit on a scatter plot that has no correlation? ✓ Is it easier to draw a line of best fit on a scatter plot with a strong association or a weak association? ✓ How are lines of best fit used to make predictions? ✓ How do you determine the equation of the line of best fit? ✓ What is a situation where being able to predict what will happen in the future will be beneficial? ✓ How do you write an equation in slope-intercept form? What is the benefit of doing this? ✓ How can you be certain the line of best fit is a good representation of the data? ✓ What is the real-world meaning of the y-intercept? ✓ What is the real-world meaning of the slope? ✓ What is the real-world meaning of the x-intercept?