Grade: 8 FCPS 2025-2026 Math Grade 8 Topic 4

8th Grade Topic 4: Investigate Bivariate Data	Estimate Time Frame: 13 days
Essential Standards: 8.SP.1, 8.SP.2, 8.SP.3 Assessment Resource: enVision Topic 4	

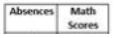
FCPS Supporting Links	Additional Supporting Links
Pacing Guide 8th Grade Topic 4 Standards Resource with Sample Formative Assessments enVision 8th Grade Topic 4 Standards Crosswalk Resource FCPS P-12 Mathematics Guidance Document FCPS Achievement & Trauma-Informed Strategies in the Classroom	Kentucky Academic Standards KSA Blueprint Target of the Standards - conceptual, procedural & application Three-Reads Routine Notice and Wonder Routine **MILC Resources Topic 4: Investigate Bivariate Data** ***enVision Teacher Guide: page 212A to 212D for specific Topic 4 Focus-Coherence-Rigor***

Big Ideas
Investigate patterns of association in bivariate data.

Essential Questions	Common Preconceptions/Misconceptions
How is bivariate data used to help me solve math problems? How can a model be used to help me represent and investigate relationships between varying quantities? How can you represent the relationship between paired data and use the representation to make predictions?	Scatter Plots- Nonlinear correlation vs. No Correlation. Scatter Plot Terminology- Association/ Correlation/Relationship (ensure students can recognize all three terms.

Standards for Mathematical Practices	Kentucky Interdisciplinary Literacy Practices (KILP)

MP.1. Make sense of problems and persevere in solving them. **MP.2. Reason abstractly and quantitatively.** **MP.3. Construct viable arguments and critique the reasoning of others.** **MP.4. Model with mathematics.** **MP.5. Use appropriate tools strategically.** MP.6. Attend to precision. **MP.7. Look for and make use of structure.** **MP.8. Look for and express regularity in repeated reasoning.** ***enVision Teacher Guide: page 212E for specific Topic 4 Math Practice suggestions***	1. Recognize that text is anything that communicates a message. 2. Employ, develop, and refine schemas to understand and create text. 3. View literacy experiences as transactional, interdisciplinary, and transformational. 4. Utilize receptive and expressive language arts to better understand self, others, and the world. 5. Apply strategic practices, with scaffolding and then independently, to approach new literacy tasks. **6. Collaborate with others to create new meaning.** **7. Utilize digital resources to learn and share with others.** **8. Engage in specialized, discipline-specific literacy practices.** **9. Apply high-level cognitive processes to think deeply and critically about text.** 10. Develop a literacy identity that promotes lifelong learning. *Incorporating texts into math instruction fosters interdisciplinary learning for a more engaging educational experience.*	
Essential Standards	**Sample Learning Intentions & Success Criteria**	**HQIR/Resource Considerations**
Cluster: Investigate patterns of association in bivariate data.		
KY.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, linear, and nonlinear associations. ☐ **Conceptual** ☐ **Procedural** ❑ Application **Clarifications:** For example, given the data and scatter plot below, students explain the relationship between	We are learning to construct and interpret scatterplots. • I can determine ordered pairs for a set of data. • I can plot ordered pairs on a coordinate grid • I can describe patterns such as clustering or outliers. • I can describe the association of a scatter plot as positive, negative, linear, or nonlinear. • I can explain the relationship between the two quantities of data.	• Topic 4 Lesson 4-1 • Brainingcamp Task (Lesson 4-1) "Sorting through Data" • enVision Language Support Handbook



students' absences and math scores shows a negative, linear association and has no obvious outliers Coherence KY.8.SP.1→ KY.HS.SP.8 **MP.2, MP.6, MP.7, KILP.2, KILP.3, KILP.10**		
KY.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. ☒ **Conceptual** ❑ Procedural ❑ Application **Clarifications:** Students informally fit a line to data; they judge whether or not a given line is a good fit for the data and describe needed adjustments. They recognize that some scatter plots cannot be described by a line. Coherence KY.8.SP.2→ KY.HS.SP.8 **MP.2, KILP.7, KILP.8**	We are learning to understand why straight lines are used to model relationships between two quantitative variables. • I can determine whether the paired data has a linear, nonlinear, or no association. • I can draw a trend line to determine if the linear association is positive or negative. • I can determine if the data has a strong or weak association by judging the closeness of the data points on the scatter plot to the line of "Best Fit" (trend line).	• Topic 4 Lesson 4-2 • Brainingcamp Task (Lesson 4-2) "How Fit is Your Line?" • enVision Language Support Handbook • MILC - New York Times Daily Graph Link • MILC - Slow Reveal Graphs Website Link
KY.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. ❑ Conceptual ❑ Procedural ☒ **Application** Coherence KY.8.SP.3→ KY.HS.SP.7	We are learning to use the equation of a linear model to solve problems in the context of bivariate measurement data. • I can interpret the slope (rate of change) in the context of the bivariate measurement data. • I can interpret the y-intercept in the context of the bivariate measurement data.	• Topic 4 Lesson 4-3 • 3-Act Task: Reach Out • enVision Language Support Handbook

MP.2, MP.4, KILP.5, KILP.8 **Clarifications:** For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height and an initial value of 4 cm represents the plant was 4 cm tall when measuring began.		

Attending to the Standards for Mathematical Practice

Students reason quantitatively by symbolically representing the verbal description of a relationship between two bivariate variables. They attend to the meaning of data based on the context of problems and the possible linear or nonlinear functions that explain the relationships of the variables. When classifying characteristics of sets of data, students reason about the descriptions that apply based on the definition (MP.2).
Students model relationships between variables using linear and nonlinear functions. They interpret models in the context of the data and reflect on whether or not the models make sense based on slopes, initial values, or the fit to the data. This requires a deep understanding of the parts of the model used and their interpretations (MP.4).
Mathematical modeling is a process that uses mathematics to represent, analyze, make predictions, or otherwise provide insight into real-world phenomena.
Students identify patterns or structures in scatter plots. They fit lines to data displayed in a scatter plot and determine the equations of lines based on points or the slope and initial value (MP.7).

Supporting Standards

N/A

Vocabulary

bivariate data- Involves two variables and deals with causes or relationships. The major purpose of bivariate data analysis is to explain.
categorical data- Data is separable into categories that are mutually exclusive, such as age groups.
clusters- Small group or bunch of something resulting from a "natural" grouping evident in a data set.
data set - Numeric information, usually gathered for analysis.
frequency- The number of times a particular item appears in a data set.
frequency table- A table showing frequencies for two variables within the same population.

linear association- Having a strong resemblance or relation to a line; points clustered close to a line.
linear function - A function defined by f(x) = mx + b.
negative association- Large values of one tend to occur with small values of the other and vice versa.
non-linear association- Not having a resemblance to a line.
positive association- Large values of one variable tend to occur with large values of another; small values of one tend to occur with small values.
relative frequency - The proportion of all given values in an interview; the frequency of the event/value divided by the number of data points.
trend line (line of best fit)- used to represent the pattern of the data and to make predictions

***Association/ Correlation/Relationship (make sure that students can recognize all three terms)**

*Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. This example is not comprehensive.
** Mathematical Practices (A.MP. 1- 8) should be evidenced at some point throughout each unit, depending on the explored tasks. It is important to note that MP. 2 should support learning in every lesson.
*** Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather with other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to *all* standards in that group.