

Grade: 8 FCPS 2026-2027 Math Grade 8 Topic 4 Framework

8th Grade Topic 4: Investigate Bivariate Data		Estimate Time Frame: 13 days Planning Calendar Template
Essential Standards: 8.SP.1, 8.SP.2, 8.SP.3		
Assessment Resource: End of Topic Common Assessment Folder and Pear Assessment Shortcut Link		
FCPS Supporting Links		Additional Supporting Links
Pacing Guide Unit / Lesson Internalization 8th Grade Topic 4 Standards Resource with Sample Formative Assessments enVision 8th Grade Topic 4 Standards Crosswalk Resource FCPS P-12 Mathematics Guidance Document SEL Standards		Kentucky Academic Standards KSA Blueprint Target of the Standards - conceptual, procedural & application Three-Reads Routine Notice and Wonder Routine <i>enVision Teacher Guide: page 212A to 212D for specific Topic 4 Focus-Coherence-Rigor</i>
Big Ideas		Opportunities for Vibrant Learning and Writing
Investigate patterns of association in bivariate data.		Topic 4 Mid-Topic Performance Task Topic 4 Pick-a-Project - Math in Careers
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.

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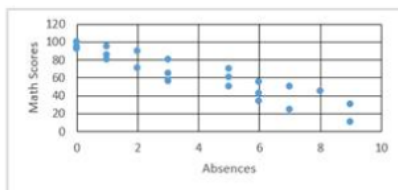
Standards for Mathematical Practices	Kentucky Interdisciplinary Literacy Practices (KILP)	
MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics. MP.5. 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. <i>enVision Teacher Guide: page 212E for specific Topic 4 Math Practice suggestions</i>	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. <i>Incorporating texts into math instruction fosters interdisciplinary learning for a more engaging educational experience.</i>	
Essential Standards	Sample Learning Intentions & Success Criteria	HQIR/Resource Considerations  Indicates a misalignment with Kentucky Academic Standards  Indicates a consideration for planning and instruction
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	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.	• Possible formative assessment  Grade 8 Topic 4 FA_8Math_SP1 • Topic 4 Lesson 4-1 • Brainiac Task (Lesson 4-1) “Sorting through Data” • enVision Language Support

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Clarifications: For example, given the data and scatter plot below, students explain the relationship between students'

Absences	Math Scores
3	65
5	50
1	95
1	85
3	80
6	34
5	70
3	56
0	100
7	24
8	45
2	71
9	30
0	95
6	55
6	42
2	90
0	92
5	60
7	50
9	10
1	80

Given data from students' math scores and absences, make a scatterplot.



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

- 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.

[Handbook](#)

[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

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

- Possible formative assessment
[Grade 8, Topic 4 FA_8Math_SP.2](#)
- Topic 4 Lesson 4-2
- Brainiac 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

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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	judging the closeness of the data points on the scatter plot to the line of “Best Fit” (trend line).	
<u>KY.8.SP.3</u> 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 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.	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.	• Possible formative assessment Grade 8, Topic 4 FA_8Math_SP.3 • Topic 4 Lesson 4-3 • 3-Act Task: Reach Out • enVision Language Support Handbook
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).		

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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

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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.