



Bridging for Math Strength Resources

[Standards of Learning Curriculum Framework](#)

Standard of Learning (SOL) 8.13c Use a drawing to estimate the line of best fit for data represented in a scatterplot.



Student Strengths	Bridging Concepts	Standard of Learning
Students can plot ordered pairs in all four quadrants of the coordinate plane. Students can graph a linear function in $y=mx$ form or $y=x+b$ form.	Students can make connections between relationships of two quantities using tables, graphs, verbal descriptions and equations. Students can graph a linear equation in $y=mx+b$ form.	Students can use a drawing to estimate the line of best fit for data represented in a scatterplot.

Understanding the Learning Trajectory

Big Ideas:

- Linear graphs are used to represent relationships between two quantities.
- Lines of best fit are effective tools to make predictions when data fits a linear pattern
- Estimating a line of best fit allows the students to make inferences regarding the patterns and the trends displayed in the scatterplot.

Formative Assessment:

- VDOE Just in time Quick Check [SOL 8.13c](#) (Word) / [PDF](#) / [Desmos](#)

Important Assessment Look Fors:

- The student can identify the line of best fit by judging the line's closeness to the points in the scatterplot.

- The student can use the line of best fit to make predictions and estimations for a given set of data.
- The student can use the line of best fit to interpret the situation modeled by the data.

Purposeful Questions:

- How do you know that your line of best fit is accurate or reasonable?
- What does the slope of your line of best fit tell you about the situation modeled?
- How can you determine if your prediction is reasonable?
- How does your estimation relate to the situation modeled?

Bridging Activity to Support Standard	Instructional Tips
Routine Fitting Lines The Correlation Coefficient	Using the four graphical images provided, teachers can allow students to work in small groups, and discuss which line would be the best fit for each scatterplot. Teachers can encourage students to use specifics from the graphs to justify their conclusions. Using the four graphical images, teachers can allow students to make connections between linear and nonlinear functions and use supportive reasoning to justify their argument for which one does not belong.
Rich Tasks Laptop Battery Charge Animal Brains	In this task, students use data to graph a scatterplot and then draw a line of best fit for the given data. This task continues to allow students to find the equation of the line of best fit and to use that equation to make predictions. Determining the equation for the line of best fit is beyond the standard, however, this task can be adapted for the students to use the estimated line of best fit to make those predictions. In this task, students create a scatterplot and then think critically about the relationship between two variables, discover the effects of outliers, and use hands-on manipulatives (teachers will need to provide the students with a piece of uncooked spaghetti or other thin straight simply object) to find the line of best fit for the data.
Games/Tech Desmos: 400-Meter Modeling Line of Best Fit-NCTM	Desmos: Students use real world data (the fastest 400 meter run for the years after 1970) and create a line of best fit from the data. Students are asked to make connections between the parts of the line of best fit and the context of the problem as well as make predictions and assess the reasonableness of those predictions. NCTM: This interactive tool allows students to input points and displays them on the coordinate plane. The students can use the tool to make a line of best fit prediction as well as use the tool to find the exact line of best fit.

Other Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - o [8.13c - Scatterplots: Estimating the Line of Best Fit](#) (Word)/(PDF)
- VDOE Word Wall Cards: Grade 8 [\(Word\)](#) | [\(PDF\)](#)
 - o Scatterplot
 - o Positive Linear Relationship
 - o Negative Linear Relationship
 - o No Relationship

- Desmos Activity
 - o [Scatter Plot Capture](#)

Learning Trajectory Resources:

- Charles, R. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. *Journal of Mathematics Education Leadership*, 7(3), NCSM.
- Clements, D. H., & Sarama, J. (2019). Learning and teaching with learning trajectories [LT]2. Marsico Institute, Morgridge College of Education, University of Denver. <https://www.learningtrajectories.org/>
- Common Core Standards Writing Team. (2019). [Progressions for the Common Core State Standards for Mathematics](#). Tucson, AZ: Institute for Mathematics and Education, University of Arizona.
- Richardson, K. (2012). How Children Learn Number Concepts: A Guide to Critical Learning Phases. Bellingham: Math Perspectives Teacher Development Center.
- Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally*. (10th edition) New York: Pearson (2019:9780134802084)
- VDOE Curriculum Framework for All Grades - [Standard of Learning Curriculum Framework \(SOL\)](#)