



Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Bridging Standards of Learning (SOL) for Grade 8

Bridging Standard of Learning (SOL) 8.16c Determine the independent and dependent variable, given a practical situation modeled by a linear function.



Student Strengths	Bridging Concepts	Standard of Learning
Students can represent a proportional situation between two quantities from practical situations.	Students can identify the domain and range of a function represented as a set of ordered pairs, a table, or a graph of discrete points. Students can identify inputs and outputs in a table and graph. Students can make sense of which variables belong on the x- and y-axis when graphing.	Students can identify the dependent and independent variable, given a practical situation modeled by a linear function.

Understanding the Learning Trajectory

Big Ideas:

- Functions can be used to model relationships between quantities. (Achieve the Core)
- In mathematical relationships, the value for one quantity depends on the value of the other quantity. (Charles, 2005)
- The nature of the quantities in a relationship determines what values of the input and output quantities are reasonable. (Charles, 2005)
- In a prediction context, the x -variable is referred to as the independent variable, explanatory variable, or predictor variable. The y -variable is referred to as the dependent variable, response variable, or predicted variable. Students should become equally comfortable with using the pairings (independent, dependent),

(explanatory, response), and (predictor, predicted). Statistics builds on data, and in this lesson, students investigate bivariate data that are linearly related. Students examine how the dependent variable relates to the independent variable or how the predicted variable relates to the predictor variable (From Engage NY 8th grade [lesson 10](#))

Formative Assessment:

- [Just in Time Mathematics Quick Check 8.16c Word](#)
- [Just in Time Mathematics Quick Check 8.16c PDF](#)
- [Just in Time Mathematics Quick Check 8.16c Desmos](#)

Important Assessment Look Fors:

- The student describes independent and dependent variables as the input and output of the function and can provide real life examples of each.
- The student can identify the independent and dependent variable given a function modeled by words, tables, graphs, and equations.

Purposeful Questions:

- What is an independent variable? What is a dependent variable? What is a real life example of each?
- How can you use an input/output table to help you identify the independent and dependent variables?
- How can we identify the independent and dependent variables of a function in the following scenarios: given a word problem? A table? A graph? An equation?
- Does being able to identify a variable being independent or dependent matter? Why or why not?

Bridging Activity to Support Standard	Instructional Tips
Routine Domain and Range Routine made by Sarah Greenberg	This routine is designed to create conversation around what makes a function, independent vs. dependent variable, and domain and range. This should help prepare students for the game and task.
Rich Tasks Experiments & Graphs	Run the experiment and create 2 graphs (same data, but switching the x-and y-axis). Then, hold a discussion about which graph makes more sense to emphasize the big ideas around dependent and independent variables and why one graph makes more sense to readers.
Games Ghosts in the Graveyard Game: Independent and Dependent Variables	Detailed directions are found on the website.
Other Resources: • Independent and Dependent Variables Choose Your Adventure: word/pdf (from HCPS) ◦ Version 1 ◦ Version 2 • Lesson from Engage NY - Linear Functions VDOE Mathematics Instructional Plans (MIPS) ◦ 8.16c - Independent and Dependent Variables (Word) / PDF Version • VDOE Algebra Readiness Formative Assessments ◦ SOL 8.16c (Word) / PDF • VDOE Algebra Readiness Remediation Plans	

- [Independent and Dependent Variables](#) (Word) / [PDF](#)
- VDOE Word Wall Cards: Grade 8 [\(Word\)](#) | [\(PDF\)](#)
 - Linear Function
 - Dependent/Independent Variable
 - Independent Variable
 - Dependent Variable

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.

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.

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 \(SOL\)](#)