Bridging to Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Standards of Learning (SOL) for Grade 7

Standard of Learning (SOL) 7.10e Make connections between and among representations of a proportional or additive relationship between two quantities using verbal descriptions, tables, equations, and graphs



Student Strengths	Bridging Concepts	Standard of Learning
Students can determine the slope as a rate of change in a proportional relationship between two quantities and write an equation in the form y=mx to represent the relationship.	Students can determine the y-intercept in an additive relationship between two quantities and write an equation in the form y=x+b to represent the relationship.	Students can make connections between and among representations of a proportional or additive relationship between two quantities using verbal descriptions, tables, equations, and graphs.

Understanding the Learning Trajectory

Big Ideas:

- Functions can be represented as ordered pairs, tables, graphs, equations, physical models, or in words.
- Any given relationship can be represented using multiple representations.
- Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways.

Formative Assessment:

- Just in Time Mathematics Quick Check 7.10e Word
- Just in Time Mathematics Quick Check 7.10e PDF
- Just in Time Mathematics Quick Check 7.10e Desmos

Important Assessment Look Fors:

- Students can represent additive and proportional relationships as ordered pairs, tables, graphs, equations, and in words.

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- Students can determine the relationship between the same function written as an ordered pairs, tables, graphs, equations, physical models and in words.
- Students can create one form of the additive or proportional relationship when given another form of the same relationship.
- Students can represent the same proportional or additive relationship in a table, graph, equation and words.

Purposeful Questions:

- How can you describe and understand linear relationships through various representations -in algebraic symbols, situations, graphs, verbal descriptions, tables? Give an example of how you can make connections between and among these representations.
- What are similarities and differences between a proportional relationship and an additive relationship? (or ask how is y=2x different from y=x+2?).
- How could you represent this relationship in a different format?
- Show the additive or proportional relationship in all of these representations. Explain how you know.

Bridging Activity to Support the Standard	Instructional Tips
Routine Graphing Stories: Time Graphing Stories: Height of Stack Graphing Stories Template: Height of Stack	Students will graph each of the stories and discuss the differences between the two.
Rich Tasks VDOE Rich Mathematical Task Grade 7 7.10e Summer Passes Rich Math Task	The purpose of the task is to deepen understanding by connecting rates, tables, and equations while, at the same time, contrasting proportional and additive relationships.
Games/Tech Functions Dice Game from Henrico Public Schools Desmos 7.10e Making Connections	Roll the dice one or two times (depending on how many blanks there are). Then graph the equation of the line. In this activity, students explore proportional and additive relationships. They are asked to sort word problems into the two categories and then complete two card sorts matching equations to tables and graphs. (edited version of Making Connections SOL 7.10e)

Other Resources:

- VDOE Mathematics Instructional Plans (MIPS)
  - 7.10e - Making Connections (Word) / PDF Version
  - 7.10ab- Discover Slope (m) (Word) / PDF Version
  - 7.10cd - Discover y-intercept (b) (Word) / PDF Version
- VDOE Algebra Readiness Formative Assessments
  - SOL 7.10e (Word) / PDF
- VDOE Algebra Readiness Remediation Plans
  - Making Connections between Representations (Word) / PDF
- VDOE Word Wall Cards: Grade 7 (Word) | (PDF)

    - Connecting Representations: Proportional Relationship
    - Connecting Representations: Additive Relationship
- VDOE Rich Mathematical Tasks: Name of on-grade-level Task
    - 7.10 Summer Passes Task Template (Word) / PDF Version
- Desmos Activity
    - Making Connections SOL 7.10e

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)