Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Bridging Standards of Learning (SOL) for Grade 7

Standard of Learning (SOL) 7.12 Solve two-step linear equations in one variable, including practical problems that require the solution of a two-step linear equation in one variable.

Student Strengths	Bridging Concepts	Standard of Learning
Students can perform operations and simplify expressions with fractions, decimals, and integers.	Students can solve one-step linear equations, including practical problems.	Students can solve two-step linear equations in one variable, including practical problems.

Understanding the Learning Trajectory

Big Ideas:

- A given equation can be represented in an infinite number of different ways that have the same solution (Charles, 2005).
- A variety of concrete materials such as colored chips, algebra tiles, or weights on a balance scale may be used to model solving equations in one variable.
- The inverse operation for addition is subtraction, and the inverse operation for multiplication is division.
- Properties of real numbers and properties of equality can be applied when solving equations, and justifying solutions.
- Some problem situations can be represented as algebraic expressions or algebraic equations.

Formative Assessment:

- Just in Time Mathematics Quick Check 7.12 Word
- Just in Time Mathematics Quick Check 7.12 Desmos
- Just in Time Mathematics Quick Check 7.12 PDF

Important Assessment Look Fors:

- The student can identify the inverse operation(s) required for solving the equation.
- The student can translate the equation between visual and concrete representations.
- The student can verify their solution.
- The student provided a response that is reasonable.

Purposeful Questions:

- What is the important information in this problem?
- How did you determine the terms and their placement within the equation?
- What inverse operations will you use to solve your written equation?
- How did you determine what is unknown?

Bridging Activity to Support Standard	Instructional Tips
Routine Numberless Word Problem - Slide 10, 18, 26, 34, or 42.	The solution to the scenarios presented on these slides is easily derived. The teacher should instruct the students to attempt to translate the scenario and solution into a mathematical equation.
Rich Tasks Mars - Grade 7: Mystery Letters pg. 47 - 48	If a teacher notices a student experiencing difficulty during the initiation of the task, please instruct the student to begin with 4a = 8.
Games/Tech MathGames: One-Step Equations Math-Play: One-Step Equations Soccer Khan Academy: Two-Step Equations Practical Problems (Interpretation) Khan Academy: Two-Step Equations Practical Problems (Solving) Desmos 7.12 Translating Expressions and Equations Card Sorts	Math-Play: One-Step Equations Soccer can be played with two students competing against each other, or with one student representing both the red and blue teams. Students complete card sorts to review translating expressions, then equations, then word problems.

Other Resources:

- VDOE Mathematics Instructional Plans (MIPS)
  - 7.12 - Solving Two-Step Equations (Word) / PDF Version
  - 7.12 - Translating Expressions and Equations (Word) / PDF Version
- VDOE Co-Teaching Mathematics Instruction Plans (MIPS)
  - 7.12 - Solving Equations (Word) / PDF Version
- VDOE Algebra Readiness Formative Assessments
  - SOL 7.12 (Word) / PDF
- VDOE Algebra Readiness Remediation Plans
  - Applying Properties of Real Numbers When Solving Equations (Word) / PDF
  - Solving Equations - Applying Properties (Word) / PDF
  - Solving Equations Using Algebra Tiles (Word) / PDF

- Solving Two-Step and Multi-Step Equations (Word) / PDF
- Solving Practical Problems Using Two-Step Equations (Word) / PDF

- VDOE Word Wall Cards: Grade 7 (Word) | (PDF)
  - Verbal and Algebraic Expressions and Equations
  - Equations
- Desmos Activity
  - Translating Expressions and Equations Card Sorts

Learning Trajectory Resources

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)

Curriculum Framework for All Grades -Standard of Learning Curriculum Framework (SOL)

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.

Charles, R., (2005). Big Ideas and Understandings as the Foundation for Elementary and Middle School Mathematics. *Journal of Mathematics Education Leadership*, 7,(3), NCSM.