



Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Bridging Standards of Learning (SOL) for Grade 8

Standard of Learning (SOL) 8.14a Evaluate an algebraic expression for given replacement values of the variables



Student Strengths	Bridging Concepts	Standard of Learning
Students can determine the square root of a perfect square, identify and describe absolute value, use the order of operations with limited exponents and limited grouping symbols.	Students can evaluate algebraic expressions with limited exponents and limited grouping symbols.	Students can evaluate an algebraic expression for given replacement values of the variables.

Understanding the Learning Trajectory

Big Ideas:

- In mathematics, it is understood that a variable can be replaced by a value.
- Letters are used in mathematics to represent generalized properties, unknowns in equations, and relationships between quantities (Charles, 2005).
- In mathematics, following the order of operations is the correct way to simplify/evaluate an expression and there are specific notations to follow.
- In mathematics, performing any operation involving rational numbers is necessary to simplify expressions.

Formative Assessment:

- [Just in Time Mathematics Quick Check 8.14a Word](#)
- [Just in Time Mathematics Quick Check 8.14a PDF](#)
- [Just in Time Mathematics Quick Check 8.14a Desmos](#)

Important Assessment Look Fors:

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- The student can replace the variables with the assigned value with appropriate signs.
- The student starts at the innermost grouping symbol in this expression.
- The student can follow the order of operations accurately with expressions including rational values.

Purposeful Questions:

- What are the different types of grouping symbols you see in this expression?
- How do you know where to start?
- Should the answer be negative or positive? How do you know?
- Explain how you arrived at your final expression.

Bridging Activity to Support Standard	Instructional Tips
Routine Desmos: Open Middle using order of operations	Student pacing should be used to have discussions of student findings after each slide.
Rich Tasks Expressions for Gardening	Task Template with Directions
Games/Tech Partner Dice Competition 3 (Henrico) Desmos 8.14a Picture Perfect Desmos 8.14a Pentomino Puzzle	Collaborative game for practice with replacement values. In this activity, students will use algebraic thinking to precisely (and efficiently) hang picture frames on the wall. This activity will provide opportunities for students to deepen their previous understanding with linear equations. In this activity, students work through a series of "pentomino sum" puzzles. They begin informally (and rather inefficiently). But later, they'll develop and apply an algebraic approach, demonstrating the power and efficiency of mathematics along the way." Students are coached to write an algebraic expression to represent the sum of the values covered by a pentomino on a number grid. Using this concept, they then create challenges to share with one another.
Other Resources: • Evaluating Expressions (PDF) • Illustrative Math Rectangle Perimeter • Legends of Learning Icecavator: Legends of Learning requires a free account for the teacher, and gives a code. The Icecavator game is for basic order of operation steps with limited grouping symbols that could be used for remediation. • VDOE Mathematics Instructional Plans (MIPS) ◦ 8.14a - Evaluating Algebraic Expressions (Word) PDF Version • VDOE Algebra Readiness Formative Assessments ◦ 8.14a (Word) PDF Version • VDOE Algebra Readiness Remediation Plans ◦ Applying Properties to Simplify Algebraic Expressions (Word) / PDF ◦ Evaluating Algebraic Expressions (Word) / PDF ◦ Evaluating Expressions (Word) / PDF • VDOE Word Wall Cards: Grade 8 (Word) (PDF) ◦ Term ◦ Constant ◦ Like Terms	

- Order of Operations
- VDOE Rich Mathematical Tasks: How Many Stones Will I Need?
 - [8.14 How Many Stones Will I Need Task Template](#) (Word) / [PDF Version](#)
- Desmos Activities
 - [Picture Perfect](#)
 - [Pentomino Puzzles](#)

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 \(SOL\)](#)