Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Bridging Standards of Learning (SOL) for Grade 6

Bridging Standard of Learning (SOL) 6.6a Add, subtract, multiply, and divide integers



Student Strengths	Bridging Concepts	Standard of Learning
Students can add, subtract, multiply, and divide whole numbers fluently. Students can represent integers on a number line, as well as compare and order integers with and without number lines.	Students can add, subtract, multiply and divide integers using concrete models.	Students can add, subtract, multiply, and divide integers.

Understanding the Learning Trajectory

Big Ideas:

- Integers are the whole numbers and their opposites on the number line, where zero is its own opposite.
- The real-world actions for operations with integers are the same for operations with whole numbers. (Charles, 2005).
- The sum of opposite integers is equal to zero.
  (Arizona, Number System, p. 7-9)

Formative Assessment:

- Just in Time Mathematics Quick Check 6.6a Word
- Just in Time Mathematics Quick Check 6.6a PDF
- Just in Time Mathematics Quick Check 6.6a Desmos

Important Assessment Look Fors:

- The student has demonstrated a clear understanding of positive and negative signs in their model.
- The student correctly simplified the expression.
- The student is able to accurately reflect the operation in their model.

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- The student can justify the sign they used as part of their solution.

Purposeful Questions:

- How do you know that your model represents the expression?
- How can you use the models to show how to simplify the expression?
- How do you know that the answer should be negative? Positive? Either?
- How can you use other manipulatives to prove your solution?
- How can you use the number line to show this number sentence?

Bridging Activity to Support Standard	Instructional Tips
Routine Integer Number Strings, Henrico County	See the notes on the bottom of each slide. There is a number string for each of the operations. Show the slide in present mode so that students see each number sentence one at a time. Students should solve each equation in the number string and make connections between them.
Rich Tasks Illustrative Mathematics - It's Warmer in Miami	Have students model this on a number line and then write the corresponding number sentence. This task elicits discourse about distance from zero and absolute value. Students are finding the difference between two temperatures; "How do you demonstrate a difference in a number sentence?"
Games/Tech Integer Bump Games, MathStrength Desmos 6.6a Adding Integers Desmos 6.6a Hot Air Balloon for integer operation modeling	Partner Bump Games to practice modeling integer operations using 2 color counters and number lines. In this activity, students practice adding integers in the context of a card game. The goal of the game is to create two groups of cards, each with the same sum. Whoever uses the most cards wins! Provides learners with a context for modeling adding and subtracting integers.

Other Resources:

- Open Middle slide 28: In this Open Middle, students will decide if they want to use positive or negative numbers in order to create the largest/smallest quotient possible (can be modified by having students use a single digit divisor).
- Desmos: The first two Desmos activities allow for students to explore how integer chips are used in the modeling of addition and subtraction of integers. Check Desmos teacher notes. There are specific stop point locations to allow for class discussion.
  - Modeling Adding Integers
  - Subtracting Integers
  - Adding Integers
- VDOE Mathematics Instructional Plans (MIPS)
  - Operations with Integers (Word) / PDF
- VDOE Algebra Readiness Formative Assessments
  - 6.6a (Word) / PDF
- VDOE Algebra Readiness Remediation Plans
  - Operations with Integers Addition- (Word) / PDF
  - Operations with Integers Division- (Word) / PDF
  - Operations with Integers Multiplication- (Word) / PDF
  - Operations with Integers Subtraction- (Word) / PDF

- VDOE Word Wall Cards: Grade 6 (Word) / PDF
    - Integer Operations- Addition and Subtraction
    - Integer Operations- Model Addition and Subtraction
    - Integer Operation- Multiplication and Division

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)