Bridging for Math Strength Resources

Standards of Learning Curriculum Framework

Standard of Learning (SOL) 3.3a Estimate and determine the sum or difference of two whole numbers

Student Strengths	Bridging Concepts	Standard of Learning
Students can demonstrate fluency for addition or subtraction within.	Students can estimate the sum or difference within 20.	Students can estimate and determine the sum or difference of two whole numbers.

Understanding the Learning Trajectory

Big Ideas:

- Properties of operations allow for multi-digit numbers to be broken down into single digit numbers (place value) for computation (addition and/or subtraction). (Common Core Progressions, pg. 3)
- Concrete models, drawings, and symbolic representations may be used to find sums and differences.
- Estimation is a form of rounding. Rounding addends before finding a sum or difference allows students to estimate an answer and determine the reasonableness of the final answer to their computation. (Prince William County, Grade 3 Unit 1 guide).

Formative Assessment:

- VDOE Just in Time Mathematics Quick Check 3.3a (PDF)
- VDOE Just in Time Mathematics Quick Check 3.3a (Desmos)

Important Assessment Look Fors:

- Student uses place value to break numbers down for computing with multi-digit numbers.
- Student represents multi-digit numbers with concrete items and/or abstract drawings.
- Student makes reasonable estimations.
- Student finds the estimate or determines the sum or difference of two multi-digit numbers.

Purposeful Questions:

- What steps are needed to provide an estimate? What strategy did you use?
- How does place value help you when determining the sum or difference?

- What strategy did you use to determine the sum or difference? How will you prove your answer?

Bridging Activity to Support Standard	Instructional Tips
Routine Open Middle	Multiple routines included in one slide deck. Students can use digits only once to create problems and/or solutions.
Rich Task Base Ten Block Addition Adapted from T. Wills	Task includes base ten blocks. The numbers included are 3-digits. Task is to check if students realize the place values were switched.
Games Domino Addition and Subtraction Desmos 3.3ab Biggest, Smallest, Closest: Whole Number Computation	The game has recording sheets to keep track of computations. Encourage students to check their partner's answer by using estimation. In this activity, students will practice adding and subtracting whole numbers. They will create expressions to match given criteria (e.g., the greatest value, the smallest value, etc.). Students will reason abstractly and structurally, arguing that their expressions are the greatest or closest possible to the target

Other Resources:

- VDOE Mathematics Instructional Plans (MIPS):
  - 3.3a - Addition and Subtraction (Word) / PDF Version
- VDOE Word Wall Cards: Grade 3 (Word) and (PDF)
  - Addition
  - Subtraction
  - Round

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.

Clements, D. H., & Sarama, J. (2019). Learning and teaching with learning trajectories [LT]2. Marsico Institute, Morgridge College of Education, University of Denver. https://www.learningtrajectories.org/

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.

Richardson, K. (2012). How Children Learn Number Concepts: A Guide to Critical Learning Phases. Bellingham: Math Perspectives Teacher Development Center.

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)