Bridging for Math Strength Resources

Standards of Learning Curriculum Framework

Standard of Learning (SOL) 3.5 Solve practical problems that involve addition and subtraction with proper fractions having like denominators of 12 or less

Student Strengths	Bridging Concepts	Standard of Learning
Students can name and write fractions represented by a set model showing halves, fourths, eighths, thirds, and sixths. Students can create and solve single-step practical problems involving addition or subtraction of whole numbers.	Students can apply whole number strategies for adding and subtracting (i.e., putting together/taking apart) to adding and subtracting fractions with like denominators.	Students can solve practical problems that involve addition and subtraction with proper fractions having like denominators of 12 or less, using concrete and pictorial models representing area/regions.

Understanding the Learning Trajectory

Big Ideas:

- The understanding of addition as putting together allows students to see the way fractions are composed of unit fractions.
- Prior knowledge of addition and subtraction of whole numbers allows for composing and decomposing fractions with the same denominator.
- Whole numbers can be represented as an equivalent fraction, thereby supporting addition and subtraction computations with whole numbers and fractions.

Formative Assessment:

- VDOE Just in Time Mathematics Quick Check 3.5 PDF
- VDOE Just in Time Mathematics Quick Check 3.5 Desmos

Important Assessment Look Fors:

- Student recognizes fractions represented by models.
- Student uses an appropriate operation to solve the problem.
- Student adds/subtracts numerators only while recognizing denominator remains unchanged.

- Student recognizes when a sum is an improper fraction and is able to convert it to a mixed number.

Purposeful Questions:

- Does your answer make sense? How do you know?
- Why did you add/subtract the numerators and not the denominators?
- Why did you add/subtract the numerators and the denominators?
- How did you come up with that fraction for your answer?

Bridging Activity to Support Standard	Instructional Tips
Routine Choral Counting with fractions Math in Our World: Baking Bread	Choral Counting with Fractions example on YouTube. Choral Counting can be done with any denominator. Display the Math In Our World: Baking Bread image. Sophia loves to bake. She's been doing a lot of baking lately. Her measuring cups are dirty. Only the ½-cup, ⅓-cup, and 1-tablespoon measures are clean. She wants to bake wheat bread.  This is her recipe: • *3 cups warm water* • *2 packages yeast* • *⅔ cup honey* • *5 cups bread flour* • *5 tablespoons butter* • *1 tablespoon salt* • *3 ½ cups whole wheat flour* Ask, "What do you notice? What do you wonder?" • What ingredients could be measured with the • $\frac{1}{2}$ cup? How do you know? • What ingredients could be measured with the $\frac{1}{3}$ cup? How do you know?
Rich Tasks Decomposing Fractions - Jelly Beans Activity Henrico County Public Schools	This question could be changed to equal any fraction.
Games/Tech Draw or Play (digital version) Henrico County Public Schools	First slide can be used as an example. Encourage students to use notebooks or whiteboards to solve problems.

Desmos 3.5 Adding and Subtracting Fractions Like Denominators	In this activity students use a visual tool for adding and subtracting fractions with like denominators

Other Resources:

- VDOE Mathematics Instructional Plans (MIPS):
  - 3.5 - Adding and Subtracting Fractions (Word) / PDF)
- VDOE Word Wall Cards: Grade 3 (Word) and (PDF)

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)