Bridging for Math Strength Resources

Standards of Learning Curriculum Framework

Standard of Learning (SOL) 3.2c Compare fractions having like and unlike denominators, using words and symbols (>, <, =, or ≠), with models

Student Strengths	Bridging Concepts	Standard of Learning
Students can compare unit fractions for halves, fourths, eighths, thirds, and sixths, using words (greater than, less than or equal to) and symbols (>, <, =), with models.	Students can compare fractions based on the size of the pieces, not just the numbers. Students can use benchmarks to reason and make comparisons among fractions (when appropriate).	Students can compare fractions having like and unlike denominators, using words and symbols (>, <, =, or ≠), with models.

Understanding the Learning Trajectory

Big Ideas:

- Two fractions that have the same denominator have unit fractions that are the same size, so the fraction with the greater numerator is greater because it is made of more unit fractions (Common Core Progressions, p.9).
- For unit fractions, the one with the larger denominator is smaller, by reasoning, for example, that in order for more (identical) pieces to make the same whole, the pieces must be smaller. For two fractions that have the same numerator, the fraction with the smaller denominator is greater because the pieces are larger (Common Core Progressions, p.9).
- Fractions can be compared by reasoning about the relative size of the fractions, assuming the same size whole.
- Benchmark fractions of 0, 1, and ½ are used in comparing fractions.

Formative Assessment:

- VDOE Just in Time Mathematics Quick Check 3.2c (PDF)
- VDOE Just in Time Mathematics Quick Check 3.2c (Desmos)

Important Assessment Look Fors:

- Student use words (greater than, less than or equal to) and symbols (>, <, =) appropriately.
- Student draws models that are the same size when comparing fractions.
- Student attends to both the numerator and denominator when comparing fractions, not just comparing numerators (ex. 1/4 < 2/12 because 1 is less than 2).
- Student uses the benchmarks 0, ½, and 1 when comparing fractions.
- Student uses to identify other fractions that are equivalent to 1/2 (3/6, 4/8, etc.).

Purposeful Questions:

- How do you know this fraction is greater than/less than the other fraction? (i.e., how is 2/5 less than 4/10?)
- Where on a number line would you put these fractions? How can you use the number line to help you compare the fractions?
- How does this fraction compare to the benchmark of 1/2 (or 0 or 1)?
- Can you draw a model to compare this fraction to 1/2?

Bridging Activity to Support Standard	Instructional Tips
Routine Would You Rather: Sharing Brownie image	Compare brownie sharing scenarios A and B. Be sure students attend to the note below each scenario about how many friends are sharing the brownies (scenario A requires the brownies to be split into smaller pieces than they appear). The slide to use for this routine can be found at Would You Rather from Theresa Wills.
Rich Tasks Comparing Fractions from Illustrative Mathematics	Consider providing manipulatives for students to represent the fractions.
Games/Tech Fraction Compare Comparing Fractions Game Illustrative Math Desmos 3.2c Comparing Fractions Using Benchmarks and Models	Fraction Compare is from Theresa Wills' website. Download the file and then go to playing cards in order to play the game. There is a great video at the top of the webpage that is linked to the game and provides directions. Choose the cards with models for focus on this standard. In this activity, students will - create fraction models to compare fractions - explore half as a benchmark - sort fractions into greater than, less than, and equal to 1/2

Other Resources:

- Henrico County Public Schools standard 3.2
- VDOE Mathematics Instructional Plans (MIPS):
  - 3.2c - Comparing Fractions (Word) / PDF Version
- 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)