Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Standard of Learning (SOL) 4.3d Given a model, write the decimal and fraction equivalents



Student Strengths	Bridging Concepts	Standard of Learning
Students can represent fractions and mixed numbers, with models and symbols. Students can determine the value of a collection of bills and compare the value of two sets of coins or two sets of coins and bills.	Students can use a variety of models to represent fractions (i.e., decimal grid, metric ruler, money, rational number wheel, etc.). Students can leverage their understanding of money to make connections to decimals.	Given a model, students can write the decimal and fraction equivalents.

Understanding the Learning Trajectory

Big Ideas:

- In mathematics, any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value. Decimal and fraction numbers can be named in an infinite number of different but equivalent forms (e.g., 3/10= 0.3 = 0.30 = 0.10 + 0.20) (Charles, 2005).
- We can relate fractions to decimals using a variety of representations including 10 by 10 grids, number lines, decimal squares, money, rational number wheel and decimal grids. These representations build an understanding of equivalency. (VDOE Curriculum Framework, 2016)
- An understanding of money can be applied to fractions and decimals by considering parts of a whole dollar that can be represented as equivalent fractions and decimals. In mathematics, these relationships are especially evident with the connection to dimes (tenths) and the connection to pennies (hundredths).

Formative Assessment:

- VDOE Just in Time Mathematics Quick Check 4.3d (PDF)
- VDOE Just in Time Mathematics Quick Check 4.3d (Desmos)

Important Assessment Look Fors:

- The student models and names equivalent fractions and decimals.
- The student identifies equivalent relationships between tenths and hundredths.

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- The student names the same value in a variety of ways.
- The student may partition the same model in a variety of ways to notice and name equivalent relationships.

Purposeful Questions:

- Tell me about your model. Why did you…?
- Is there another way you could name that value?
- How do you know __ is equivalent to ___?
- What do you know about money and parts of a dollar that can help you? (For example, if I have 2 dimes, what part of a dollar does that represent?)
- What connections do you see between money, decimals, and fractions?

Bridging Activity to Support Standard	Instructional Tips
Routines Which One Doesn't Belong?	As students think about this routine, consider having hundredths grids available. Students may need to visualize some of these numbers. As students are sharing, they might name these numbers in multiple ways. Highlight these equivalent relationships.
Rich Tasks Fraction Decimal Farm: Desmos	Some Desmos slides are better served to be tasks than others. You may invite students to create their own farm on Slide 1. Share their farms and fraction/decimal equivalents. Consider asking questions to make connections and deepen understanding. Possible questions: ● Did you use any common benchmarks to make your farm? ● Which part of your farm is the largest? Smallest? Why? ● Can you name that part of the farm in a different way? ● How is __'s farm similar or different to __'s farm? ● How do you know each part of your farm is accurately named? (students should be able to justify that all parts add to 100/100 or 1)
Games/Tech Fractions and Decimals to 1 Math Learning Center	Students can play this game virtually or print out the materials and provide colored pencils/markers. Questions to deepen student's understanding: ● What numbers did you want the spinner to land on? Why? ● Can you prove __ is the equivalent decimal for __? ● What number would you need to land on to make 1? ● How much more do you need? How many turns do you think it will take? Why?
Desmos 4.3d Decimals: Represent and Write	(Desmos 4.3d Decimals: Represent and Write) Students will look at how fractions and decimals connect to one another through models. They will write equivalent fractions and decimals connected to models and finish with a match up of fractions and decimals.
Desmos 4.3d Fraction and Decimal Equivalencies	(Desmos 4.3d Fraction and Decimal Equivalencies) Students activate their background knowledge by connecting fractions and decimals to money. They model and explain the difference between tenths and hundredths. Students match equivalent models, fractions, and decimals.
Desmos 4.3d Fraction/Decimal Card Sort	(Desmos 4.3d Fraction/Decimal Card Sort) Match the fraction, decimal, and model.

Other Resources:

- Same but Different
- VDOE Mathematics Instructional Plans (MIPS)
  - 4.3d - Fraction-Decimal Relationships with Grids (Word) / PDF Version
- VDOE Co-Teaching Mathematics Instruction Plans (MIPS)
  - 4.3d - Fraction Decimal Grid (Word) / PDF Version
- VDOE Algebra Readiness Remediation Plans
  - Fractions, Decimals, and Percents with Hundred Grids (Word) / PDF
  - Hundreds Grids (Word) / PDF
  - Picture Perfect (Word) / PDF
- VDOE Word Wall Cards: Grade 4 (Word) | (PDF)
  - Decimal
  - Equivalent

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)
Blackline masters from older addition available on web

VDOE Curriculum Framework for All Grades (2016)- Standard of Learning Curriculum Framework (SOL)