Bridging for Math Strength Resources

Standards of Learning Curriculum Framework (SOL)

Bridging Standard of Learning (SOL) 4.3a Read, write, represent, and identify decimals expressed through thousandths.

Student Strengths	Bridging Concepts	Standard of Learning
Students can identify the ten-to-one relationship within the base-ten system of whole numbers. Students can read and write various amounts of money and recognize that the number before the decimal point represents whole dollars and the amount to the right of the decimal point represent a part of a dollar.	Students connect the idea that money is a model or representation of decimals (i.e., that 10 dimes equals a dollar or 100 pennies is equal to a dollar). Students can extend their understanding of ten-to-one place value relationships to decimals.	Read, write, represent, and identify decimals expressed through thousandths.

Understanding the Learning Trajectory

Big Ideas:

- The structure of the base-ten number system is based upon a simple pattern of tens, where each place is ten times the value of the place to its right. This is known as a ten-to-one place value relationship (Van de Walle et al., 2019)
- Decimals are another form of writing fractions and the connection between the two is important in understanding the concepts of decimals (i.e. connect 1/10 as 0.1 and 1/100 as 0.01 and 1/1000 as 0.001 - Reading the decimal fractions will help students “hear” the connection).
- Understanding of the base-ten system to the relationship between adjacent places and how numbers compare can help support students round for decimals to thousandths. For example, it is important to deepen understanding and fluency with decimals in the different forms, seeing .57 as 5 tenths and 7 hundredths as well as 57 hundredths (Common Core Standards Writing Team, 2019, p. 64). This ability to rename and decompose decimals can help students round to the nearest whole number, tenth or hundredth.
- The decimal point separates the whole from the fractional part. The place value system extends infinitely in both directions of the decimal point, to very large and very small numbers. Connected uses of decimals in real life using money, metric measurements, batting averages can support student understanding.

- ***Formative Assessment:***
- VDOE Just in Time Mathematics Quick Check 4.3a (PDF)
- VDOE Just in Time Mathematics Quick Check 4.3a (Desmos)

Important Assessment Look Fors:

- The student uses the identified whole to name a decimal represented by base ten blocks.
- The student can read a decimal in word form and record it in numeric form.
- The student can identify the position and place value of each digit in a decimal.

Purposeful Questions:

- Is the decimal represented more or less than a whole? Explain your answer.
- If the whole changed, how would that affect the decimal represented?
- When modeling with base ten blocks, what would the cube represent if the whole is equal to a rod? Explain your answer.
- How can you represent this decimal in a variety of ways, such as number line, money, or 10-by-10 grid?

Bridging Activity to Support Standard	Instructional Tips
Routines Which One Doesn't Belong? From the Math Learning Center Which One Doesn't Belong? (coins) from RSD2 SPARK	Students are presented with a set of four images and are encouraged to decide which one doesn't belong. There are many answers when exploring this routine, so students should provide justification when explaining which one doesn't belong. Since this routine allows for a variety of answers, students are engaged and excited to participate. The second set of images connects students' understanding of money to decimals.
Rich Tasks Card Decimal Task from Region 1 Performance Task Tenths and Hundredths from Illustrative Mathematics	In the Card Decimal task, students create decimals that are greater than 1 and less than 1 using the digits provided. This task also allows for a variety of answers which can be used to represent decimals in a variety of forms. Students can use models such as base ten blocks, number lines, or money to represent the decimal. This task can also be used to introduce other concepts such as comparing, ordering, and rounding to the nearest whole. In the Tenths and Hundredths task, students critique the reasoning of another student and figure out various numbers that could be represented by a model.
Games/Tech Match it - Matching Decimals from Theresa Wills Decimal 4 Sums to Win from Math Learning Center	In the game Match It, students will be asked to match the decimal word form to a 10-by-10 grid. The representations included are expressed through thousandths. Scroll down to Decimal Games to find this game. The Decimal 4 Sums to Win game focuses on several different concepts such as: • Writing a fraction with a denominator (bottom number) of 10 as an equivalent fraction with a denominator of 100. • Writing fractions with denominators of 100 (100th fractions) as decimals. • Comparing two decimal numbers. • Modeling decimal values on the hundredths grid.

Desmos 4.3a Hundredths and Tenths Comparison Sliders	This Desmos activity allows students to visually represent tenths and/or hundredths (Fractions or Decimals) on a square. Most slides are self checking!

Other Resources:

- Decimal Match: The Decimal Match activity focuses on matching the different forms of decimals with a model. The representation used is a ten by ten grid, modeling tenths and hundredths.
- Links to interactive manipulatives:
  - Base Ten Blocks
  - Decimal Strips
  - Decimal Place Value Disks
  - Decimal Place Value Mat
- VDOE Mathematics Instructional Plans (MIPS)
  - 4.3a - Reading and Writing Decimals (Word) / PDF Version
- VDOE Word Wall Cards: Grade 4 (Word) | (PDF)
  - Decimal Place Value Position

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)