



Bridging for Math Strength Resources

[Standards of Learning Curriculum Framework \(SOL\)](#)

Standard of Learning (SOL) 5.2a Represent and identify equivalencies among fractions and decimals, with and without models.



Student Strengths	Bridging Concepts	Standard of Learning
Students can name equivalent fractional amounts using concrete and pictorial models less than one.	Students can name fractions with denominators of 2, 4, 5, 10, 20, 25, and 50 as equivalent fractions with a denominator of 100 and record in decimal form.	Students can represent and identify equivalencies among fractions and decimals, with and without models.

Understanding the Learning Trajectory

Big Ideas:

- Students should begin to identify equivalence among fractions and decimals starting with common fractions such as halves, thirds, fourths and eighths as decimal fractions. For example using a decimal grid and shading $\frac{1}{2}$ and $50/100 = .5$. A double number line, decimal grids, and rational numbers wheel (see chap. 16 of Van de Walle text) are useful models to connect decimals and fractions as one moves beyond common fractions to continue the development of fraction-decimal equivalence (Van de Walle et al., 2018).
- Any number can be represented in an infinite number of ways that have the same value (Charles, p.10).
- Decimal to fraction equivalents can be named not just through procedures but through sense-making with our base-ten system (e.g. $\frac{2}{5} = 4/10 = 0.4$). For example, although one can use division with the fraction to find the decimal equivalent, another way is to find an equivalent decimal fraction with 10 or 100 in the denominator to find the decimal equivalent (e.g. $12/50 = 24/100 = 0.24$)
- Naming an equivalent fraction and decimal means that the quantities are the same even though they are represented differently. $\frac{3}{4}$ is 0.75 written in a different form. Both $\frac{3}{4}$ and .75 would appear at the same point on a number line, take up the same amount of space on an area model, and be shown similarly in a set or measurement model.

Formative Assessment:

- [Just in Time Mathematics Quick Check 5.2a PDF](#)

- [Just in Time Mathematics Quick Check 5.2a Desmos](#)

Important Assessment Look Fors:

- The student recognizes, identifies, and names equivalent fractions and decimals with concrete or pictorial models.
- The student recognizes, identifies, and names equivalent fractions and decimals **without** concrete or pictorial models.
- The student demonstrates an understanding that fractional models can also be written in many equivalent decimal forms (0.8, 0.80, etc.) and vice versa.
- The student recognizes that there is more than one way to name an equivalent fraction or decimal to represent a model or quantity including in simplest form.

Purposeful Questions:

- What strategies did you use to find a decimal equivalent for common fractions (e.g., $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{2}{4}$, $\frac{3}{4}$ or $\frac{1}{5}$, $\frac{1}{10}$) ? Which strategy is the most efficient for you and why? How can one connect fraction and decimal with money, like quarter, two quarters, three quarters?
- How can you connect fractions and decimals with money, like quarter, two quarters, three quarters?
- What strategies did you use to find a fraction equivalent for decimals? Which strategy is the most efficient for you and why?
- How does a decimal grid, fraction bars, or rational number wheel help you find a fraction or decimal equivalent?
- How can finding a decimal fraction with the denominators as 10, 100 or 1000 help you change fractions to decimals (e.g., $\frac{1}{4} = \frac{25}{100} = 0.25$ and $\frac{1}{8} = \frac{125}{1000} = 0.125$)?
- How might division help you find a decimal equivalent for a fraction?

Bridging Activity to Support Standard	Instructional Tips
Routines 5.2a Which One Does Not Belong?	This routine will promote mathematics discourse. Ask students for the decimal equivalents for the fractions and fraction equivalent for the decimals. Change your routine based on the skills you want to introduce that day or the skills you introduced the day before: e.g. fourths, improper fractions, etc. Or simply use one as a formative classroom assessment.
Rich Tasks How Much Money Goes Into the Savings Jar? by MathStrength	Students may use multiple strategies in order to determine how much money (out of a \$1) each child is required to put into their savings. They will record each fraction as a decimal amount. Support could include: pennies, blank area models to shade in, base ten blocks, and/or calculators. After the task, extend student learning by asking about Michel who must put $\frac{5}{8}$ of a dollar and Layla who must put $\frac{1}{3}$ of her dollar into her savings jar.
Games/Tech Decimal and Fractions Games Download Free decimals cards Desmos 5.2a Fraction and	With differentiated levels of playing cards, students can play 3 different games: 1) <i>Find A Pair</i> where they match an equivalent fraction to the decimal, 2) <i>Match It Up</i> in which students play equivalencies on each other's cards, or 3) <i>First Four</i> where you win when you are the first play to find 4 equivalent cards (ex. 0.20, 0.2, 20/100, 2/10). Other games are also included. Consider adding new cards with denominators of 2, 4, 5, 10, 20, 25, and 50. In this Desmos activity, students activate their background knowledge by connecting fractions and decimals to money. They model and explain the difference between

Decimal Equivalencies	tenths and hundredths. Students match equivalent models, fractions, and decimals. Lastly they explore eighths to begin grappling with thousandths.
Other Resources: • Online Games by Theresa Wills: This website has a number of games for comparing fractions <i>or</i> comparing decimals. However they can also be used to practice writing decimal fractions. • Equivalent Fractions Bingo: Find equivalent fractions by using numbers or numbers and charts, in order to name an equivalent fraction. • VDOE Mathematics Instructional Plans (MIPS) ◦ 5.2ab - Order Up! Equivalences and Ordering Fractions and Decimals (Word) / PDF • VDOE Algebra Readiness Formative Assessments ◦ SOL 5.2a (Word) / PDF • VDOE Algebra Readiness Remediation Plans ◦ Hundreds Grids (Word) / PDF ◦ Picture Perfect (Word) / PDF • VDOE Word Wall Cards: Grade 5 (Word) (PDF) ◦ Mixed Number ◦ Equivalent • Desmos Activity ◦ Fraction and Decimal Equivalencies • Money Pieces by the Math Learning Center is a great visual to relate money, fractions, and decimals. • Online Fraction Bars and Circles by Mathigon • Decimal Squares for an interactive shadeable tenths, hundredths, or thousandths grid for comparing. • Convert Fractions to Decimals Online Game by Sheppard Software allows 5 levels of gaming in relaxed or timed mode to allow for students' varying levels of ability. Learning Trajectory Resources: Charles, R. (2005). <u>Big ideas and understandings as the foundation for elementary and middle school mathematics.</u> <i>Journal of Mathematics Education Leadership</i>, 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). <i>Elementary and Middle School Mathematics: Teaching Developmentally.</i> (10th edition) New York: Pearson (2019:9780134802084) VDOE Curriculum Framework for All Grades - Standard of Learning Curriculum Framework (SOL)	