Your host

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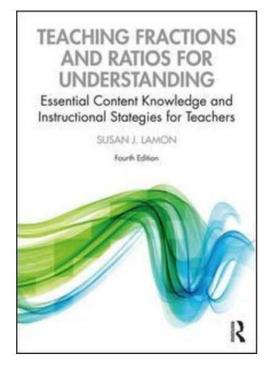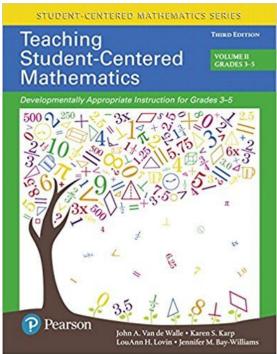
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Today's Session
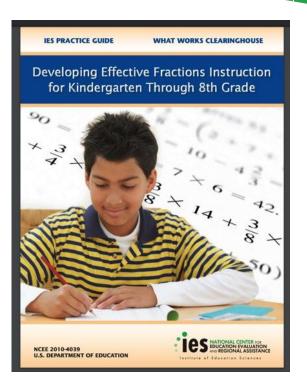
- Research
- Standard
- Fractions Operations w/common denominators
  - Color Wall
  - Number Line Hops
  - Geogebra

Research

TEACHING FRACTIONS AND RATIOS FOR UNDERSTANDING
Essential Content Knowledge and Instructional Stategies for Teachers
SUSAN J. LAMON
Fourth Edition

STUDENT-CENTERED MATHEMATICS SERIES
Teaching Student-Centered Mathematics
THIRD EDITION
VOLUME II GRADES 3–5
Developmentally Appropriate Instruction for Grades 3-5
Pearson
John A. Van de Walle • Karen S. Karp
LouAnn H. Lovin • Jennifer M. Bay-Williams

IES PRACTICE GUIDE   WHAT WORKS CLEARINGHOUSE
Developing Effective Fractions Instruction for Kindergarten Through 8th Grade
NCEE 2010-4039
U.S. DEPARTMENT OF EDUCATION
ies NATIONAL CENTER FOR EDUCATION EVALUATION AND REGIONAL ASSISTANCE
Institute of Education Sciences

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IES Recommendation 3

Recommendation 3.

Help students understand why procedures for computations with fractions make sense.

- Use area models, number lines, and other visual representations to improve students' understanding of formal computational procedures.

- Provide opportunities for students to use estimation to predict or judge the reasonableness of answers to problems involving computation with fractions.

- Address common misconceptions regarding computational procedures with fractions.

- Present real-world contexts with plausible numbers for problems that involve computing with fractions.

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Standards

Standards

KY.4.NF.3 Understand a fraction $\frac{a}{b}$ with a > 1 as a sum of fractions $\frac{1}{b}$.

a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

b. **Decomposing** a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions.

b. $\frac{3}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$ OR $\frac{3}{5} = \frac{2}{5} + \frac{1}{5}$

$3\frac{1}{4} = 1 + 1 + 1 + \frac{1}{4}$ OR $3\frac{1}{4} = \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{1}{4}$

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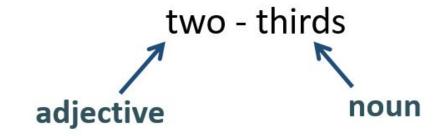
Five Interpretations of Rational Numbers

➤ Part-whole   ($\frac{4}{5}$ "4 out of 5 equal parts")

➤ (Measurement)   ($\frac{4}{5}$ "4 one-fifth units")

➤ Operator   ($\frac{4}{5}$ "four-fifths of something")

➤ Quotient   ($\frac{4}{5}$ "4 ÷ 5")

➤ Ratio   ($\frac{4}{5}$ "the ratio of 4 to 5")

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Adjective Noun View

two - thirds

adjective   noun

One-third is the unit (or object)

The "two" tells us how many.

Units

- Add 6 (teddy bears) + 2 (teddy bears)
- Add 6 (ones) + 2 (ones)
- Add 6 tens + 2 tens
- Add 6 hundreds + 2 hundreds
- Add 6 thirds + 2 thirds
- Add 6 tenths + 2 tenths
- Add $6x + 2x$
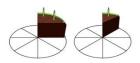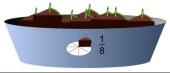
Contextual Examples and Models

Robert and Elijah were eating slices of cake. Robert had 2/8 of his cake left. Elijah had 1/8 of his cake left. How much do the boys have together.

Decomposing Fractions

$$\frac{8}{5}$$

$8\ fifths$

$$\frac{6}{5} + \frac{2}{5}$$

Decomposing Fractions

$$\frac{8}{5} \qquad 8 \; fifths$$
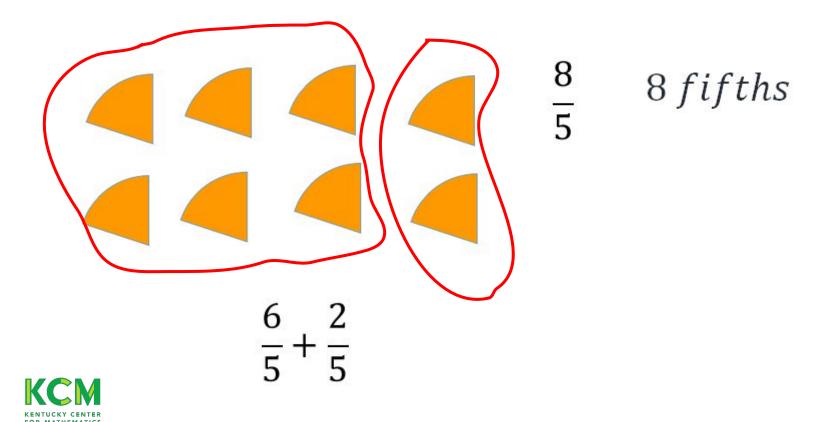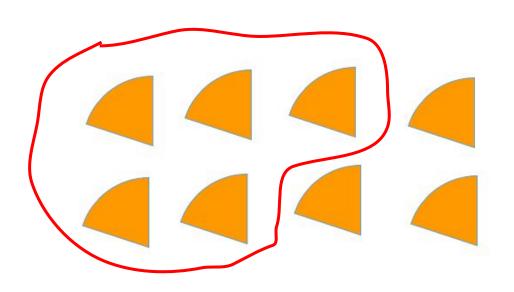
$$\frac{6}{5} + \frac{2}{5} \qquad\qquad \frac{5}{5} + \frac{3}{5} \;=\; 1 + \frac{3}{5}$$

Adding fractions with common denominators

$$\frac{3}{5} + \frac{4}{5}$$

Think: $3\ fifths + 4\ fifths$

$7\ fifths$

$$\frac{7}{5}$$

Color Fraction Wall Activity

Color Fraction Wall Activity

Colour in Fractions game board

How might you color $\frac{2}{3}$?

How might you color $\frac{2}{3}$?

$$\frac{2}{3} = \frac{8}{12}$$

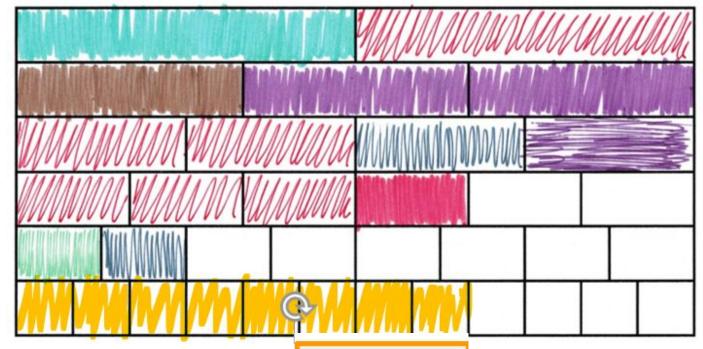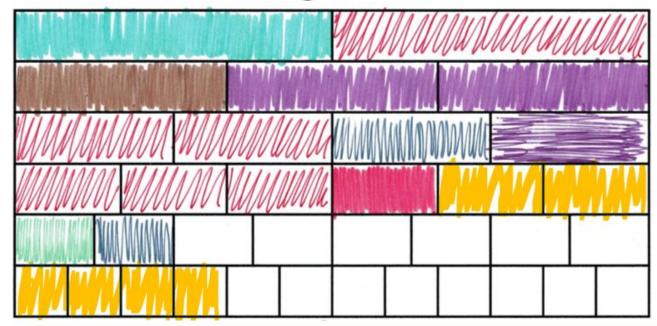# How might you color $\frac{2}{3}$?

$$\frac{2}{3} = \frac{1}{3} + \frac{1}{3} = \frac{4}{12} + \frac{2}{6}$$

Clark Fraction Wall Online Version

Fraction Wall Games

C-Rod Addition and Subtraction

C-Rod Addition and Subtraction

How Far Did She Go?
Part 1 (with C-rods)
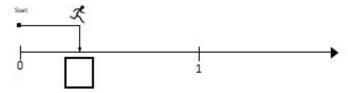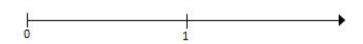
Name: _____

On Monday's run.

On Tuesday's run.

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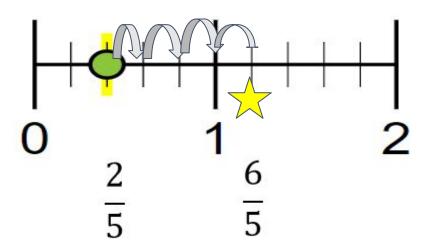
Number Line Addition and Subtraction

How many hops
does it take?

$$\frac{2}{5} + \frac{4}{5}$$

0   1   2

$$\frac{2}{5} \qquad \frac{6}{5}$$

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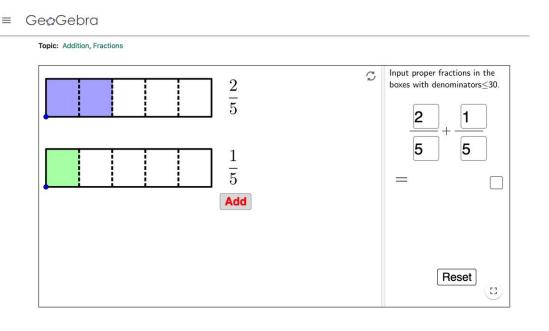
Geogebra Fraction Simulation

What works for teaching fraction operations?
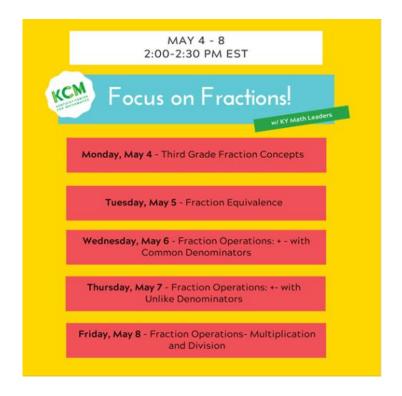
use contexts and provide Rich Tasks

a variety of models

include estimation & invented methods

address misconceptions

Coming up this Week

MAY 4 - 8
2:00-2:30 PM EST

KCM **Focus on Fractions!**

w/ KY Math Leaders

Monday, May 4 - Third Grade Fraction Concepts

Tuesday, May 5 - Fraction Equivalence

Wednesday, May 6 - Fraction Operations: + - with Common Denominators

Thursday, May 7 - Fraction Operations: +- with Unlike Denominators

Friday, May 8 - Fraction Operations- Multiplication and Division

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