Eureka Math

4th Grade
Module 5
Lesson 6

At the request of elementary teachers, a team of Bethel & Sumner educators met as a committee to create Eureka slideshow presentations. These presentations are not meant as a script, nor are they required to be used. Please customize as needed. Thank you to the many educators who contributed to this project!

Directions for customizing presentations are available on the next slide.

Icons

Read, Draw, Write

Learning Target

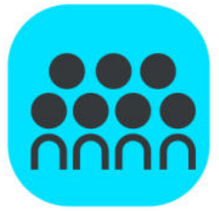
Personal White Board

Problem Set

Manipulatives Needed

Fluency

Think Pair Share



Whole Class

Individual

Partner

Small Group

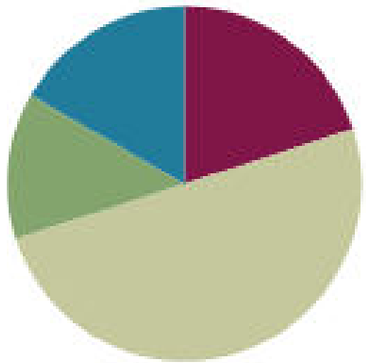
Small Group Time

Lesson 6

Objective: Decompose fractions using area models to show equivalence.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(8 minutes)
Concept Development	(30 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



Decompose fractions using area models to show equivalence.

SPRINT

Equivalence

⅓, say this fraction.

Say the fraction

On your white boards use an area model to show ⅓

Show ⅓ and sixths.

What is ⅓ equivalent to?

Application Problem

Use area models to prove that $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$, $\frac{1}{2} = \frac{3}{6} = \frac{6}{12}$, and $\frac{1}{2} = \frac{5}{10}$. What conclusion can you make about $\frac{4}{8}$, $\frac{6}{12}$, and $\frac{5}{10}$? Explain.

Area model to show equivalence

Draw an area model to show ¾.
Discuss with your partner how to decompose fourths into eighths.
Now show it.
How many eighths are shaded?
Work with your partner and write an addition and multiplication sentence to show that ¾ and 6/8 are equivalent.
What do you notice about the addition and multiplication sentences?

Area model to show equivalence

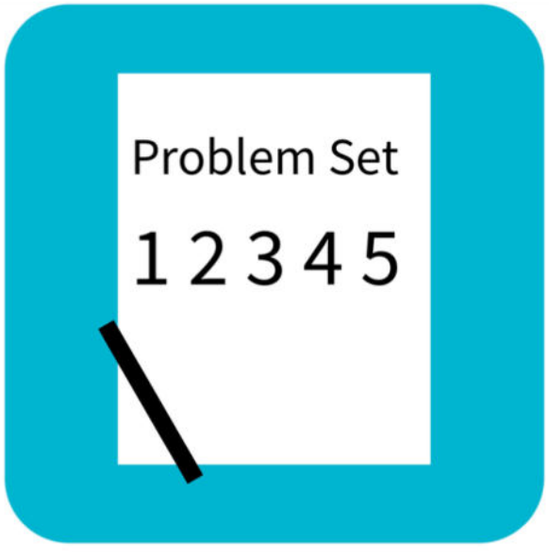
Let's draw and area model to show ⅔=8/12.
What fraction will you model first? Why?
Draw an area model to show ⅔.
How can we show that ⅔ = 8/12?
Now, show it in an addition sentence.
What about a multiplication sentence.

Area model to show equivalence

Let's use what we know to model equivalent fractions.

1) Draw an area model. The entire figure is 1.
2) Choose a fraction, and partition the whole using vertical lines.
3) Shade your fraction.
4) Switch papers with a partner. Write down the fraction that your partner has represented.
5) Draw one to three horizontal lines. What equivalent fraction have you modeled?

How could we model 5 thirds.

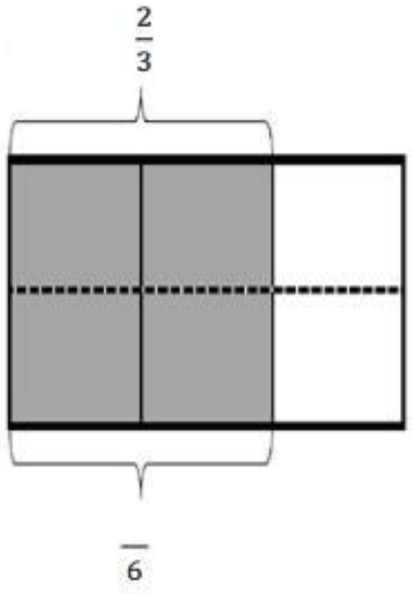


Problem Set

Name _____ Date _____

1. Each rectangle represents 1. Draw horizontal lines to decompose each rectangle into the fractional units as indicated. Use the model to give the shaded area as a sum and as a product of unit fractions. Use parentheses to show the relationship between the number sentences. The first one has been partially done for you.

a. Sixths



$$\frac{2}{3} = \frac{4}{\_}$$

$$\frac{1}{3} + \frac{1}{3} = \left(\frac{1}{6} + \frac{1}{6}\right) + \left(\frac{1}{6} + \frac{1}{6}\right) = \frac{4}{\_}$$

$$\left(\frac{1}{6} + \frac{1}{6}\right) + \left(\frac{1}{6} + \frac{1}{6}\right) = \left(2 \times \frac{1}{\_}\right) + \left(2 \times \frac{1}{\_}\right) = \frac{4}{\_}$$

$$\frac{2}{3} = 4 \times \frac{1}{\_} = \frac{4}{\_}$$

Debrief

- Look at Problems 1(c) and 2(b). Compare the two problems. How can $\frac{3}{4}$ be equivalent to both fractions?
- Why do we use parentheses? What does it help show?
- In Problem 2 of the Concept Development, could you represent $\frac{8}{12}$ first and then show the equivalence to $\frac{2}{3}$? How would you show it?
- How can two different fractions represent the same portion of a whole?
- How did the Application Problem connect to today's lesson?

Exit Ticket

Name _____ Date _____

1. The rectangle below represents 1. Draw horizontal lines to decompose the rectangle into eighths. Use the model to give the shaded area as a sum and as a product of unit fractions. Use parentheses to show the relationship between the number sentences.