

MATH NEWS

Grade 4, Module 5, Topic B

4th Grade Math

Module 5: Fraction Equivalence, Ordering, and Operations

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 5 of Eureka Math (Engage New York) covers fraction equivalence, ordering, and operations.

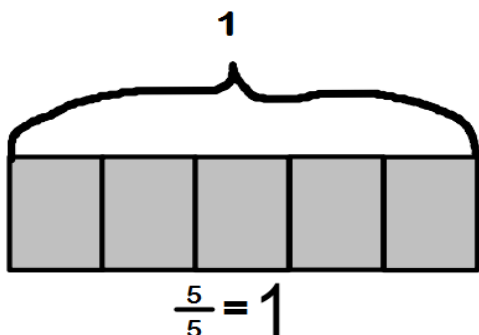


Focus Area Topic B:

Fraction Equivalence Using Multiplication and Division

Words to Know:

Whole fraction – when the numerator and the denominator are the same e.g., 2 halves, 3 thirds, 4 fourths



Non-unit fraction - fraction with numerators other than 1

Equivalent fractions - fractions that name the same size or amount

Compose - change a group of unit fractions with the same denominator to a single non-unit fraction or mixed number

Decompose - change a non-unit fraction or mixed number to the sum of its parts or unit fractions

OBJECTIVES OF TOPIC B

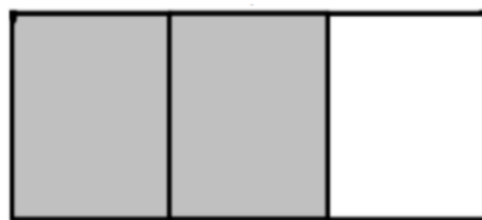
- ▶ Use the area model and multiplication to show the equivalence of two fractions.
- ▶ Use the area model and division to show the equivalence of two fractions
- ▶ Explain fraction equivalence using a tape diagram and the number line, and relate that to the use of multiplication and division.

Focus Area – Topic B

Fraction Equivalence Using Multiplication and Division
The Area Model and Fraction Equivalence using Multiplication

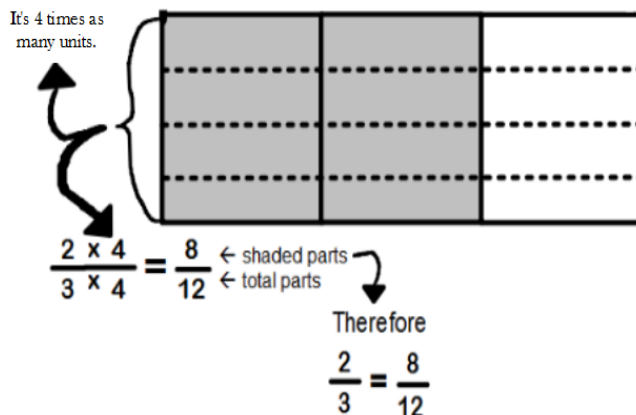
Students create equivalent fractions with area models.

To find a fraction that is equivalent to $\frac{2}{3}$ start with an area model that shows 2 out of 3 shaded parts. ↷



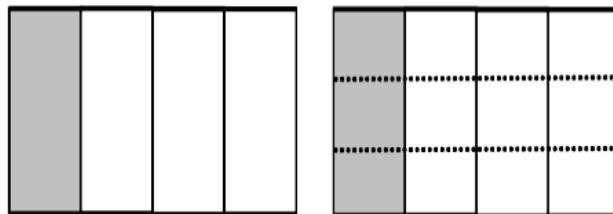
Multiply both the numerator and the denominator by the same number. $\frac{2 \times 4}{3 \times 4}$ ↷

When you multiply this way, each third gets partitioned into 4 parts.



Example Problem and Answer

Students will be asked to decompose the shaded fraction into smaller units using an area model. Then they will need to express the equivalent fraction in a number sentence using multiplication. Below is one way to solve. Can you think of another way?



Before

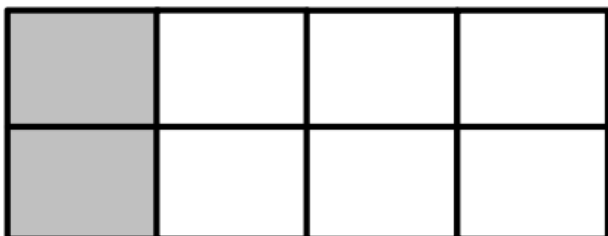
After

$$\frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12}$$

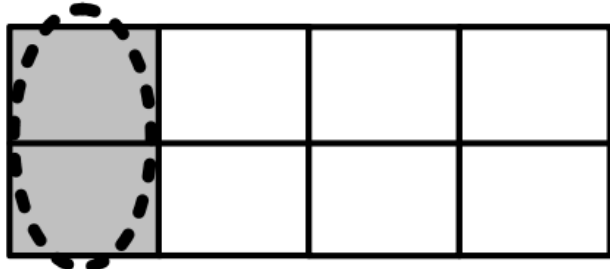
The Area Model and Fraction Equivalence using Division

Students will learn that division can be used to create a fraction comprised of larger units (or a single unit) that is equivalent to a given fraction.

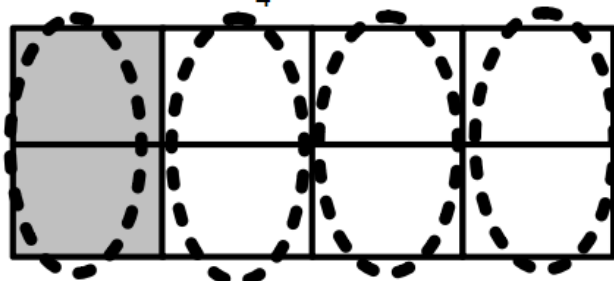
This area model shows $\frac{2}{8}$.



When we group 2 of the units together this way, we are dividing the numerator and the denominator by 2.



If we continue grouping by 2, we will have 4 groups with 1 group shaded. That's $\frac{1}{4}$!

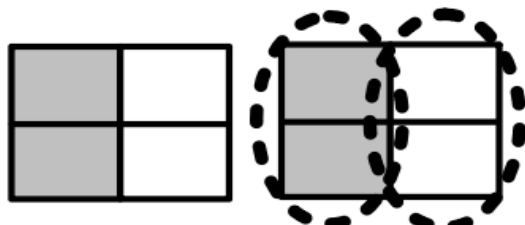


Therefore

$$\frac{2}{8} = \frac{2 \div 2}{8 \div 2} = \frac{1}{4}$$

Example Problem and Answer

Students are asked to compose the shaded fraction into larger fractional units and express the equivalent fraction in a number sentence using division.



Before

After

$$\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$$

Focus Area Topic B:

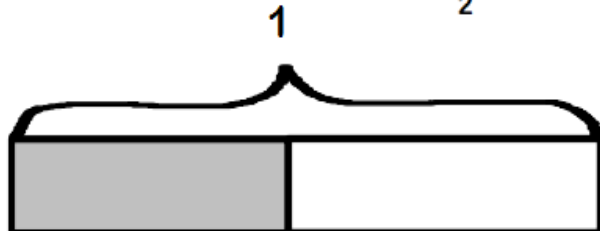
Fraction Equivalence Using Multiplication and Division



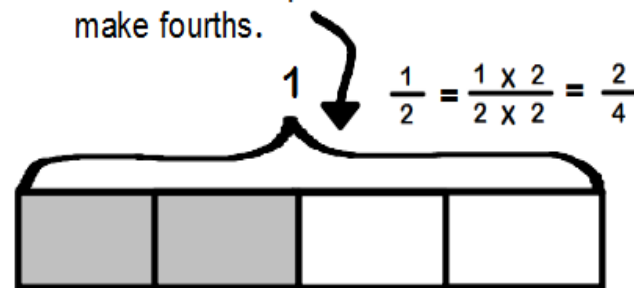
Fractions and the Number Line

Students use tape diagrams to transition their knowledge of fraction equivalence to the number line.

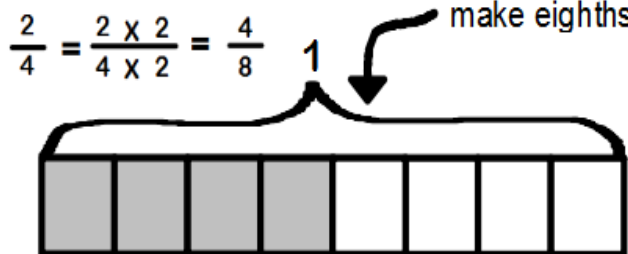
This tape diagram shows $\frac{1}{2}$.



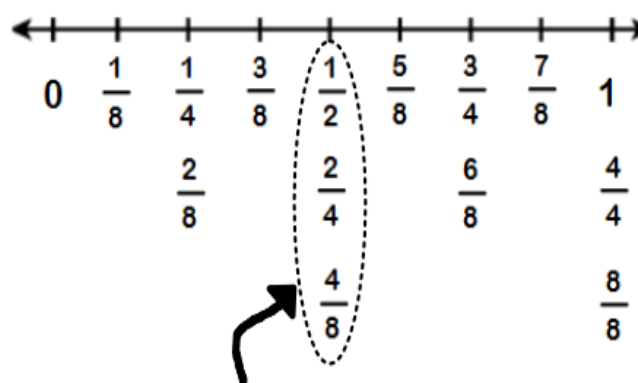
We can decompose halves to make fourths.



We can decompose fourths to make eighths.



Students will use this same process to decompose $\frac{1}{2}$ on a number line.



When multiple fractions share the same location on the number line, those fractions are equivalent.

Therefore $\rightarrow \frac{1}{2} = \frac{2}{4} = \frac{4}{8}$