

MATH NEWS

Grade 4, Module 5, Topic A

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 A:

Decompositions and Fraction Equivalence

Words to Know:

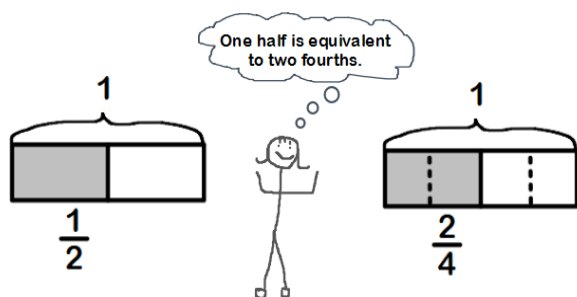
Numerator - top number in a fraction- the number of parts of the whole

Denominator - bottom number in a fraction- indicates the number of parts into which one whole is divided.

Mixed number - number made up of a whole number and a fraction

Unit fraction - fractions with numerator 1

Equivalent fractions - fractions that name the same size or amount



Fraction greater than 1 - a fraction with a numerator that is greater than the denominator

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 A

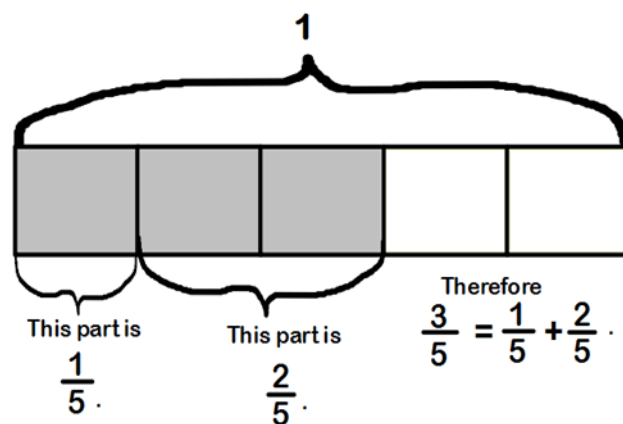
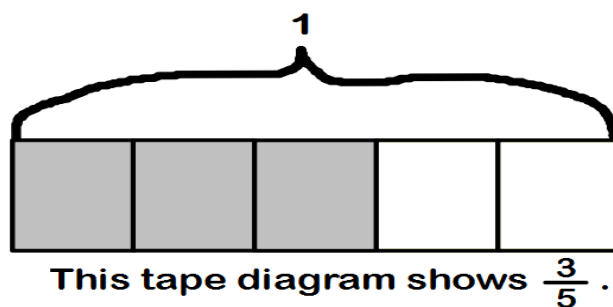
- ▶ Decompose fractions as a sum of unit fractions using tape diagrams.
- ▶ Decompose non-unit fractions and represent them as a whole number times a unit fraction using tape diagrams.
- ▶ Decompose fractions into sums of smaller unit fractions using tape diagrams.
- ▶ Decompose unit fractions using area models to show equivalence.

Focus Area – Topic A

Decompositions and Fraction Equivalence

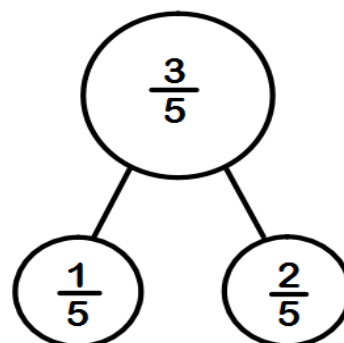
Number Bonds and Tape Diagrams with Fractions

Students decompose fractions as unit fractions, drawing tape diagrams to represent them as sums of fractions with the same denominator in different ways.



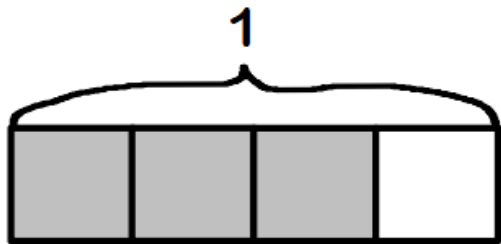
A number bond is a graphic showing a part/part/whole relationship. In this case, the fractions $\frac{1}{5}$ and $\frac{2}{5}$

combine to make $\frac{3}{5}$.





In Topic A, students begin to see that representing a fraction as repeated addition of a unit fraction is the same as multiplying that unit fraction by a whole number.



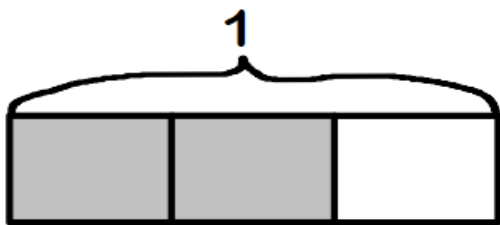
This tape diagram shows $\frac{3}{4}$.

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

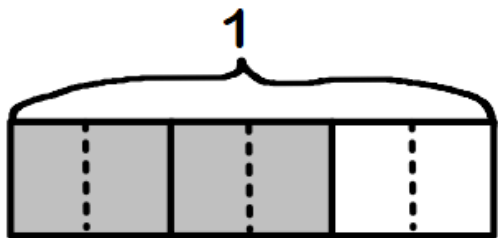
Therefore

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

Students continue with decomposition. They represent fractions as the sum of smaller unit fractions.



This tape diagram shows $\frac{2}{3}$.



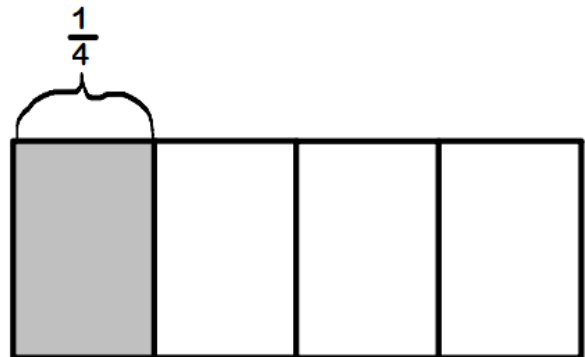
$$\frac{2}{3} = \left(\frac{1}{6} + \frac{1}{6}\right) + \left(\frac{1}{6} + \frac{1}{6}\right) = \frac{4}{6}$$

This activity helps students discover that the number of fractional parts in a whole increases, while the size of the pieces decreases.

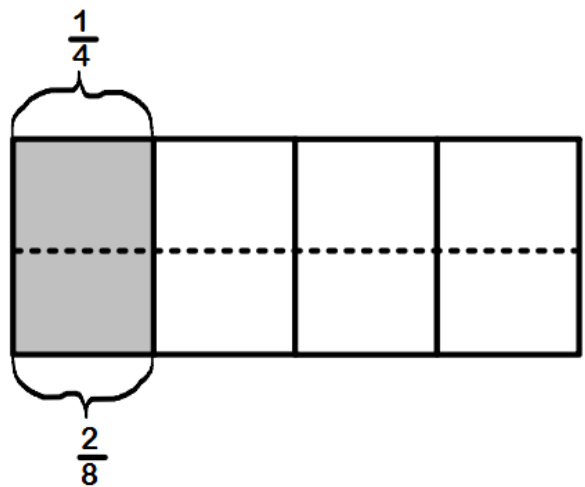
Fractions and the Area Model

The idea of the number of fractional parts increasing, while the size of the pieces decreases is further investigated as students represent the decomposition of unit fractions in area models.

This area model shows $\frac{1}{4}$.



The dotted line decomposes the whole into 2 equal rows. There were 4 pieces but now there are 8. Each fourth was cut into 2 pieces. Even though the parts changed, the area covered by the shaded region did not change.



The area model is used to explain how certain fractions are equivalent. Students will write addition and multiplication sentences to explain this equivalence.

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

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

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