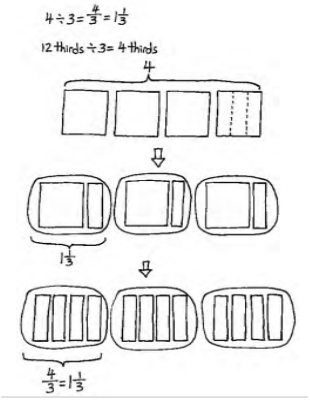
Eureka Math tips for Parents

Grade 5 Module 4

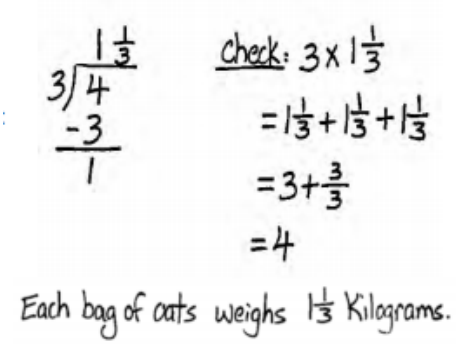
Multiplication and Division of Fractions and Decimal Fractions

In this 38-day module, students learn to multiply fractions and decimal fractions and start work with fraction division. Students will begin by measuring fractional parts on a number line as a concrete way of understanding fractional parts of a whole, and eventually move to more abstract fraction operations.

A diagram of 4 ÷ 3 showing fractional division:



4 ÷ 3, shown as a traditional algorithm division problem:



What Came Before this Module: We learned to add and subtract fractions with unlike denominators, moving from concrete to abstract examples.

What Comes After this Module: In Module 5, we will work with the area and volume of two- and three-dimensional figures.

New Terms in this Module:
Decimal divisor- the number that divides the whole and that has units of tenths, hundredths, thousandths, *e.g. 1/100*

Simplify- using the largest fractional unit possible to express an equivalent fraction, *e.g. 4/6 simplifies to 2/3, with the denominator 3 being a larger fractional unit than 6*

Familiar Terms with some definitions:

Denominator
Decimal Fraction
Equation
Equivalent Fraction
Factors - numbers that are multiplied to obtain a product
Line Plot
Mixed Number
Numerator
Tape Diagram
Unit - one segment of a partitioned tape diagram
Unknown - the missing factor or quantity in multiplication or division
Whole Unit - any unit that is partitioned into smaller, equally sized fractional units

+ How you can help at home:

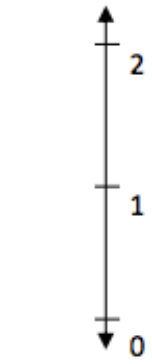
- Continue to practice and review multiplication and division math facts - this greatly supports work with fractions!
- Look for opportunities in daily life to discuss both fractional parts of a whole and of other fractions, e.g. What is ¼ of 20? ¼ of ½?

Key Common Core Standards:

- *Write and interpret numerical expressions.*
- *Perform operations with multi-digit whole numbers and with decimals to hundredths.*
- *Apply and extend previous understandings of multiplication and division to multiply and divide fractions.*
- *Convert like measurement units within a given measurement system.*
- *Represent and interpret data.*

Prepared by Erin Schweng, Math Coach

Various types of number lines:



Vertical number line

The clock – a circular number line!

A ruler number line

Spotlight on Math Models:

Number Lines

You will often see this mathematical representation in *A Story of Units*.

A Story of Units has several key mathematical "models" that will be used throughout a student's elementary years.

The number line is a powerful, flexible model that students can use in many ways. In this particular module, students begin to understand the idea of fractions as division by marking a ruler or line plot with $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ increments.

The number line is used beginning in Kindergarten in *A Story of Units*, and will continue to appear in various forms through 5th grades. It is used to develop a deeper understanding of whole number units, fraction units, measurement units, decimals, and negative numbers. Often, the mathematical concepts in an *ASOU* module move from concrete to more abstract, and the number line is an important concrete conceptual step for students of all ages.

Sample Problem from Module 4:
(Example taken from Lesson 5)

Forty students shared 5 pizzas equally. How much pizza did each student receive?

What fraction of the pizza did each student receive?

Note the use of a tape diagram as well as the drawing showing division of a whole number into fractional parts: