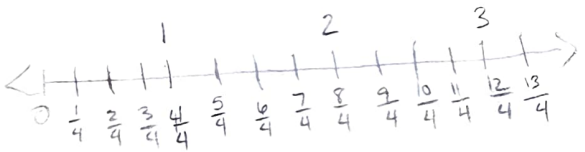
Fractions

Equal Parts

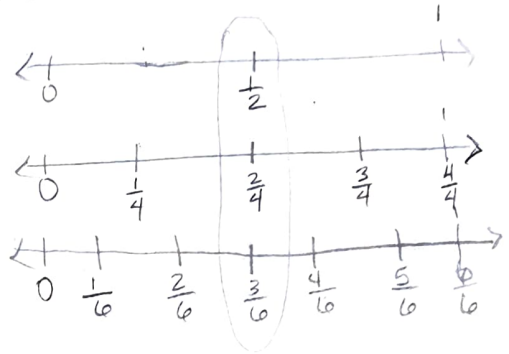
Numerator → 2 - amount of parts
Denominator → 4 - parts of the whole

Counting fractions

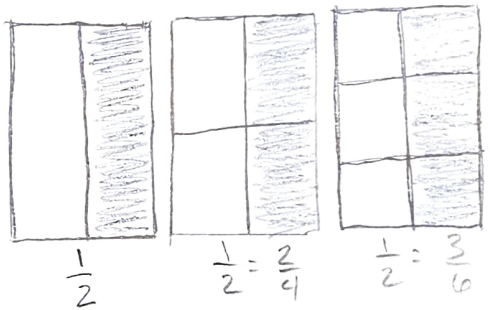


Equivalent Fractions

linear model



area model



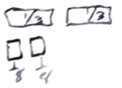
Comparing Fractions

Common denominator

$\frac{4}{6} > \frac{2}{6}$

Common numerator

$\frac{2}{2} > \frac{2}{8}$



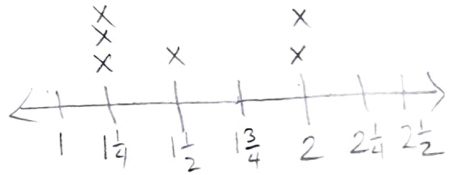
must compare to same sized whole

Measurement and Fractions

use anything you can measure

ruler

line plot



Standards and Mathematical Practices

1) We will explain our thinking when we identify and name fractions.

2) We will model with mathematics to create equivalent fractions

3) We will look for and make use of structure to compare fractions

Inquiry

What we know about fractions.

What we want to learn about fractions

UNIT PLANNING TOOL

Planning Focus: Fractions **Module(s)/Unit(s): Unit 4**

CCSSM:

CCSS.MATH.CONTENT.3.NF.A.1: Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.

CCSS.MATH.CONTENT.3.NF.A.2.A: Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.

CCSS.MATH.CONTENT.3.NF.A.2.B: Represent a fraction *a*/*b* on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.

CCSS.MATH.CONTENT.3.NF.A.3.A: Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

CCSS.MATH.CONTENT.3.NF.A.3.B: Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model.

CCSS.MATH.CONTENT.3.NF.A.3.C: Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*

CCSS.MATH.CONTENT.3.NF.A.3.D: Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Mathematical Practices being emphasized:

3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
7. Look for and make use of structure

Essential Questions

What do the numbers in a fraction tell us?
How can I use unit fractions to build other fractions?
How can I show fractions on a number line?
How can I prove that the point I located on the number line is the correct location for a specific fraction?
How do I know two fractions are equal?
How do I create equivalent fractions?
How can I compare fractions that have the same numerator or denominator?

Key Concepts

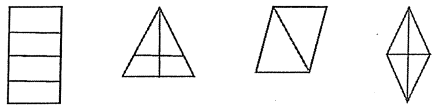
- Fractions are numbers
- Equal parts of a whole
- Fractions are made of repeated unit fractions (1 in the numerator)
- Numerator and denominator role
- Fractions can be represented in area models, linear models, sets of objects
- Compare fractions with the same numerator or denominator.

Visual Models/ Algorithms/ Diagrams for Compendium

(planned on a separate sheet of paper)

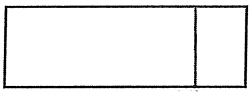
Pre and Post Assessments

1) Circle the shapes that show fourths.



2) Write these numbers on the number line:
2, 3, 5

3) Is this shape partitioned into halves?



4) Using <, >, or =, complete the statements below.
   a. 5_____9
   b. 8 _____3

5) Draw a triangle and partition it into halves

6) Draw a rectangle and partition it into thirds.

Connections (Real World Applications)

- Dividing food to share (pizza, candy bars, an apple…)
- Buying groceries (2 ½ pounds of hamburger, ½ pound of grapes…)
- Measuring objects or distance (3 ½ inches, 4 ¼ miles)
- Increasing or decreasing recipes
- In sports (1/2 yard from the in zone, 1/2 time, swam ¼ of the pool)
- Identifying parts of groups (2/3 of the students are wearing pajamas)

Language Functions/Structures

Describe There are ___ equal parts in the whole. ____ parts are shaded.
The numerator tells us _____. The denominator tells us _____.
I partitioned the shape into __ parts and shaded in ___ of them.

Discuss I agree with _____ because. I want to add… I respectfully disagree with ____ because…

Compare __ is greater than ___. ___ is less than ___. __ is equal to ___.
__ and __ are equivalent.
___ is closest to (0, ½, 1) because …

Vocabulary

fraction	numerator	denominator	unit fraction
equal parts	equivalent	benchmark fraction	compare
greater than	less than	equal to	number line
partition	benchmark fraction	improper fraction	mixed number

half/halves, third(s), fourth(s), fifth(s)……twelfth(s)

Focus and Motivation

Chant: *Understanding Fractions Yes, Ma'am* by Lisa Meyer
Songs by Number Rock**:** *Fraction Song by* Number Rock https://www.youtube.com/watch?v=lTce7f6KGE0 (targets numerator and denominator), *Fractions on a Number Line https://www.youtube.com/watch?v=SZaXtOHNh6s* (make sure to extend the idea beyond one)

Video and quizzes on BrainPOP for fractions: *https://www.youtube.com/watch?v=he07GTSA2Qw*

Literature: *Give me Half* by Stuart J. Murphy
How big is a foot? By Robert Myller (measurement connection)
The Wishing Club by Donna Jo Napoli
Fraction Action by Loreen Leedy
Apple Fractions by Jerry Pallotta

Fraction Card Games: fractions less than ½, ½ or more than ½, comparing fractions

Understanding Fractions Yes Ma'am

by Lisa Meyer

Is this a fraction?	Yes, Ma'am
Is this a fraction?	Yes, Ma'am
How do you know?	It's a partial number.
How do you know?	Numerator and denominator
Give me an example.	¾ (3 out of 4)
Give me an example.	¼ (1 out of 4)

Is this a unit fraction?	Yes, Ma'am
Is this a unit fraction?	Yes, Ma'am
How do you know?	1 in the numerator
How do you know?	One part of the whole
Give me an example.	1/2 or 1/3
Give me an example.	1/5 or 1/8

Is this a benchmark fraction?	Yes, Ma'am
Is this a benchmark fraction?	Yes, Ma'am
How do you know?	Common fractions we know
How do you know?	Easier to compare
Give me an example.	1/2
Give me other benchmarks.	0 and 1

Is this an equivalent fraction?	Yes, Ma'am
Is this an equivalent fraction?	Yes, Ma'am
How do you know?	They're the same size.
How do you know?	One equals the other
Give me an example.	1/2 and 2/4
Give me an example.	2/5 and 4/10

Repeat first verse.

Note: Chant could be *Yes, Ma'am; Yes, of course; Yes, sir…*