

Fractions

Whole number $\frac{3}{1}$, Partial numbers $\frac{4}{10}, \frac{5}{10}, \frac{4}{100}$, $\frac{1}{2} = .50 = 50\%$

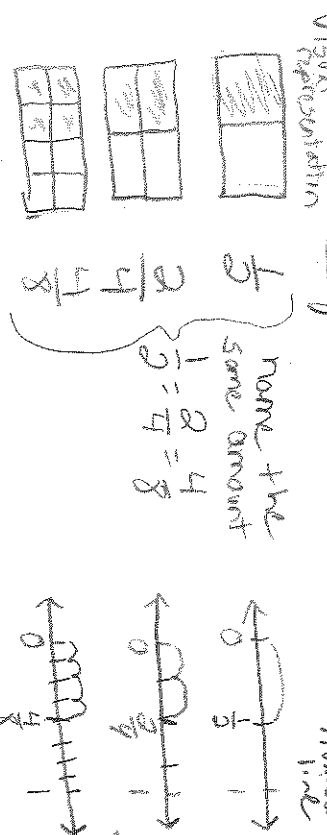
3 types

Proper, Improper, Mixed

Numerator \rightarrow 3 - parts
Denominator \rightarrow 4 - whole
whole \rightarrow 1
proper fraction \rightarrow $\frac{3}{4}$



equal \rightarrow equivalent fractions



Comparing

less than $<$, greater than $>$, equal $=$, inequalities

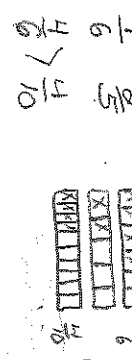
Use a benchmark fraction

$\frac{3}{8}$ to $\frac{6}{10}$ \rightarrow use $\frac{5}{10}$ as the benchmark

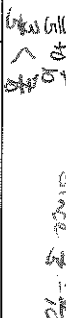


Conclusion $\frac{3}{8} < \frac{6}{10}$

Compare common numerators

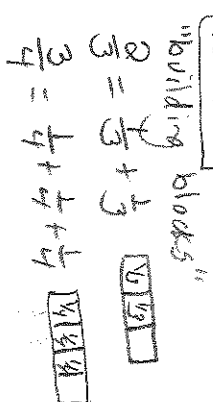


Compare common denominators

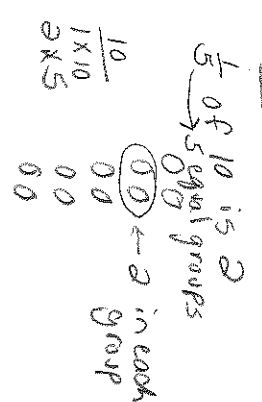


Unit fractions

Building blocks: $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$



Fractions in sets or groups



Mathematical Standards and Practices

1) We will make sense of fractions and persevere in finding equivalent fractions and comparing fractions.

2) We will select and use tools such as fraction bars and number lines to solve fraction problems.

Inquiry Chart

What we know about fractions?

What we want to learn about fractions?

Fractions → a part of a whole

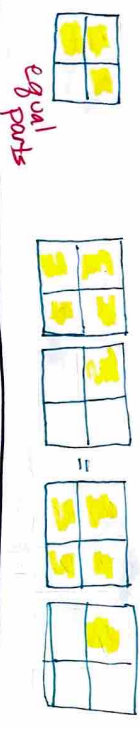
Whole number Partial number
 $3, 4, 7, 2, 5, 4$
 $\frac{1}{2} = .50 = 50\%$

3 types

Proper - parts we have
 numerator 3 denominator 4 whole

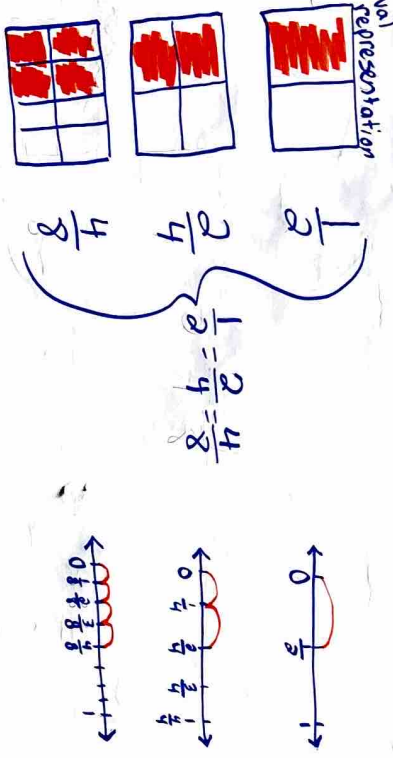
Improper

Mixed number



equal representation

equal parts

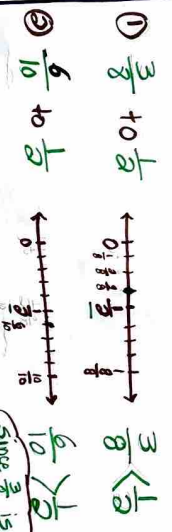


Comparing fractions

less than
 greater than
 equal to

Use a benchmark

$\frac{3}{8}$ to $\frac{6}{10}$ → Use $\frac{1}{2}$ as the benchmark



Conclusion $\frac{3}{8} < \frac{6}{10}$

Compare like numerators

$\frac{4}{6}$ to $\frac{2}{5}$

Compare like denominators

$\frac{3}{5}$ to $\frac{3}{7}$



What we know

Ingving Chart

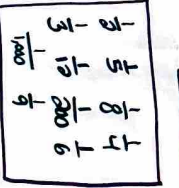
What we want to learn

Mathematical Standards and Practices

1) We will select and use tools such as fraction bars and number lines to solve fraction problems.

2) We will make sense of fractions and persevere in finding equivalent fractions and comparing fractions.

Unit fractions

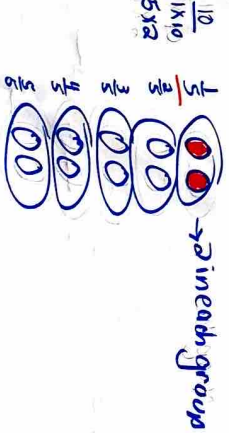


building blocks of fractions

$\frac{2}{3} = \frac{1}{3} + \frac{1}{3}$
 $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$

fractions in sets or groups

$\frac{1}{5}$ of 10 is 2
 → 5 equal groups



What is equivalent?

What is a benchmark fraction?

What does $\frac{1}{4}$ mean?

Is it possible to have a really high number and still write it as a fraction?

How fractions can be placed on a number line

UNIT PLANNING TOOL

Planning Focus: Fractions: Extending fraction equivalence and ordering / comparing

Grade Level: 4th

CCSS.MATH.CONTENT.4.NF.A.1

Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

CCSS.MATH.CONTENT.4.NF.A.2

Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Mathematical Practices being emphasized:

1. Make sense of problems and persevere in solving them.
5. Use appropriate tools strategically.

Essential Questions

- How can a fraction model help us make sense of a problem?
- In what ways can we model equivalent fractions?
- How are benchmark fractions helpful when comparing fractions?

Key Concepts

- Benchmark fractions
- Plotting fractions on a number line
- Use visual models to compare and find equivalent fractions
- Factors and products
- Multiples

Pre and Post Assessments

Pre and post assessments from Topic 8 materials.
Exit slips (teacher developed)

Preassessment for classroom demo – see attached.
(Preassessment based on concepts that will help the teachers know students' current understanding of fractions.)

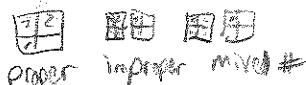
Other formative assessment opportunities:

- Simultaneous Numbered Heads
- Inquiry Chart
- Work on unit lessons
- Guided math group

Visual Models/ Algorithms/ Diagrams for Compendium

3 types

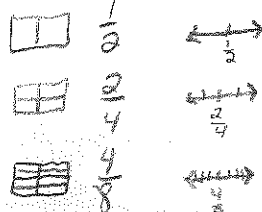
$\frac{3}{4}$ $\frac{5}{4}$ $1\frac{1}{4}$



proper improper mixed #

equivalent fractions

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



Comparing $>$ $<$ $=$

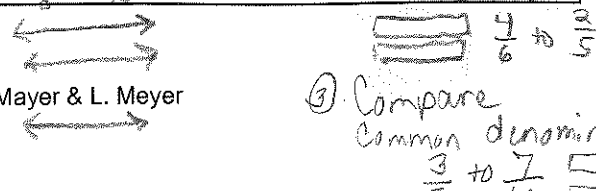
① $\frac{1}{2}$ as a benchmark
 $\frac{3}{8}$ to $\frac{4}{8}$

② Compare Common Numerators

$\frac{4}{6}$ to $\frac{5}{10}$

③ Compare Common Denominators

$\frac{3}{5}$ to $\frac{7}{10}$



Connections (Real World Applications)

- Dividing food (candy bars, cakes)
- Weight of food (2 $\frac{1}{2}$ pounds of grapes X 1 $\frac{1}{4}$ times that weight in bananas)
- Bags of marbles, boxes of pencils, yards or feet of wrapping paper or ribbon
- Increasing or decreasing recipes, fraction of students on buses
- $\frac{2}{3}$ of the class are boys. $\frac{1}{2}$ are wearing tennis shoes. What fraction of the boys are wearing tennis shoes?

Language Functions/Structures

Describe First we _____. Then we _____. Finally, we _____

Explain We decided to _____ because _____. To solve the problem, we _____ and then _____.
The factors of _____ are _____ and _____ because ...

Analyze _____ is greater than _____ because ... _____ is less than _____ because ...
_____ is equivalent to _____ because...
_____ and _____ are equivalent because _____, where _____ and _____ are inequalities because...

Vocabulary

fraction, numerator, denominator, operations, multiplication/multiply, factors, products, mixed numbers, product, quotient, partition, equal parts, equivalent, factor, unit fraction, benchmark fraction, inequalities, greater than, less than, compare, order

Focus and Motivation

Chants: *Yes Ma'am, Understanding Fractions* by Lisa Meyer

Video and quizzes on Brainpop for fractions

Fraction Action Math Song | Mister C https://www.youtube.com/watch?v=Rcrlq9_5r7s

Literature: *Inchworm and a Half* by Elinor J. Pinczes

The Wishing Club by Donna Jo Napoli

Fraction Action by Loreen Leedy

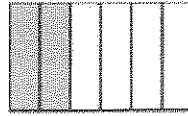
Fraction Card Games: matching equivalent fractions; fractions less than $\frac{1}{2}$, $\frac{1}{2}$ or more than $\frac{1}{2}$

YouTube - Fractions in real life <https://www.youtube.com/watch?v=5AVjBFP4MRg&t=36s> (possible start for doing a fraction hunt)

Name: _____

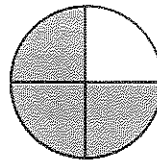
Topic 8 Pre-Assessment

1. What fraction of the object is shaded?

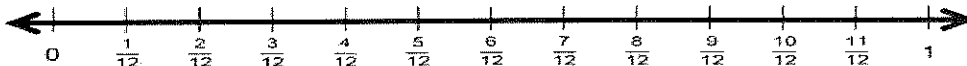
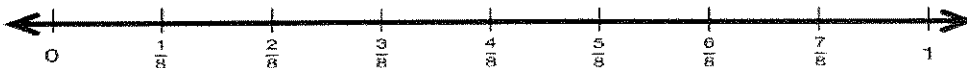
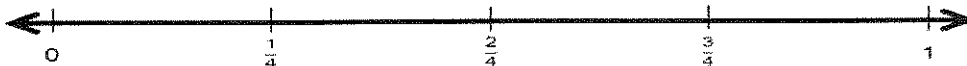
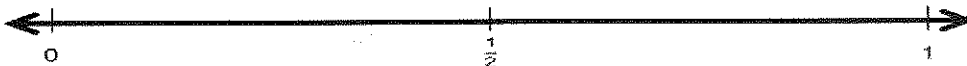


2. For dinner, Josie ate $\frac{3}{4}$ of her pizza.

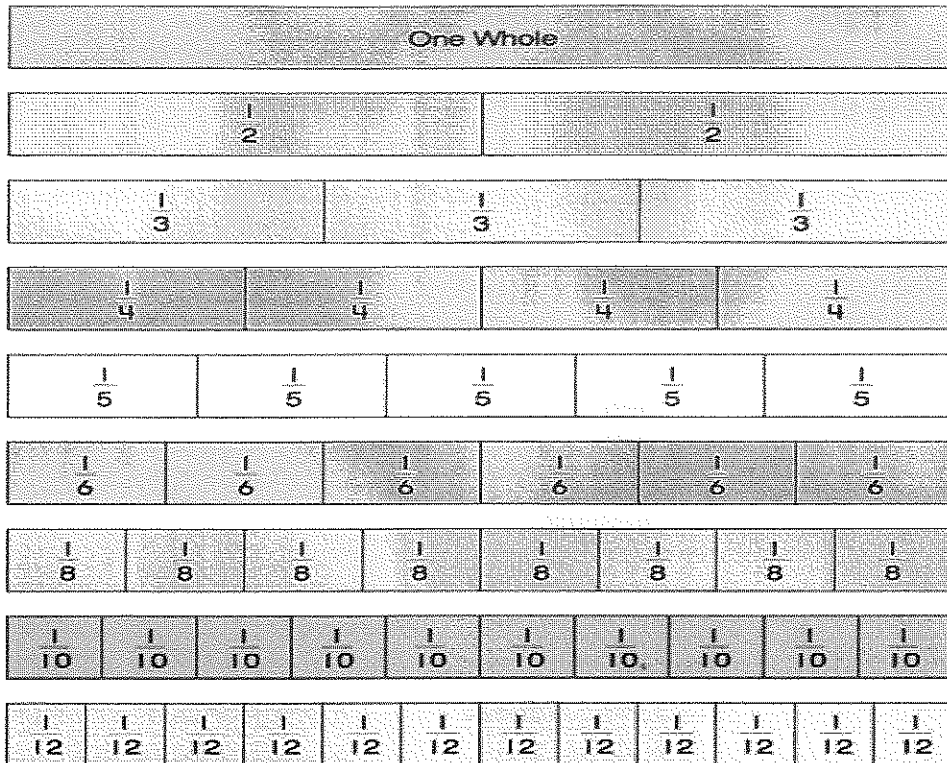
What fraction is **equivalent** to $\frac{3}{4}$?



3. Use the number line to write 2 fractions that are **equivalent** to $\frac{2}{6}$.



4. Use the **bar model** to find equivalent fractions for $\frac{1}{2}$.



5) **Sort** the fractions in the box by comparing each one to the **benchmark** fraction $\frac{1}{2}$.

$\frac{3}{4}$	$\frac{1}{3}$	$\frac{6}{12}$	$\frac{4}{5}$	$\frac{2}{4}$
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Less than $\frac{1}{2}$	Equal to $\frac{1}{2}$	More than $\frac{1}{2}$