

UNIT PLANNING TOOL

Planning Focus: Fractions: Extending fraction equivalence and ordering

Grade Level: 4th

Extend understanding of fraction equivalence and ordering.

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:

- 3. Construct viable arguments and critique the reasoning of others.
- 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

Pre and Post Assessments

Pre and post assessments in unit.
Exit slips (teacher developed and from unit)

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

Visual Models/ Algorithms/ Diagrams for Compendium

The image shows several handwritten mathematical models and diagrams:

- Three rectangular fraction models representing $1/3$, $2/4$, and $1/2$. Each is divided into equal parts, with the first part shaded to show equivalence.
- Three number lines from 0 to 1, each with tick marks. The first has 3 ticks (representing $1/3$), the second has 4 ticks (representing $2/4$), and the third has 6 ticks (representing $1/2$).
- A number line from 0 to 1 with a tick mark at $1/2$ and a point labeled $3/6$ marked with a dot.
- A number line from 0 to 1 with a tick mark at $1/2$ and a point labeled $6/10$ marked with a dot.
- A handwritten note: " $1/5$ of 10 is 2" with a box around the number 2.
- A vertical stack of four boxes, each containing a fraction: $10/1 \times 10$, 2×5 , and two boxes with 20 inside.
- A handwritten comparison: $3/8 < 6/10$.
- Handwritten symbols for comparison: $<$, $>$, $=$.

Other formative assessment opportunities:

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

Connections (Real World Applications)

- Dividing food (candy bars, cakes)
- Weight of food (2 ½ pounds of grapes X 1 ¼ 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
- 2/3 of the class are boys. ½ 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

Focus and Motivation

Chants: Yes Ma'am: Fractions, Decimals, Percents by Annette Maestas
Fractions Cadence by Evelyn Chávez

Video and quizzes on Brainpop for fractions

Literature: *Inchworm and a Half* by Elinor J. Pinczes
The Wishing Club by Donna Jo Napoli
Engineering Marvels: Roller Coasters: Dividing Fractions by Ben Nussbaum

Activity with pattern blocks or base ten blocks: If ____ is ____, then what is ____? What would be one whole? What would ____ be?

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