

Unit 4F - Fractions

Overview

In this unit, students will begin by building, comparing, and investigating relationships between unit and common fractions using several models including parts of a whole, parts of a set, and number line models. Using models such as an egg carton, ruler, 12 foot section of adding machine tape, and circle graph, students see real world applications for fractions. The unit then connects this to related work with data collection, representation, and interpretation.

21st Century Capacities: Synthesizing

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS

MP 4 Model with Mathematics
MP 7 Look for and make use of structure.

CCSS.MATH.CONTENT.3.NF.A.1 Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

CCSS.MATH.CONTENT.3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.

CCSS.MATH.CONTENT.3.NF.A.2.A Represent a fraction $\frac{1}{b}$ 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 $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.

CCSS.MATH.CONTENT.3.NF.A.2.B Represent a

Transfer:

Students will be able to independently use their learning in new situations to...

1. Build models in order to visualize or compose fractional quantities.
2. represent and interpret patterns in numbers and data to draw conclusions or create a solution (synthesizing)

Meaning:

UNDERSTANDINGS: *Students will understand that:*

1. Fractions must be of the same size whole to compare and perform operations
2. fractions are part of a whole, part of a set, part of an area, and locations on the number line
3. Mathematicians create or use models to examine, describe, solve and or make predictions.
4. There are flexible ways of representing and recognizing fractional quantities.

ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:*

- A. Why is it necessary to have the same size wholes when working with fractions?
- B. How can fractions be modeled, compared and ordered?
- C. How can I visualize equivalent amounts?
- D. How do the numerator and denominator in a fraction relate?
- E. How do I interpret this data?

Grade 3 Math Curriculum

<p>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.</p> <p>CCSS.MATH.CONTENT.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>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.</p> <p>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.</p> <p>CCSS.MATH.CONTENT.3.NF.A.3.C Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.</p> <p>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.</p> <p>CCSS.MATH.CONTENT.3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.</p> <p>CCSS Math Content 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.</p>	Acquisition:	
<p><i>Students will know...</i></p> <ol style="list-style-type: none"> 1. The symbolic notation for a given fraction 2. A unit fraction is one of the equal parts into which a whole has been partitioned 3. How to partition a number line into equal parts 4. Visual models can help generate and recognize equivalent fractions 5. How to compare fractions with same numerators or same denominators 6. Vocabulary: numerator, denominator, fraction, half, partition, unit fraction, common fraction, equivalent fractions, sixths, fourths, eighths, thirds, twelfths 	<p><i>Students will be skilled at...</i></p> <ol style="list-style-type: none"> 1. Partitioning shapes into parts with equal areas and expressing the area of each equal part of a whole as a unit fraction of the whole 2. Representing fractions with denominators of 2, 3, 4, 6, and 12 as parts of a set and parts of a whole using a variety of models 3. Locating fractions on a number line and placing fractions in their correct positions 4. Using number lines and other models to build, compare and explore equivalence of common fractions 5. Recognizing fractions that are equivalent to whole numbers 	