

Unit 5

Fractions as Numbers on the Number Line

Grade 3 Math

Description: Students transition from thinking of fractions as area or parts of a figure to points on a number line. Once the unit “1 fourth” has been established, counting them is as easy as counting whole numbers: 1 fourth, 2 fourths, 3 fourths, 4 fourths, 5 fourths, etc. Students compare fractions, find equivalent fractions in special cases, and solve problems that involve fractions.

Louisiana Student Standards for Mathematics (LSSM) Instructional Outcomes

Major Cluster: NF: Number and Operations – Fractions

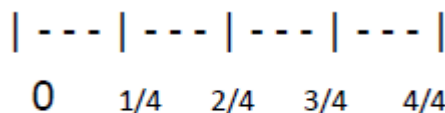
Develop understanding of fractions as numbers. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)

3.NF.1 Understand a fraction $1/b$, with denominators 2, 3, 4, 6, and 8, 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 part of size $1/b$.

3.NF.2 Understand a fraction with denominators 2, 3, 4, 6, and 8 as a number on a number line diagram.

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.

b. Represent a fraction a/b on a number line diagram by marking off the length $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.



3.NF.3

Explain equivalence of fractions with denominators 2, 3, 4, 6, and 8 in special cases, and compare fractions by reasoning about their size.

- a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. (Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)
- 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.
- c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: *Express 3 in the form of $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.*
- 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.

Supporting Cluster: G: Geometry**3.G.2**

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part is $1/4$ of the area of the shape.

Enduring Understandings:

- Fractional parts are equal shares of a whole or a whole set.
- The fraction name (half, third, etc.) indicates the number of equal parts in the whole.
- The more equal sized pieces that form a whole, the smaller the pieces of the whole become.
- Fractions can be represented on a number line.
- Fractions can be compared by drawing a model or representation on a number line.
- When the numerator and denominator are the same number, the fraction equal one whole.
- Whole numbers can be renamed as fractions.

Essential Questions:

- What is a fraction?
- How do I represent a fraction on a number line?
- What fractions are on the number line between 0 and 1?
- How can I compare fractions? When we compare two fractions, how do we know which has a greater value?
- How can I represent fractions of different sizes?
- How can I show that one fraction is greater (or less) than another?
- How can I use fractions to name parts of a whole?
- How does the numerator impact the denominator on the number line?
- What are the important features of a unit fraction?

- How are fractions used in problem-solving situations?