Unit 5 Family Support Materials

Fractions as Numbers

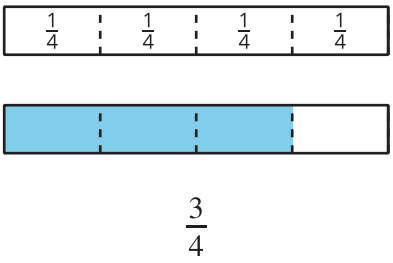
In this unit, students develop an understanding of fractions as numbers. They represent fractions with diagrams and number lines, and compare and find equivalent fractions.

Section A: Introduction to Fractions

In this section, students use diagrams and fraction strips to learn about fractions.

In grade 2, they learned about halves, thirds, and fourths. Now, they partition 1 whole into 6 or 8 parts, describe each part as "a sixth" or "an eighth," and write the notation $\frac{1}{6}$ or $\frac{1}{8}$.

Students learn that the notation $\frac{1}{b}$ means 1 whole is partitioned into b parts and each part has size $\frac{1}{b}$.



In these diagrams, each part is a unit fraction of size $\frac{1}{4}$.

Students see that composing unit fractions creates non-unit fractions (fractions with numerators greater than 1). For example, putting together 3 parts of $\frac{1}{4}$ each gives $\frac{3}{4}$.

Section B: Fractions on the Number Line

In this section, students locate fractions on the number line. They learn that the same as whole numbers, fractions can be represented as distances from 0 on the number line.

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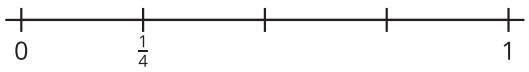
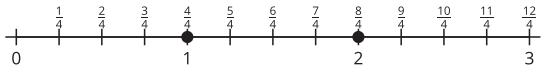
Students partition the interval from 0 to 1 into b equal parts. They label the first tick mark to the left of zero, with a unit fraction $\frac{1}{b}$. Here, the number line is divided into 4 equal parts, and the first tick mark is labeled $\frac{1}{4}$:



Then students locate non-unit fractions on the number line by counting unit fractions. They notice that certain fractions are in the same location as whole numbers on the number line.

For example, $\frac{4}{4}$ is at the same location as 1, and $\frac{8}{4}$ is at the same location as 2.

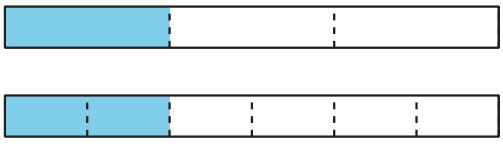


The terms “numerator” and “denominator” are introduced here.

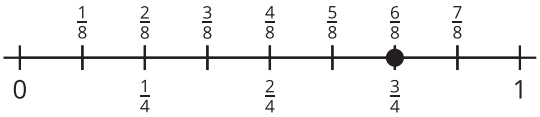
Section C: Equivalent Fractions

In this section, students learn that equivalent fractions are fractions that are the same size. They use fraction strips and diagrams to show and find equivalent fractions.

The shaded parts of the diagrams show that $\frac{1}{3}$ and $\frac{2}{6}$ are the same size, so $\frac{1}{3} = \frac{2}{6}$.

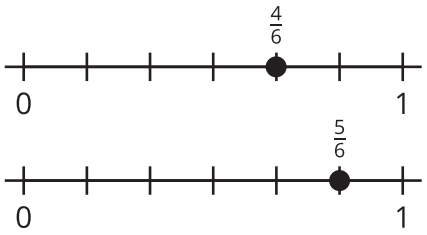


The number line shows that $\frac{6}{8}$ and $\frac{3}{4}$ are at the same location or are the same distance from 0, so $\frac{6}{8} = \frac{3}{4}$.



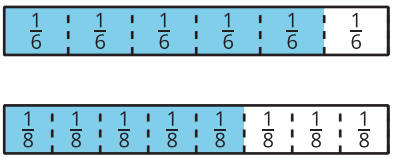
Section D: Fraction Comparisons

In this section, students compare fractions. They learn that comparisons are only valid if the fractions being compared refer to the same whole.



Students first compare fractions with the same denominator (such as $\frac{4}{6}$ and $\frac{5}{6}$).

Then they compare fractions with the same numerator (such as $\frac{5}{6}$ and $\frac{5}{8}$).



Try it at home!

Near the end of the unit, ask your third grader to show each fraction on a fraction strip and on a number line:

- $\frac{5}{8}$
- $\frac{6}{4}$

Questions that may be helpful as they work:

- How did you figure out the number of partitions to make?
- How did you know the number of parts to shade?
- How did you know where to place the fraction on the number line?
- Which fraction is greater? How do you know?

Solution:

- A fraction strip and a number line that represent $\frac{5}{8}$.
- A fraction strip and a number line that represent $\frac{6}{4}$.

Sample responses:

- The denominator shows me the number of partitions to make. I made 8

partitions for $\frac{5}{8}$ and 4 partitions for $\frac{6}{4}$.

- The numerator shows me the number of parts to shade. I shaded 5 parts for $\frac{5}{8}$ and 6 parts for $\frac{6}{4}$.
- I split the whole into 8 parts and counted 5 parts, starting from 0, to get to $\frac{5}{8}$. I split 2 wholes into 4 parts each and counted 6 parts, starting from 0, to get to $\frac{6}{4}$.
- $\frac{6}{4}$ is greater because it is more than 1 and $\frac{5}{8}$ is less than 1.

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