

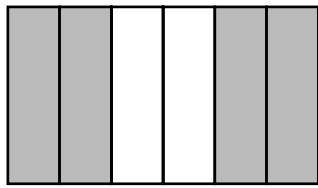
Teaching Unit 6 (Continued)

Math Background

Meaning of Fractions

Fractions as Parts of a Whole

Students will explore the meaning of a fraction as equal parts of a whole. The whole is divided into a number of equal parts. The number under the fraction bar tells how many equal parts the whole is divided into and is called the *denominator*. The number above the fraction bar tells how many parts we are talking about and is called the *numerator*. From the beginning, we show that a unit fraction can be combined to form other fractions of a whole.



$$\frac{4}{6}$$

$$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{4}{6}$$

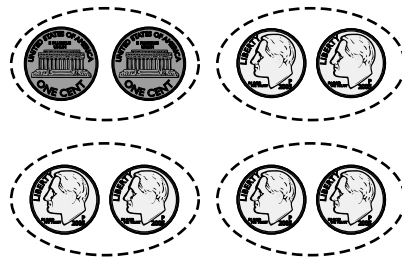
$$4 \times \frac{1}{6} = \frac{4}{6}$$

$$\frac{1}{6} = \text{one of 6 equal parts}$$

Fractions as Parts of a Set

Students will also explore the meaning of fractions as parts of a set. To represent the fraction of the set of coins that are pennies in the example below, we can write two equivalent fractions.

What fraction of the coins are pennies?



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

Fraction of a Set or Number

Students will first find a unit fraction of a set or number and then find a non-unit fraction of a set or number. For example, in the problem below students first find $\frac{1}{6}$ of 12 by grouping the 12 objects into 6 groups of 2. Then they find that 2 groups of $\frac{1}{6}$ is 4 or $\frac{2}{6}$ of 12 = 4.



$$\frac{1}{6} \text{ of } 12 = 2 \text{ so } \frac{2}{6} \text{ of } 12 = 4$$

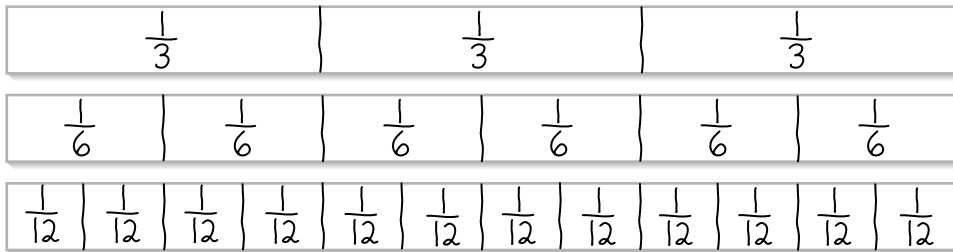
Working with Fractions

Finding Equivalent Fractions

Students explore equivalent fractions by making models of the same-sized whole strip. They start with folding equal strips into halves, fourths, eighths, and twelfths. They write a chain of equivalent fractions:

$$\frac{1}{2} = \frac{2}{4} = \frac{4}{8} = \frac{8}{16}$$

For thirds, sixths, and twelfths, they follow this folding and labeling sequence:



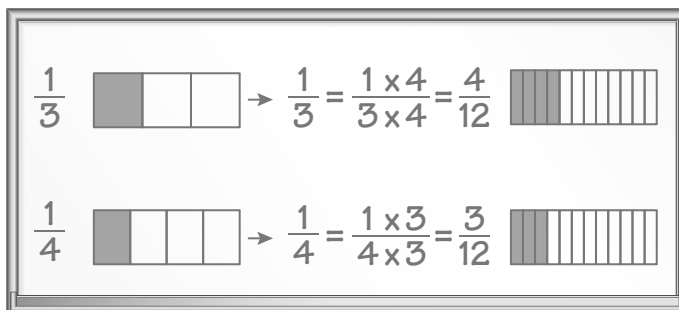
They write the following equivalent fraction chains:

$$\frac{1}{3} = \frac{2}{6} = \frac{4}{12}$$

$$\frac{2}{3} = \frac{4}{6} = \frac{8}{12}$$

Comparing, Adding, and Subtracting Fractions

To compare, add, or subtract fractions, students learn how to multiply numerators and denominators to rename fractions. They find equivalent fractions and like denominators.



Students can now compare, add, or subtract the fractions, $\frac{1}{3}$ and $\frac{1}{4}$, using their common denominators $\frac{4}{12}$ and $\frac{3}{12}$.

Students cut out and put together rows of the multiplication table to see many equivalent fractions for a given fraction. The column number tells them the common multiple to find each equivalent multiple.

$$\frac{2}{7} = \frac{4}{14} = \frac{6}{21} = \frac{8}{28} = \frac{10}{35} = \frac{12}{42} = \frac{14}{49} = \frac{16}{56} = \frac{18}{63} = \frac{20}{70}$$