

**Study Guide and Intervention**

7NS1.2, 7NS2.2

**Adding and Subtracting Unlike Fractions**

Fractions with unlike denominators are called **unlike fractions**. To add or subtract unlike fractions, rename the fractions using the least common denominator. Then add or subtract as with like fractions.

**Example 1** Find  $\frac{3}{5} + \frac{2}{3}$ . Write in simplest form.

$$\begin{aligned}\frac{3}{5} + \frac{2}{3} &= \frac{3}{5} \cdot \frac{3}{3} + \frac{2}{3} \cdot \frac{5}{5} \\ &= \frac{9}{15} + \frac{10}{15} \\ &= \frac{9+10}{15} \\ &= \frac{19}{15} \text{ or } 1\frac{4}{15}\end{aligned}$$

The LCD is  $5 \cdot 3$  or 15.

Rename each fraction using the LCD.

Add the numerators. The denominators are the same.

Simplify.

**Example 2** Find  $-3\frac{1}{2} - 1\frac{5}{6}$ . Write in simplest form.

$$\begin{aligned}-3\frac{1}{2} - 1\frac{5}{6} &= -\frac{7}{2} - \frac{11}{6} \\ &= -\frac{7}{2} \cdot \frac{3}{3} - \frac{11}{6} \\ &= -\frac{21}{6} - \frac{11}{6} \\ &= \frac{-21-11}{6} \\ &= -\frac{32}{6} \text{ or } -\frac{16}{3} \text{ or } -5\frac{1}{3}\end{aligned}$$

Write the mixed numbers as improper fractions.

The LCD is  $2 \cdot 3$  or 6.

Rename  $\frac{7}{2}$  using the LCD.

Subtract the numerators.

Simplify.

**Exercises**

Add or subtract. Write in simplest form.

1.  $\frac{2}{5} + \frac{3}{10}$

2.  $\frac{1}{3} + \frac{2}{9}$

3.  $\frac{5}{9} + \left(-\frac{1}{6}\right)$

4.  $-\frac{3}{4} - \frac{5}{6}$

5.  $\frac{4}{5} - \left(-\frac{1}{3}\right)$

6.  $1\frac{2}{3} - \left(-\frac{4}{9}\right)$

7.  $-\frac{7}{10} - \left(-\frac{1}{2}\right)$

8.  $2\frac{1}{4} + 1\frac{3}{8}$

9.  $3\frac{3}{4} - 1\frac{1}{3}$

10.  $-1\frac{1}{5} - 2\frac{1}{4}$

11.  $-2\frac{4}{9} - \left(-1\frac{1}{3}\right)$

12.  $3\frac{3}{5} - 2\frac{2}{3}$