

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. $\frac{2}{5} + \frac{3}{10}$ $\frac{7}{10}$

2. $\frac{1}{3} + \frac{2}{9}$ $\frac{5}{9}$

3. $\frac{5}{9} + \left(-\frac{1}{6}\right)$ $\frac{7}{18}$

4. $-\frac{3}{4} - \frac{5}{6}$ $-1\frac{7}{12}$

5. $\frac{4}{5} - \left(-\frac{1}{3}\right)$ $1\frac{2}{15}$

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

7. $-\frac{7}{10} - \left(-\frac{1}{2}\right)$ $-\frac{1}{5}$

8. $2\frac{1}{4} + 1\frac{3}{8}$ $3\frac{5}{8}$

9. $3\frac{3}{4} - 1\frac{1}{3}$ $2\frac{5}{12}$

10. $-1\frac{1}{5} - 2\frac{1}{4}$ $-3\frac{9}{20}$

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

12. $3\frac{3}{5} - 2\frac{2}{3}$ $\frac{14}{15}$