

## Lesson 5-2

### Example 1 Add Like Fractions

Add  $\frac{3}{8} + \frac{1}{8}$ . Write in simplest form.

$$\begin{aligned}\frac{3}{8} + \frac{1}{8} &= \frac{3+1}{8} && \text{Add the numerators.} \\ &= \frac{4}{8} && \text{Write the sum over the denominator.} \\ &= \frac{1}{2} && \text{Simplify.}\end{aligned}$$

### Example 2 Subtract Like Fractions

Subtract  $\frac{11}{12} - \frac{4}{12}$ . Write in simplest form.

$$\begin{aligned}\frac{11}{12} - \frac{4}{12} &= \frac{11-4}{12} && \text{Subtract the numerators.} \\ &= \frac{7}{12} && \text{Write the difference over the denominator.}\end{aligned}$$

### Example 3 Add Unlike Fractions

Add  $\frac{1}{4} + \frac{1}{12}$ . Write in simplest form.

The least common denominator of 4 and 12 is 12.

$$\begin{aligned}\frac{1}{4} &= \frac{1 \times 3}{4 \times 3} = \frac{3}{12} && \text{Rename } \frac{1}{4} \text{ using the LCD.} \\ \frac{1}{4} &\rightarrow \frac{3}{12} \\ + \frac{1}{12} &\rightarrow + \frac{1}{12} \\ \hline &\frac{4}{12} \text{ or } \frac{1}{3}\end{aligned}$$

$$\text{So, } \frac{1}{4} + \frac{1}{12} = \frac{1}{3}$$

#### Example 4 Subtract Unlike Fractions

Subtract  $\frac{2}{3} - \frac{1}{4}$ . Write in simplest form.

The LCD of 3 and 4 is 12.

$$\begin{array}{r} \frac{2}{3} \rightarrow \frac{2 \times 4}{3 \times 4} \rightarrow \frac{8}{12} \\ - \frac{1}{4} \rightarrow -\frac{1 \times 3}{4 \times 3} \rightarrow -\frac{3}{12} \\ \hline \frac{5}{12} \end{array}$$

$$\text{So, } \frac{2}{3} - \frac{1}{4} = \frac{5}{12}$$

#### Example 5 Add and Subtract Unlike Fractions

**MAGAZINES** In Monday's mail, Dave received a stack of magazines measuring  $\frac{5}{8}$

inch in height. On Tuesday, he received magazines measuring  $\frac{2}{3}$  inch in height.

What is the total height of the stack of magazines Dave received on Monday and Tuesday?

$$\begin{aligned} \frac{5}{8} + \frac{2}{3} &= \frac{5 \times 3}{8 \times 3} + \frac{2 \times 8}{3 \times 8} \\ &= \frac{15}{24} + \frac{16}{24} \\ &= \frac{31}{24} \\ &= 1 \frac{7}{24} \end{aligned}$$

The LCD of 8 and 3 is 24.

Rename the fractions with the LCD.

Add the numerators.

Rename  $\frac{31}{24}$  as a mixed number.

The total height of the stack of magazines is  $1 \frac{7}{24}$  inches.

**Example 6 Add and Subtract Like Fractions**

**MAGAZINES** Using the information from example 5, find the difference in the amount of mail Dave received on Monday and Tuesday.

The phrase *difference* suggests subtraction. Subtract the smaller fraction from the larger fraction.

$$\begin{aligned}\frac{2}{3} - \frac{5}{8} &= \frac{2 \times 8}{3 \times 8} - \frac{5 \times 3}{8 \times 3} \\ &= \frac{16}{24} - \frac{15}{24} \\ &= \frac{1}{24}\end{aligned}$$

The LCD for the fractions is 24.

Rename the fractions using the LCD.

Subtract the numerators.