

## Pre-Algebra

### Adding and Subtracting Fractions

#### To add or subtract fractions:

- Rewrite the problem if necessary, in order to make it easier to work.
- Calculate a common denominator. *Note: another page shows how to do this.*
- Express each fraction in terms of the common denominator.
- Add or subtract the numerators of the fractions. Leave the denominator unchanged.
- Simplify if possible. *Note: if you want to convert the solution to a mixed number, first simplify the fraction resulting from the addition or subtraction; then, calculate the mixed number.*

**Example 1:**  $\frac{3}{8} + \frac{11}{12}$

Create LCD:  $= \frac{3}{3} \cdot \frac{3}{8} + \frac{11}{12} \cdot \frac{2}{2}$

Express with LCD:  $= \frac{9}{24} + \frac{22}{24}$

Add numerators:  $= \frac{31}{24}$

Simplify:  $= 1 \frac{7}{24}$

**Example 2:**  $\frac{1}{3} - \frac{2}{5}$

Create LCD:  $= \frac{5}{5} \cdot \frac{1}{3} - \frac{2}{5} \cdot \frac{3}{3}$

Express with LCD:  $= \frac{5}{15} - \frac{6}{15}$

Add numerators:  $= \frac{-1}{15}$

Simplify:  $= -\frac{1}{15}$

**Example 3:**  $\left(-\frac{1}{9}\right) - \left(\frac{-5}{6}\right)$

Rewrite problem:  $\left(-\frac{1}{9}\right) + \left(\frac{5}{6}\right)$

Create LCD:  $= \frac{2}{2} \cdot \frac{(-1)}{9} + \frac{5}{6} \cdot \frac{3}{3}$

Express with LCD:  $= \frac{-2}{18} + \frac{15}{18}$

Add numerators:  $= \frac{13}{18}$

**Example 4:**  $-\frac{4}{7} + \frac{9}{28}$

Create LCD:  $= \frac{4}{4} \cdot \frac{(-4)}{7} + \frac{9}{28}$

Express with LCD:  $= \frac{-16}{28} + \frac{9}{28}$

Add numerators:  $= \frac{-7}{28}$

Simplify:  $= -\frac{1}{4}$