

Unit 12 Adding and Subtracting Mixed Numbers

1. **Mixed numbers** are part whole number and part fraction.
2. Adding and subtracting procedures:
 - A. Make sure all fractions have the same denominator (LCD).
 - B. Add or subtract fractions (watch out for carrying and borrowing).
 - C. Add or subtract the whole numbers.
 - D. If necessary, reduce your answer to lowest terms.
3. Adding and subtracting mixed numbers with like fractions

$$\begin{array}{r} 1\frac{1}{5} \\ +2\frac{2}{5} \\ \hline 3\frac{3}{5} \end{array}$$

Carrying

$$\begin{array}{r} 4\frac{5}{7} \\ +2\frac{4}{7} \\ \hline 6\frac{9}{7} \end{array}$$

Reduce

$$6\frac{9}{7} = 6 + 1\frac{2}{7} = 7\frac{2}{7}$$

$$\begin{array}{r} 3\frac{5}{7} \\ -1\frac{2}{7} \\ \hline 2\frac{3}{7} \end{array}$$

Borrowing

$$6\frac{2}{5} = 5\frac{5}{5} + \frac{2}{5} = 5\frac{7}{5}$$

$$\begin{array}{r} 5\frac{7}{5} \\ -2\frac{4}{5} \\ \hline 3\frac{3}{5} \end{array}$$

Subtracting 4/5 from 2/5 is not possible.

Borrowing

$$8 = 7 + \frac{4}{4} = 7\frac{4}{4}$$

$$\begin{array}{r} 7\frac{4}{4} \\ -1\frac{3}{4} \\ \hline 6\frac{1}{4} \end{array}$$

Note: To simplify the improper fraction 9/7, divide 7 into 9. The answer is 1 with a remainder of 2/7.

4. Adding mixed numbers with unlike fractions

LCD is 8

$$\begin{array}{r} 1\frac{1}{8} \\ +2\frac{1}{2} = 2 + \frac{1 \times 4}{2 \times 4} = +2\frac{4}{8} \\ \hline 3\frac{5}{8} \end{array}$$

LCD is 12

$$4\frac{1}{3} = 4 + \frac{1 \times 4}{3 \times 4} = 4\frac{4}{12}$$

$$\begin{array}{r} 4\frac{4}{12} \\ +3\frac{3}{4} = 3 + \frac{3 \times 3}{4 \times 3} = +3\frac{9}{12} \\ \hline 7\frac{13}{12} \end{array}$$

Reduce

$$7\frac{13}{12} = 7 + 1\frac{1}{12} = 8\frac{1}{12}$$

5. Subtracting mixed numbers with unlike fractions

LCD is 6

$$2\frac{2}{3} = 2 + \frac{2 \times 2}{3 \times 2} = 2\frac{4}{6}$$

$$\begin{array}{r} 2\frac{4}{6} \\ -1\frac{1}{2} = 1 + \frac{1 \times 3}{2 \times 3} = -1\frac{3}{6} \\ \hline 1\frac{1}{6} \end{array}$$

LCD is 6

Borrowing

$$6\frac{1}{6} = 5\frac{6}{6} + \frac{1}{6} = 5\frac{7}{6}$$

$$\begin{array}{r} 5\frac{7}{6} \\ -3\frac{2}{3} = 3 + \frac{2 \times 2}{3 \times 2} = -3\frac{4}{6} \\ \hline 2\frac{3}{6} \end{array}$$

Reduce

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