

Subtraction of Mixed Numbers with Regrouping

To subtract mixed numbers, it may be necessary to regroup first. Write the whole number part as a mixed number. Add the mixed number and the fraction. Then subtract and simplify.

Find: $8\frac{7}{12} - 2\frac{3}{4}$

Write the fractions with like denominators. Compare the numerators.

$$\begin{array}{r} 8\frac{7}{12} = 8\frac{7}{12} \\ - 2\frac{3}{4} = 2\frac{9}{12} \\ \hline \end{array}$$

$\frac{9}{12}$ is greater than $\frac{7}{12}$. You can't subtract the fractions.

To regroup, write 8 as a mixed number.

$$8 = 7\frac{12}{12}$$

Add the mixed number and the fraction.

$$8\frac{7}{12} = 7\frac{12}{12} + \frac{7}{12} = 7\frac{19}{12}$$

Remember, $\frac{19}{12}$ is an improper fraction.

Now you can subtract and simplify.

$$\begin{array}{r} 8\frac{7}{12} = 7\frac{19}{12} \\ - 2\frac{9}{12} = 2\frac{9}{12} \\ \hline 5\frac{10}{12} = 5\frac{5}{6} \end{array}$$

Subtract. Simplify.

a

$$\begin{array}{r} 1. \quad 8\frac{1}{5} = 7\frac{6}{5} \\ - 2\frac{4}{5} = 2\frac{4}{5} \\ \hline 5\frac{2}{5} \end{array}$$

b

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

c

$$\begin{array}{r} 8\frac{7}{12} = 7\frac{\quad}{12} \\ - 4\frac{11}{12} = 4\frac{11}{12} \\ \hline \end{array}$$

2.

$$\begin{array}{r} 9\frac{3}{8} \quad \boxed{} \\ - 1\frac{1}{2} \quad \boxed{} \\ \hline \end{array}$$

1 0 $\frac{1}{3}$

$$\begin{array}{r} 10\frac{1}{3} \quad \boxed{} \\ - 8\frac{2}{3} \quad \boxed{} \\ \hline \end{array}$$

7 $\frac{1}{5}$

$$\begin{array}{r} 7\frac{1}{5} \quad \boxed{} \\ - 4\frac{5}{8} \quad \boxed{} \\ \hline \end{array}$$

3.

$$\begin{array}{r} 16\frac{1}{12} \quad \boxed{} \\ - 9\frac{11}{12} \quad \boxed{} \\ \hline \end{array}$$

1 2 $\frac{1}{10}$

$$\begin{array}{r} 12\frac{1}{10} \quad \boxed{} \\ - 1\frac{1}{5} \quad \boxed{} \\ \hline \end{array}$$

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

$$\begin{array}{r} 16\frac{1}{2} \quad \boxed{} \\ - 8\frac{4}{9} \quad \boxed{} \\ \hline \end{array}$$

Set up the problems. Then find the differences. Simplify.

a

4. $6\frac{3}{5} - 4\frac{9}{10} = \underline{\hspace{2cm}}$

$$\begin{array}{r} 6\frac{3}{5} \\ - 4\frac{9}{10} \\ \hline \end{array}$$

b

$9\frac{1}{4} - 7\frac{3}{7} = \underline{\hspace{2cm}}$

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

c

$15\frac{1}{3} - \frac{2}{5} = \underline{\hspace{2cm}}$

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