

Notes on Adding/Subtracting Fractions with Unlike Denominators

1. You must find a common denominator (denominator that is the same number).
To find the common denominator you may use the GCF, the LCM, or multiply the two denominators together.

2. Once you know the common denominator, multiply or divide both fractions by the appropriate fraction equivalent to 1 to make the denominator equal the common denominator.

3. Add or subtract numerators.

Examples:

$$1 \quad \frac{4}{3} + \frac{3}{2} = \boxed{}$$

common denominator = 12 (3 x 4)

To make $\frac{3}{2} = \frac{4}{\square} = \frac{4}{12}$ do $\frac{3}{2} \left(\frac{4}{4} \right) = \frac{12}{8}$

To make $\frac{4}{3} = \frac{3}{\square} = \frac{3}{12}$ do $\frac{4}{3} \left(\frac{4}{4} \right) = \frac{16}{12}$

$$\frac{8}{12} + \frac{16}{12} = \frac{24}{12} = 2 \quad \text{or} \quad \frac{1}{5}$$

$$2. \quad \frac{3}{8} - \frac{1}{16} = \square$$

common denominator = 16 (LCM of 8 and 16)

note: you may have thought 8 would work as it is the GCF, but it does not.

To turn $\frac{1}{16} = \frac{\square}{8}$ you do

$$\frac{1}{16} \div \frac{2}{2} = \frac{\square}{32}$$

cannot divide 1 by 2

$$\text{To make } \frac{3}{8} = \frac{\square}{16} = \frac{3}{8} \left(\frac{2}{2} \right) = \frac{6}{16}$$

$$\frac{6}{16} - \frac{1}{16} = \frac{5}{16}$$

$$3. \quad \frac{5}{12} + \frac{1}{4} = \square$$

common denominator = 12 (GCF of 12 and 24)

$$\text{To make } \frac{1}{4} = \frac{\square}{12}, \quad \frac{1}{4} \div \frac{3}{3} = \frac{3}{12} = \frac{1}{4}$$

$$\frac{5}{12} + \frac{3}{12} = \frac{8}{12}$$