

Adding and Subtracting Fractions

Objective 1: Adding or subtracting fractions with common denominators

When adding or subtracting fractions, all you need to do is add or subtract the numerators if the denominators are **the same**.

Example: Add or subtract. Remember to leave all fractions in lowest terms.

$$\frac{3}{8} + \frac{2}{8}$$

Example: Add or subtract. Remember to leave all fractions in lowest terms.

$$\frac{7}{9} - \frac{5}{9}$$

Example: Add or subtract. Remember to leave all fractions in lowest terms.

$$\frac{4}{15} + \frac{8}{15}$$

Example: Add or subtract. Remember to leave all fractions in lowest terms.

$$\frac{7}{18} - \frac{17}{18}$$

Pause the video and try these problems.

Add or subtract. Remember to leave all fractions in lowest terms.

1) $\frac{12}{13} - \frac{5}{13}$

2) $\frac{1}{30} + \frac{7}{30}$

3) $-\frac{5}{18} - \frac{7}{18}$

4) $\frac{11}{16} - \frac{7}{16}$

Restart when you are ready to check your answers.

Objective 2: Finding the Least Common Denominator

Sometimes the denominators are not the same. For us to add or subtract fractions with unlike denominators, we will need to work with each fraction individually to force the two fractions to have the same size parts (denominators).

We will then need to find the *least common multiple* of the two denominators. This is called the LCM. Since the LCM is located in the denominator of the fraction, the name will change to the *least common denominator* (LCD).

Method A: Listing the multiples of each denominator until they have the same one.

List out the multiples of each denominator. You are looking for the smallest number that is a multiple of each denominator.

Example: Find the least common denominator for the pair of fractions.

$$\frac{3}{4} \text{ and } \frac{5}{9}$$

Example: Find the LCD for the pair of fractions.

$$\frac{1}{8} \text{ and } \frac{1}{18}$$

Method B: Finding the prime factors of each denominator and calculate the LCD from the factors list.

Sometimes Method A can be quite cumbersome if the two denominators are large values. So, instead of trying to figure out all of the multiples of each number, we can list the **prime factors** of each number and create a combined list of prime factors that will be the LCD of the fractions.

Example: Find the least common denominator for the pair of fractions.

$$\frac{1}{8} \text{ and } \frac{1}{18}$$

Example: Find the least common denominator for the pair of fractions.

$$\frac{3}{16} \text{ and } \frac{1}{36}$$

Example: Find the least common denominator for the pair of fractions.

$$\frac{7}{15} \text{ and } \frac{5}{18}$$

Pause the video and try these problems.

Find the least common denominator for each pair of fractions.

1) $\frac{7}{8}$ and $\frac{1}{16}$

2) $\frac{2}{21}$ and $\frac{4}{35}$

3) $\frac{1}{18}$ and $\frac{1}{24}$

4) $\frac{3}{8}$ and $\frac{1}{6}$

Restart when you are ready to check your answers.

Objective 3: Adding and subtracting fractions with unlike denominators.

Now that you can find the LCD of two fractions with unlike denominators, let's see how finding the LCD affects the fractions.

Example: Add or subtract.

$$\frac{3}{4} + \frac{5}{24}$$

Example: Add or subtract.

$$\frac{2}{9} - \frac{5}{12}$$

Example: Add or subtract.

$$\frac{3}{5} - \frac{3}{20}$$

Example: Add or subtract.

$$-\frac{5}{12} + \frac{2}{21}$$

Example: **Add or subtract.**

$$\frac{5}{6} - \frac{3}{8}$$

Add or subtract. Leave all answers in lowest terms.

1) $\frac{2}{9} - \frac{1}{27}$

$$2) \frac{1}{24} + \frac{7}{18}$$

$$3) -\frac{3}{20} - \frac{9}{32}$$

$$4) \frac{5}{12} - \frac{3}{8}$$

$$5) \frac{11}{16} - \frac{1}{24}$$

Restart when you are ready to check your answers.