Finding Common Denominator: A Step-by-Step Guide

Finding a common denominator is an essential skill when working with fractions, especially when adding or subtracting them. A common denominator is a shared multiple of the denominators of two or more fractions. Here's a clear, step-by-step explanation to help understand the process.

Step 1: Identify the Denominators

Start by looking at the fractions you want to work with. Identify the denominator of each fraction. For example, if you have the fractions **1/4** and **1/6**, the denominators are **4** and **6**.

Step 2: Find the Least Common Multiple (LCM)

The next step is to find the least common multiple of the denominators. The LCM is the smallest positive integer that is a multiple of both denominators. To find the LCM of **4** and **6**:

- List the multiples of each number:
- Multiples of 4: 4, 8, 12, 16, 20...
- Multiples of 6: 6, 12, 18, 24...

The smallest common multiple is **12**, so the LCM of 4 and 6 is 12.

Step 3: Convert Each Fraction

Now that you have the least common multiple, you need to convert each fraction to have this common denominator. For this, you will see how many times the LCM can contain each original denominator and adjust the numerators accordingly:

- For **1/4**: Multiply the numerator and the denominator by **3** (because 12 ÷ 4 = 3)
    - This gives you: (1 × 3)/(4 × 3) = **3/12**
- For **1/6**: Multiply the numerator and the denominator by **2** (because 12 ÷ 6 = 2)
    - This gives you: (1 × 2)/(6 × 2) = **2/12**

Step 4: Perform the Addition or Subtraction

Now that both fractions have a common denominator, you can add or subtract them easily. For example, if we want to add:

- 3/12 + 2/12 = (3 + 2)/12 = **5/12**

If you were subtracting, simply subtract the numerators as follows:

- 3/12 - 2/12 = (3 - 2)/12 = **1/12**

Conclusion

Finding a common denominator is a straightforward process that involves identifying the denominators, calculating the least common multiple, converting the fractions to have this common denominator, and then performing the desired operation. With practice, you will become more comfortable with this essential math skill!