

Adding and Subtracting Fractions

Adding and subtracting fractions can seem tricky at first, but once you understand the basic steps, it becomes much easier! Let's break it down step by step.

Step 1: Understand Fractions

A fraction has two parts: the **numerator** (the top part) and the **denominator** (the bottom part). For example, in the fraction $\frac{1}{2}$, 1 is the numerator and 2 is the denominator.

Step 2: Common Denominators

To add or subtract fractions, they must have the same denominator. The denominator tells you the total number of equal parts the whole is divided into. If the denominators are different, we need to find a common denominator.

Example:

Let's say we have two fractions: $\frac{1}{4}$ and $\frac{1}{2}$. The denominators are 4 and 2. The common denominator for these is 4.

Step 3: Convert Fractions

If the denominators are not the same, we need to convert one or both fractions. To do this:

- Multiply the numerator and the denominator of the fraction being changed by the same number so that the denominator becomes the common denominator.

For our example, we can convert $\frac{1}{2}$ to have a denominator of 4:

$$\frac{1}{2} = \frac{(1 \times 2)}{(2 \times 2)} = \frac{2}{4}$$

Now we have $\frac{1}{4}$ and $\frac{2}{4}$.

Step 4: Adding or Subtracting

Now that the denominators are the same, we can add or subtract the numerators:

- For addition: $\frac{1}{4} + \frac{2}{4} = \frac{(1 + 2)}{4} = \frac{3}{4}$
- For subtraction: $\frac{2}{4} - \frac{1}{4} = \frac{(2 - 1)}{4} = \frac{1}{4}$

Step 5: Simplify if Necessary

Sometimes the result can be simplified. A fraction is simplified when the numerator and denominator have no common factors other than 1. If our answer was $\frac{4}{8}$, we could simplify it to $\frac{1}{2}$ by dividing both the numerator and denominator by 4.

Practice Problems

Try these:

1. $\frac{1}{3} + \frac{1}{6} = ?$

2. $\frac{3}{5} - \frac{1}{5} = ?$

Answers:

- $\frac{1}{3} + \frac{1}{6} = \frac{1}{2}$
- $\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$

And that's how you add and subtract fractions! With practice, it'll become second nature. Happy calculating!