



Adding and Subtracting Fractions with Different Denominators

KS2 MATHS

FRACTIONS

ARITHMETIC

Ages 9-12



3 min read

Why Can't We Just Add Them Straight Away?

When you add or subtract fractions, the bottom number (called the **denominator**) is really important. It tells us what size pieces we're working with. If the denominators are different, it's like trying to add slices from a pizza cut into **4 pieces** to slices from a pizza cut into **8 pieces** — they're not the same size!

Think of it like mixing different coins. You can't just add **2 pound coins** and **3 ten-pence pieces** without thinking about what they're worth. First, you need to convert them to the same value.

Finding the Common Denominator

The solution is to find a **common denominator** — a denominator that both fractions can use. The easiest one to find is the **lowest common multiple (LCM)** of the two denominators.

Let's try $\frac{1}{3} + \frac{1}{4}$. The denominators are **3** and **4**. What's the smallest number that both **3** and **4** divide into? It's **12**. So **12** is our common denominator.

Converting the Fractions

Now we need to change both fractions so they have the denominator **12**:

$\frac{1}{3}$ — multiply the top and bottom by **4** (because $3 \times 4 = 12$). This gives us $\frac{4}{12}$.

$\frac{1}{4}$ — multiply the top and bottom by **3** (because $4 \times 3 = 12$). This gives us $\frac{3}{12}$.

Now we can add: $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$.

Think of it like converting different currencies before you can add money together. Once everything is in the same currency (pounds, euros, dollars), adding is simple.

Subtracting Works the Same Way

Subtraction follows exactly the same steps. For example, $\frac{3}{4} - \frac{1}{3}$: find the common denominator (**12**), convert both fractions ($\frac{9}{12} - \frac{4}{12}$), then subtract ($\frac{5}{12}$).

The key is always: **find the common denominator first**, then add or subtract the top numbers. The denominator stays the same!