Simplifying Algebraic Expressions Made Easy

KS4 MATHEMATICS ALGEBRA Ages 13-15 ⏰ 3 min read

What Does It Mean to Simplify?

When mathematicians talk about **simplifying algebraic expressions**, they mean making them shorter and tidier without changing what they're worth. Think of it like tidying your bedroom — you're not throwing anything away, just organizing it better so you can see what you've got.

An **algebraic expression** is a mix of numbers, letters (called **variables**, usually x or y), and mathematical symbols like plus and minus signs. For example, **3x + 2x + 5** can be simplified to **5x + 5**.

Think of it like combining your pocket money from different weeks. If you saved £3 one week and £3 the next week, you'd say you have £6 total, not "£3 plus £3."

Combining Like Terms

The main trick to simplifying is finding **like terms** — these are parts of the expression that have exactly the same variable raised to the same power. The numbers in front (called **coefficients**) can be different, but the variable part must match.

For instance, in the expression **4x + 3y + 2x + 5y**, you can combine the x terms together and the y terms together: **(4x + 2x) + (3y + 5y) = 6x + 8y**.

Think of it like sorting a bag of mixed fruit. You put all the apples together, all the oranges together — but you don't mix apples and oranges because they're different.

Using the Order of Operations

When you simplify, always follow **BODMAS** (Brackets, Orders, Division, Multiplication, Addition, Subtraction). This tells you which operations to do first. Doing things in the wrong order is like following a recipe and adding the eggs before turning on the oven!

Step-by-Step Example

Let's simplify **2(x + 3) + 4x - 5**:

First: Expand the bracket: **2x + 6 + 4x - 5**

Second: Combine x terms: **2x + 4x = 6x**

Third: Combine numbers: **6 - 5 = 1**

Final answer: 6x + 1

Simplifying algebraic expressions is like being a mathematical detective — you hunt for matching pieces and group them together. Once you master this skill, solving equations and tackling harder maths becomes much easier!