$$\text{Why does } \frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$$

Explaining the Math Behind the *Butterfly Method*	
STEPS	**REASONS**
$\dfrac{a}{b} + \dfrac{c}{d}$	Given
$\dfrac{a}{b}\left(\dfrac{d}{d}\right) + \dfrac{c}{d}\left(\dfrac{b}{b}\right)$	Create common denominators with the product (bd). **Note:** The product (bd) will produce a *common* denominator, but it will not always produce the **least** common denominator (LCD)…and that's okay!
$\dfrac{ad}{bd} + \dfrac{cb}{db}$	Simplify **Note**: Multiplying a numerator and denominator by the same nonzero whole number (e.g. $\left(\dfrac{d}{d}\right)$ or $\left(\dfrac{b}{b}\right)$) creates an equivalent fraction.
$\dfrac{ad}{bd} + \dfrac{bc}{bd}$	Rewrite the numerator and denominator of the second fraction using the Commutative Property of Multiplication.
$\dfrac{ad + bc}{bd}$	Simplify by adding the numerators of the two fractions with common denominators.

Conclusion: Teach the math as an extension of equivalent fractions and adding/subtracting fractions with common denominators. Let the **students** *discover* the butterfly.