

## Algebraic Notation: Common Mistakes

Expression	Correct Alternative	Common Mistake	Comments
$a(b + c)$	$ab + ac$	$ab + c$	Apply the Distributive Law.
$8(x + 5)$	$8x + 40$	$8x + 5$	Apply the Distributive Law.
$\frac{a+b}{c}$	$(a + b)/c$	$a + b/c$	Apply the Distributive Law.
$\frac{2x+18}{2}$	$(2x + 18)/2 = x + 9$	$2x + 18/2 = 2x + 9$ or $2x/2 + 18 = x + 18$	Apply the Distributive Law.
$(a + b)^2$	$a^2 + 2ab + b^2$	$a^2 + b^2$	Squaring does <i>not</i> distribute over addition.
$(x + 5)^2$	$x^2 + 10x + 25$	$x^2 + 25$	Squaring does <i>not</i> distribute over addition.
$\sqrt{a^2 + b^2}$	None	$a + b$	Extracting the square root does <i>not</i> distribute over addition.
$\sqrt{x^2 + 25}$	None	$x + 5$	Extracting the square root does <i>not</i> distribute over addition.
$a - (b - c)$	$a - b + c$	$a - b - c$	Subtraction is <i>not</i> associative.
$x - (8 - x)$	$x - 8 + x = 2x - 8$	$x - 8 - x = -8$	Subtraction is <i>not</i> associative.
$a/(b/c)$	$ac/b$	$ab/c$	Be careful with division.
$8x/(8/x)$	$8xx/8 = x^2$	$8x8/x = 64$ or $8x/8x = 1$	Be careful with division.
$(a/b)/c$	$a/(bc)$	$ac/b$	Be careful with division.
$(8x/8)/x$	$8x/8x = 1$	$8xx/8 = x^2$	Be careful with division.
$(ab)^2$	$a^2b^2$	$ab^2$	Powers distribute over multiplication.
$(5x)^2$	$25x^2$	$5x^2$	Powers distribute over multiplication.
$-b^2$	$-(b^2)$	$b^2$	Treat negatives as multiplication by -1; exponentiation is done before multiplication.
$-16^2$	$-256$	$256$	Treat negatives as multiplication by -1; exponentiation is done before multiplication.