

Day 1 - Review of Multiplying Powers - Notes

In 8th grade, you learned how to simplify exponential expressions. We are going to review several of those properties in preparation for the rest of our unit.

Definition of a Power

$$Ax^b = A \cdot \underbrace{x \cdot x \cdot \dots \cdot x}_{b \text{ times}}$$

A is the Coefficient of the power

x is the base of the power

b is the exponent of the power

Exploring Multiplying Powers

Original	Expanded Form	Simplified Form	Rule
$x^4 \cdot x^3$	$x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$	x^7	Multiplying Powers $x^m \cdot x^n = x^{m+n}$
$x^2 \cdot x^4$	$x \cdot x \cdot x \cdot x \cdot x \cdot x$	x^6	
$5x^4 \cdot -2x^4$	$5 \cdot -2 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$	$-10x^8$	
$-2x^4 \cdot 3y^3 \cdot x^5 \cdot 4y^4$	$-2 \cdot 3 \cdot 4 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$	$-24x^9y^7$	

Original	Expanded Form	Simplified Form	Rule
$(x^2)^4$	$x^2 \cdot x^2 \cdot x^2 \cdot x^2$	x^8	Power to a Power $(x^m)^n = x^{m \cdot n}$
$(x^3)^3$	$x^3 \cdot x^3 \cdot x^3$	x^9	
$(x^5y^2)^2$	$x^5y^2 \cdot x^5y^2$	$x^{10}y^4$	
$(x^2y^4)^3$	$x^2y^4 \cdot x^2y^4 \cdot x^2y^4$	x^6y^{12}	

Original	Expanded Form	Simplified Form	Rule
$(2x^2)^4$	$2x^2 \cdot 2x^2 \cdot 2x^2 \cdot 2x^2$	$16x^8$	Product to a Power $(xy)^m = x^m y^m$
$(2x^4)^3$	$2x^4 \cdot 2x^4 \cdot 2x^4$	$8x^{12}$	
$(10xy^2)^2$	$10xy^2 \cdot 10xy^2$	$100x^2y^4$	
$(5x^4y^2)^3$	$5x^4y^2 \cdot 5x^4y^2 \cdot 5x^4y^2$	$125x^{12}y^6$	