



Rules of Exponents

Guided Notes

Algebra Standards:
N.RN.1

Rules of Exponents

N.RN.1 I CAN... rewrite expressions involving rational exponents using the properties of exponents.

vocabulary:

Monomial A number, a variable, or a product of a number and one or more variables
Examples $34xy$, $7a^2b$

Power $\left\{ \begin{array}{l} 5^2 \\ \end{array} \right.$ Exponent
Base

rules of exponents:

Product of Powers: $a^m \cdot a^n = a^{m+n}$		
If multiplying two numbers with the same base , ADD the exponents		
$5^2 \cdot 5^6$		$y^4 \cdot y^3 \cdot y$
$(7y^5)(6y)$		$(-3x^2y^7)(5xy^6)$
Quotient of Powers: $\frac{a^m}{a^n} = a^{m-n}$		
If dividing two numbers with the same base , SUBTRACT the exponents		
$\frac{y^6}{y}$	$\frac{6^{13}}{6^2}$	$\frac{10a^7b^9}{15a^5b^9}$

Rules of Exponents

Zero Exponent: $a^0 = 1$

Any nonzero number with an exponent of zero is equivalent to 1

WHY?? Let's explore $\frac{8^2}{8^2}$

$$(-3x+7)^0$$

$$8x^0 + 5$$

Negative Exponent $a^{-n} = \frac{1}{a^n}$

For any nonzero number "a" raised to a negative exponent, place the power in the denominator to rewrite the power with a positive exponent

WHY?? Let's Explore $\frac{b^2}{b^5}$

$$2^{-3}$$

$$(-3)^{-3}$$

Rules of Exponents

Power of a Power: $(a^m)^n = a^{m \cdot n}$

If raising a power to a power, **multiply** the exponents

Examples: Simplify. Write each answer using only positive exponents:

$(x^2)^8$

$(y^{-3})^{-4}$

Power of a Product: $(ab)^m = a^m b^m$

Find the power of **each** factor in the parenthesis and multiply

$(4x^3yz)^3$

$(7xy^{-2})^{-2}$

$(6x^{-6}y^{-7}z^0)^{-2}$

Power of a Quotient: $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$

For any numbers "a" and "b" where $b \neq 0$, if the quotient of a and b is raised to a power, raise both the numerator and the denominator to the given power

$\left(\frac{3}{5}\right)^2$

$\left(\frac{2a^5}{b^7}\right)^2$

$\left(\frac{3a^{-4}}{b^7}\right)^3$

$\left(\frac{a^{-2}b^{-5}}{c^{-11}}\right)^{-6}$

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Thanks for
Shopping!!!

I hope you enjoyed the Rules of Exponents Guided Notes! You may also enjoy the Rules of Exponents Reference Sheet or Rules of Exponents: Different Question/Same Answer Partner Activity, which are both available in my store.

Thanks..... Come back soon!!

Elizabeth Kissel ☺