

# Unit 1 Day 9-11 Notes

## 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

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

### rules of exponents:

Product of Powers: $a^m \cdot a^n = a^{m+n}$		
If multiplying two numbers with the same base, _____ 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, _____ the exponents		
$\frac{y^6}{y}$	$\frac{b^{13}}{b^2}$	$\frac{10a^7b^9}{15a^5b^9}$

**Power of a Power:**  $(a^m)^n =$

If raising a power to a power, \_\_\_\_\_ the exponents

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

$$(x^2)^8$$

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

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

Find the power of each factor in the parenthesis and multiply

$$(4x^3yz)^3$$

$$(7xy)^2$$

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

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

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

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

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

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

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

### Zero Exponent: $a^0 =$

Any nonzero number with an exponent of zero is equivalent to

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

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

$$8x^0 + 5$$

### Negative Exponent $a^{-n} =$

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  $\frac{b^2}{b^5}$  .....

$$2^{-3}$$

$$3x^{-3}$$