Exit Ticket 73 - Chapter 5 Quiz 2 Review

Product of Powers

$a^m * a^n = $ _____	Multiplying powers, same bases, keep bases the same and _____ the exponents.

Powers of Powers

$(a^m)^n = $ _____	Raising a power to a power, _____ the exponents.

Quotients of Powers (Division)

$\dfrac{a^m}{a^n} = $ _____	Dividing powers, same bases, keep the bases the same and _____ the exponents.

Powers of Products

$(ab)^m = $ _____	Raising a product to a power, _____ the exponent.

Powers of Fractions

$\left(\dfrac{a}{b}\right)^m = $ _____	Raising a fraction to a power, _____ the exponent.

Zero Exponents

$a^0 = $ _____	Anything to the zero power is _____.

Negative Exponents

$a^{-m} = $ _____	A quantity to a negative exponent is _____ over that quantity to the positive exponent.

Standard/Decimal Notation to Scientific Notation:

- Move decimal over until the number is between _____ and _____. Count the number of moves.

- If the original number is greater than one, the exponent is _____.

- If the original number is less than one, the exponent is _____.

Scientific Notation to Decimal/Standard Notation

- Negative Exponent – Move decimal to the _____

- Positive Exponent – Move decimal to the _____

Scientific Notation Examples

a. Write in scientific notation: 6430000 =	b. Write in scientific notation: 0.0000000359 =
c. Write in standard notation: $6.51 \times 10^4 =$	d. Write in standard notation: $6.51 \times 10^{-4} =$

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1. Simplify each expression. Show your work.

a. $x^2 \cdot x^3$	b. $(3y)^2 \cdot y^5$
c. $2^4 \cdot 5^4$	d. $(2^3)^5$
e. $\left(\frac{1}{2^3}\right)^5$	f. $a^8 \cdot b^5 \cdot a^{12}$
g. $m^8 * \frac{1}{m^5}$	h. $r \cdot r^2 \cdot (2t) \cdot r^3 \cdot (2t)^3$

2. Write each set of numbers in order from least to greatest. Use < symbols.

a. 6.31×10^8 6.31×10^5 6.31×10^4

b. 4.5×10^{-4} 4.5×10^{-3} 4.5×10^{-6}

c. 3.2×10^3 3.2×10^{-3} -3.2×10^3

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3. Determine whether each expression equals 10^8 using rules of exponents. Show or explain your work.

Original Expression	Explain or show work.	Equal to 10^8? YES/NO
$(10^2)^4$		
$10^5 \cdot 10^3$		
$10^5 + 10^3$		
$(10^4)^4$		
$2^8 \cdot 5^8$		
$10 \cdot 10^7$		
$\dfrac{10^{12}}{10^4}$		
$\dfrac{(10^2)^4}{10^4}$		
$\dfrac{1}{10^{-8}}$		
$\dfrac{1}{10^8}$		
$100 * 10^6$		
$\left(\dfrac{1}{10}\right)^{-8}$		
$10^8 * 10^0$		
$6^0(10^8)$		

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4. Write each expression as a single power of x.

a. $(x^{-2})(x^5)$	b. $\dfrac{x^4}{x^3}$
c. $\dfrac{x^3}{x^4}$	d. $\dfrac{(x^2)^{-3}}{x}$
e. $\dfrac{(x^2)^0 \cdot (x^{-3})}{x^{-1}}$	f. $\dfrac{(x^3)^0}{x^{-4}}$

5. Write each number in standard/decimal notation.

a. -6.31×10^4	b. 5.68×10^{-3}

6. Write each number in scientific notation.

a. 82,000	b. 0.00039
c. −28,000,000	d. 600×10^4
e. 600×10^{-4}	f. -0.031×10^5
g. $(1.5 \times 10^3)(3 \times 10^{-5})$	h. $(3.1 \times 10^{-4})(4 \times 10^{-2})$