Classwork

Name: _____ Period: _____

Laws of Exponents – Day 1

Exponent Vocabulary:

Exponential Form	Expanded Form	Standard Form
Base → 3^5 ← Exponent	$3·3·3·3·3$ Expanded form shows the actual multiplication	243 Standard form is basically the "answer"

Coefficient - A coefficient is something being multiplied by another quantity. For example:

5 is the coefficient → $5x$ 2.3 is the coefficient → $2.3x^2$

Multiplication and Division with Exponents:

When working with exponents, there are certain rules we can use to help us to simplify the process of multiplying and dividing.

MULTIPLICATION (Product of Powers Rule)

Problem	Rule	Expanded form (Why it works)	Solution
$5^1 \times 5^3$	When multiplying exponents with the same base – add the exponents: $5^1 \times 5^3 = 5^{1+3} = 5^4$	$5^1 \times 5^3$ $5 \times 5 \times 5 \times 5$ This is the same as 5^4	$5^4 = \underline{625}$
$y^2 \cdot y^3$	When multiplying exponents with the same base – add the exponents: $y^2 \cdot y^3 = y^{2+3} = y^5$	$y^2 \cdot y^3$ $y \cdot y \cdot y \cdot y \cdot y$ This is the same as y^5	y^5 *We can't figure out a number answer until we know what "y" is
$5y^2 \cdot 2y^3$	When multiplying exponents with the same base – add the exponents, if there are coefficients, multiply them $5y^2 \cdot 2y^3 = (5 \times 2)(y^{2+3})$ $= 10y^5$	$5y^2 \cdot 2y^3$ $5 \cdot y \cdot y \cdot 2 \cdot y \cdot y \cdot y$ $5 \cdot 2 \cdot y \cdot y \cdot y \cdot y \cdot y$ This is the same as $10y^5$	$10y^5$ *We can't figure out a number answer until we know what "y" is

Let's try a few
Simplify:

1) $8^2 \cdot 8^3$ 2) $x^{10} \cdot x^5$ 3) $3x^3 \cdot 5x^2$ 4) $8x^6 \cdot 5x$