Name: _____ Date: _____

Aim: What are the Laws of Exponents (Day 2)?

DO NOW:

In 1-3, write the power with positive exponents.

1.) c^{-9} 2.) a^0b^{-3} 3 .) $2x^{-2}$

Evaluate each power.

4.) $(-2)^{-2}$ 5.) -2^{-2}

Multiplying Powers

Complete the table below. Write down any interesting observations.

Expression	Written as repeated multiplication	Product as a Power
$3^5 \times 3^2$	(3)(3)(3)(3)(3)(3)(3)	3^7
$5^2 \times 5^4$		
$7^5 \times 7^5$		
$2^4 \times 2^3$		
$9^2 \times 9^4$		

Law 3: _____

_____

Write the product as a single power.

1.)	2.)	3.)	4.)

Dividing Powers

Complete the table below.

Expression	Expression written as repeated multiplication	Simplified Expression	Quotient as a Power
$\frac{8^5}{8^3}$	$\frac{8 \times 8 \times 8 \times 8 \times 8}{8 \times 8 \times 8}$	$\frac{8 \times 8 \times \cancel{8} \times \cancel{8} \times \cancel{8}}{\cancel{8} \times \cancel{8} \times \cancel{8}}$	8^2
$\frac{5^6}{5^5}$			
$\frac{4^9}{4^3}$			

Law 4: _____

_____

Practice

Law 3:	Law 4:
$a^m \times a^n = a^{m+n}$	$a^m \div a^n = a^{m-n}$

Write each of the following as a base to a single power.

a) $13^2 \cdot 13^5$ b) $x^0 \cdot x^6$ c) $15^3 \div 15$ d) $\frac{25x^7}{5x^3}$

e) $3b^2 \cdot 6b^7$ f) $w^8 \div w^6$

Evaluate each using the laws of exponents.

g) $5^2 \times 5$ h) $\frac{8^8}{8^6}$ i) $\frac{12^{12}}{12^{12}}$ j) $\frac{25^{13}}{25^{12}}$

The TAKE AWAY	For all non-zero values of a: When multiplying powers, keep the base and _____ the exponents. When dividing powers, keep the base and _____ the exponents.