

Name \_\_\_\_\_

Date \_\_\_\_\_

Aim: What are the laws of exponents?

# D O N O W :

What are exponents and when do we use them?

Power: \_\_\_\_\_

Example:  $(-15)(-15)(-15)$



Power	Base	Exponent	Evaluate
$(-4)^3$			
$-7^4$			
$2^0$			
$2^{-3}$			

Law 1: \_\_\_\_\_

1.)  $987^0$

2.)  $x^0$

3.)  $x^0y^4$

4.)  $(87x)^0$

5.)  $87x^0$

What about negative exponents? Let's look at the pattern...

Law 2: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

$2^2$	4
$2^1$	2
$2^0$	1
$2^{-1}$	
$2^{-2}$	
$2^{-3}$	

### Negative Exponent Practice

Write the expression using only positive exponents. (Don't evaluate)

- 1)  $7^{-5}$       2)  $(-9)^{-3}$       3)  $a^{-8}$       4)  $y^{-10}$       5)  $3a^{-2}$       6)  $x^0y^{-3}$

Evaluate each of the following expressions.

- 7)  $3^{-2}$       8)  $4^{-3}$       9)  $5^{-4}$       10)  $99^0$       11)  $1^{-99}$

### Mixed Practice

Simplify each expression using ONLY positive exponents. Evaluate where possible.


- a.  $3^{-2}$       b.  $7^0$       c.  $m^0n^4$       d.  $x^{-6}y^4$

e. Which expressions are equivalent to 64? Select all that apply.

- $2^6$         $-2^6$         $(-8)^2$         $64^1$   
  $4^3$         $8^{-2}$         $(-4)^3$         $64^{-1}$   
  $(-2)^6$         $8^2$

f. Answer True or False for each statement.

- (i)  $\frac{1}{25} = 5^{-2}$       (ii)  $(-14)^0 = 0$       (iii)  $(-2)^3 = \frac{1}{2^3}$       (iv)  $2x^{-3} = \frac{1}{2x^3}$

	For all non-zero values of a: $a^0 =$ _____ $a^{-n} =$ _____
---	--