Exponents Guided Notes

Exponents are a new mathematical operation that causes repeated multiplication. Multiplication tells us how many times to add a number, and in a similar way **exponents** <u>tell us how many times a number is a factor or multiplied</u>.
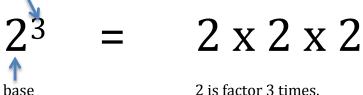
Example:

Exponential Form   **Expanded Form**   **Simplify/Standard Form**

exponent

$$2^3 \quad = \quad 2 \times 2 \times 2 \quad = \quad 8$$

base   2 is factor 3 times.   When you evaluate these
.   expressions both equal 8.

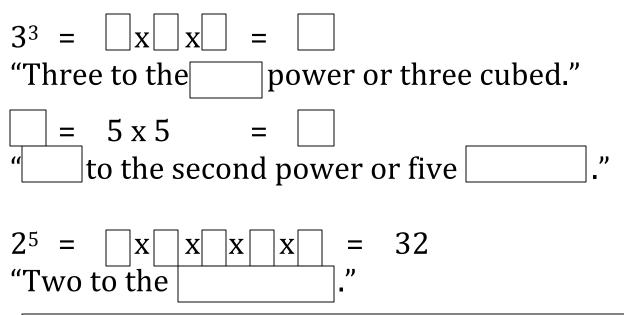This exponent would be read, " two to the third power" or "two cubed."

Special Exponents: 2, 3, and 0

2: to the second power or **squared** (two-dimensions)
3: to the third power or **cubed** (three-dimensions)

***0**: ANYTHING to the **ZERO POWER** is equal to **ONE**!

Example: $8^0 = 1$, $19^0 = 1$, $2,355^0 = 1$, and even $-7^0 = 1$

Sample Expressions: Fill in the missing information, and complete the expressions.

$3^3 \ = \ \square \times \square \times \square \ = \ \square$
"Three to the $\boxed{}$ power or three cubed."

$\boxed{} \ = \ 5 \times 5 \ = \ \square$
"$\boxed{}$ to the second power or five $\boxed{}$."

$2^5 \ = \ \square \times \square \times \square \times \square \times \square \ = \ 32$
"Two to the $\boxed{}$."

"*As I was going to St. Ives I met a man with seven wives. Each wife had seven sacks, each sack had seven cats, each cat had seven kits. Kits, cats, sacks and wives, how many were going to St. Ives?*"

Instructions: Please fill in the empty cells to complete each exponent problem.

Exponent	Expanded Form	Solution
7^3	7 x 7 x 7	343
	8 x 8 x 8	512
2^3		
10^4		
	5 x 5 x 5 x 5	
3^1	3	3
7^1		
4^3		
	6 x 6 x 6	
		25
		9
		8
	9 x 9	
10^6		
1^6		
6^1		

The **Zero Exponent Rule**!

    The ***Zero Exponent Rule*** states that any number raised to the zero power is **always** equal to 1.

    Example: 5^0 = 1, and 77^0 = 1, it doesn't matter what number you raise to the zero power, it will still equal 1!

    Practice:

        9^0 = _____ 1^0 = _____ 150^0 = _____ 213^0 = _____ -12^0 = _____