

Strand: _____ **Numbers and Operations** _____ **Name:** _____

Skill Addressed: Understand the Patterns of Numbers in Exponential Form

Activity: *Why the Laws?*

Here are 3 Laws of Exponents written as Examples:

LAW #1	$2^6 \times 2^5 = (2 \times 2 \times 2 \times 2 \times 2 \times 2) \times (2 \times 2 \times 2 \times 2 \times 2) = 2^{11}$
LAW #2	$2^8 \div 2^5 = \frac{(2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2)}{(2 \times 2 \times 2 \times 2 \times 2)} = 2^3$
LAW #3	$(2^4)^3 = (2 \times 2 \times 2 \times 2) \times (2 \times 2 \times 2 \times 2) \times (2 \times 2 \times 2 \times 2) = 2^{12}$

Explain how each law works and describe a shortcut to find the answer.

1) _____

2) _____

3) _____

4) If one base was 2 and the other base was 3, would the first two laws still work? Explain why or why not? _____

5) Is $2^6 \times 2^3 = 4^9$? Explain why or why not. _____

Complete the following chart and look for patterns:

2^5	2^4	2^3	2^2	2^1	2^0	2^{-1}	2^{-2}	2^{-3}	2^{-4}	2^{-5}
						$\frac{1}{2^1}$				$\frac{1}{2^5}$
						$\frac{1}{2}$				$\frac{1}{32}$
						0.5				

On the back of this page, describe any patterns that you found in the chart.