

NAME _____ DATE _____ PERIOD _____

Unit 7, Lesson 6: What about Other Bases?

Let's explore exponent patterns with bases other than 10.

6.1: True or False: Comparing Expressions with Exponents

Is each statement true or false? Be prepared to explain your reasoning.

- $3^5 < 4^6$
- $(-3)^2 < 3^2$
- $(-3)^3 = 3^3$
- $(-5)^2 > -5^2$

6.2: What Happens with Zero and Negative Exponents?

Complete the table to show what it means to have an exponent of zero or a negative exponent.

value	16								
exponent form	2^4								

$\xleftarrow{-2}$ $\xleftarrow{-2}$ $\xleftarrow{-2}$ $\xleftarrow{-2}$ $\xleftarrow{-2}$ $\xleftarrow{-2}$ $\xleftarrow{-2}$ $\xleftarrow{-2}$

$\xrightarrow{-1}$ $\xrightarrow{-1}$ $\xrightarrow{-1}$ $\xrightarrow{-1}$ $\xrightarrow{-1}$ $\xrightarrow{-1}$ $\xrightarrow{-1}$ $\xrightarrow{-1}$

- As you move toward the left, each number is being multiplied by 2. What is the multiplier as you move toward the right?
- Use the patterns you found in the table to write 2^8 as a fraction.
- Write $\frac{1}{32}$ as a power of 2 with a single exponent.
- What is the value of 2^0 ?
- From the work you have done with negative exponents, how would you write 5^{-3} as a fraction?
- How would you write 3^{-4} as a fraction?