Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_\_\_\_

Study Guide for Unit 5 Exponential Functions

**Learning Target #1:** “I can apply the rules of exponents.” N-RN.1, N-RN.2

Simplify the exponential expressions. Remember to FULLY simplify, so no negative exponents in your final answer.

|  |  |  |  |
| --- | --- | --- | --- |
| 1. $4a^{3}∙2bc∙ab^{2}c^{5}$
 | 1. $\frac{24ab^{8}}{8b^{6}}$
 | 1. $\left(13x^{2}\right)^{0}∙2x^{3}x^{7}$
 | 1. $\left(\frac{c^{2}}{c^{5}}\right)^{-2}$
 |
| 1. $\left(\frac{2x^{3}}{8xy^{8}}\right)^{0}$
 | 1. $8^{^{4}/\_{3}}$
 | 1. $\frac{15h^{3}}{5h^{6}}$
 | 1. $\left(\frac{x^{8}}{x^{2}}\right)^{3}$
 |
| 1. $\left(m^{3}m^{4}\right)^{2}$
 | 1. $\left(3xy^{4}\right)\left(3x^{2}y\right)$
 | 1. $49^{^{1}/\_{2}}$
 | 1. $\left(3x^{3}y^{2}\right)^{-3}$
 |

**Learning Target #2:** “I can create and graph exponential functions and use them to solve problems.” A-CED.1, A-CED.2, N-Q.2,N-Q.3, F.BF.1

1. Write the exponential equation for the graph that passes through $\left(3, 128\right)$ and $\left(0, 2\right)$.
2. Write the exponential equation for the graph that passes through $\left(0, 7\right)$ and $\left(3, 56\right)$.
3. Graph the equations you found in #13 and #14.

Equation: Equation:



**Learning Target #3:** “I can investigate the family of exponential functions through the four different representations, graph, table, equation, and situation, and I can interpret the key features/parameters.” F-IF.4, F-IF.7e, F-LE.2, F-LE.5

1. The M&M Lab activity used the equation $y=200\left(\frac{1}{2}\right)^{x}$, where $y =$ the total number of M&Ms and $x =$ number of trials. Using that equation, how many M&Ms would be left after 3 rounds? After 5 rounds?

**Learning Target #4:** “I can identify exponential functions as representing growth or decay.” I-IF.8b, F-LE.1c, F-IF.6

1. Create a situation that would be modeled by decay. Write the equation for that situation.
2. Create a situation that would be modeled by growth. Write the equation for that situation.
3. What do you know about the multiplied for a decay model?
4. What do you know about the multiplied for a growth model?