

NAME: _____

Math _____, Period _____

Mr. Rogove

Date: _____

LEARNING OBJECTIVE: We will review the rules of exponents that we have learned. (G8M1L6)

CONCEPT DEVELOPMENT:
Exponent Rules for ALL integers

$x^m \cdot x^n = x^{m+n}$	
$\frac{x^m}{x^n} = x^{m-n}$	
$(x^m)^n = x^{m \cdot n}$	
$(xy)^n = x^n y^n$	
$\left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}$	
$x^0 = 1$	
$x^{-n} = \frac{1}{x^n}$	
$\frac{1}{x^{-n}} = x^n$	

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GUIDED PRACTICE:

Simplify each expression, showing individual steps:

$(7^{-5})^{-8} = 7^{40}$ $\left(\frac{1}{7^5}\right)^{-8} = \frac{1}{7^{-40}} = 7^{40}$	$\frac{1}{x^5} \cdot \frac{1}{x^7} = \frac{1}{x^{12}}$
<p>You sent a photo of you and your family on vacation to 7 friends. If each of them sends the photo to 5 of their friends, and each of those friends sends it to 5 of their friends, and each of those friends sends it to five of their friends, how many people will see the photo (not including you). Assume that no friend receives the photo twice.</p> <p>Me → 7 ↙ ↘ 5 5 ↙ ↘ ↙ ↘ 5 5 5 5 ↙ ↘ ↙ ↘ ↙ ↘ 5 5 5 5 5 5 5 5</p> $7 \times 5^3 = 875$ $\frac{875}{7} = 125$ $7 + (7 \times 5) + (7 \times 25) + (7 \times 125)$ <p>1092 people see the photo!</p>	<p>Your friend returned from an overseas trip and got you and 5 other friends sick. Each of you got 6 other people sick, and each of those unfortunate people got 6 people of their own sick. How many people all together got sick? Assume that nobody got sick twice.</p> <p>1 6 36 216 259 people got sick</p>
<p>Use the properties of exponents to write an equivalent expression that is the product of distinct primes, each raised to an integer power.</p> $\frac{10^5 \cdot 9^2}{6^4} = \frac{(2 \cdot 5)^5 \cdot (3 \cdot 3)^2}{(2 \cdot 3)^4} = \frac{2^5 \cdot 5^5 \cdot 3^4}{2^4 \cdot 3^4} = 2 \cdot 5^5$ <p>$10^5 = (2 \cdot 5)^5$ $(2 \cdot 5)^5 \neq 2 \cdot 5^5$</p>	<p>Use the properties of exponents to write an equivalent expression that is the product of distinct primes, each raised to an integer power.</p> $\frac{12^6 \cdot 21^7}{3^{12} \cdot 2^{11}} = \frac{(2 \cdot 2 \cdot 3)^6 \cdot (3 \cdot 7)^7}{3^{12} \cdot 2^{11}} = \frac{2^6 \cdot 2^6 \cdot 3^6 \cdot 3^7 \cdot 7^7}{3^{12} \cdot 2^{11}} = \frac{2^{12} \cdot 3^{13} \cdot 7^7}{3^{12} \cdot 2^{11}} = 2 \cdot 3 \cdot 7^7$

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INDEPENDENT PRACTICE:

ACTIVATING PRIOR KNOWLEDGE:

We can evaluate expressions that result in negative exponents:

$(x^4)^{-8}$	$(3x^7y^{-1})^{-2}$
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CLOSURE:

Separate piece of paper:

Write your own exponents question using at least one of the rules we reviewed and provide the solution too

TEACHER NOTES:

Collect questions and then distribute them to each other.