Name:_____

Part 1:

Exponent Properties: The Power Rule and Distributive Rule for Products

Problem to simplify	First repeated multiplication	Second repeated multiplication	Power of the form a^c
$(2^2)^3$	$2^2 \cdot 2^2 \cdot 2^2$	$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$	2^6
$(x^3)^4$			
			h^{12}
	$x^6 \cdot x^6 \cdot x^6 \cdot x^6$		
$(2x)^3$			
$(xy^3)^2$			
$(2jk^7m^2)^{10}$	Too big to write out! Find another way.		

Now, write the general rule for what happens when we have something already to a power, raised to a power again. You may want to write the rule in words, or you can use an example or expression to communicate the rule.

1) $(x^2)^4$

2) $(y^3)^4$

3) $(k^5)^9$

4) $(2z^2)^3$

5) $(3c^5)^4$

6) $(4p^{10})^2$

7) $(2x^5y^3)^3$

8) $(gh^7j^0)^6$

9) $(-4w^6x^9)^2$

Part 2:

Exponent Properties: The Distributive Rule for Quotients

Quotient	Repeated multiplication	Write as a fraction
$\left(\dfrac{2}{3}\right)^4$	$\left(\dfrac{2}{3}\right)\left(\dfrac{2}{3}\right)\left(\dfrac{2}{3}\right)\left(\dfrac{2}{3}\right)$	$\dfrac{2^4}{3^4}$
	$\left(\dfrac{3}{y}\right)\left(\dfrac{3}{y}\right)\left(\dfrac{3}{y}\right)\left(\dfrac{3}{y}\right)\left(\dfrac{3}{y}\right)\left(\dfrac{3}{y}\right)$	
		$\dfrac{x^6}{y^3}$
$\left(\dfrac{2x}{9}\right)^3$		
		$\dfrac{3^{10}a^{10}}{12^{10}b^{10}}$
$\left(\dfrac{a}{b}\right)^{104}$	Too hard to write out! Find another way.	

Now, write the general rule for what happens when we have a quotient raised to a power. You may want to write the rule in words, or you can use an example or expression to communicate the rule.

1) $\left(\dfrac{y}{x}\right)^4$

2) $\left(\dfrac{r}{t}\right)^3$

3) $\left(\dfrac{w}{v}\right)^{10}$

4) $\left(\dfrac{2y}{x}\right)^2$

5) $\left(\dfrac{3d}{4}\right)^3$

6) $\left(\dfrac{10m}{3n}\right)^4$

7) $\left(\dfrac{6y}{2}\right)^5$

8) $\left(\dfrac{8xy}{11z}\right)^2$

9) $\left(\dfrac{ab}{x}\right)^{10}$