

Quotient Properties of Exponents



Expression	Expression as repeated multiplication	Simplified Expression	Simplified Expression as Power
$\frac{2^7}{2^2}$			
$\frac{x^5}{x^3}$			
$\frac{2^5}{2^5}$			

GENERALIZE YOUR FINDINGS:

When you divide powers with like bases ...
you subtract the exponents

try it out...

1) $\frac{2a^{16}}{4a^7} = \frac{1a^9}{2} = \frac{a^9}{2}$

2) $\frac{(-4)^6}{(-4)^3} = \frac{(-4)^3}{1} = (-4)^3$

3) $\frac{x^4y^5}{y^2} = \frac{x^4y^3}{1} = x^4y^3$

4) $\frac{a^9 \cdot a^5}{a^2} = \frac{a^{14}}{a^2} = \frac{a^{12}}{1} = a^{12}$

MAGNET PRACTICE!

5)

6)

7)

8)

Fraction ^{power} Property

Expression	Expanded Expression	Product of Fractions	Simplified Expression
$\left(\frac{5}{8}\right)^3$	$\left(\frac{5}{8}\right) \cdot \left(\frac{5}{8}\right) \cdot \left(\frac{5}{8}\right)$		
$\left(\frac{x}{7}\right)^5$			

GENERALIZE YOUR FINDINGS:

When you raise a quotient to a power...

you can distribute the exponent to numerator/denominator

$$5) \left(\frac{4}{x}\right)^3 = \frac{4^3}{x^3}$$

$$6) \left(\frac{a^2}{b}\right)^4 = \frac{(a^2)^4}{b^4} = \frac{a^8}{b^4}$$

$$7) \frac{(w^2)^3}{w^2} = \frac{w^6}{w^2} = \frac{w^4}{1} = w^4$$

$$8) \left(\frac{2x}{3}\right)^3 = \frac{2^3 x^3}{3^3}$$

$$9) \left(\frac{2x^2}{3}\right)^3 = \frac{(2x^2)^3}{3^3} = \frac{2^3 x^6}{3^3}$$

$$10) \left(\frac{2x^4 y^2}{3^2}\right)^3 = \frac{(2x^4 y^2)^3}{(3^2)^3} = \frac{2^3 x^{12} y^6}{3^6}$$