Algebra 1 7.2

$\frac{2^7}{2^4}$

Use the properties of exponents to divide monomials

Simplify expressions containing negative exponents

$\frac{t^4}{t^3}$

Simplify expressions containing zero exponents

Compare measurements using order of magnitude

reciprocal
exponent
base
quotient
factors
negative exponent
order of magnitude

Triangle puzzle (?)

ICE WS

KeyConcept Zero Exponent Property

Words	Any nonzero number raised to the zero power is equal to 1.
Symbols	For any nonzero number a, $a^0 = 1$.
Examples	$15^0 = 1$ $\left(\frac{b}{c}\right)^0 = 1$ $\left(\frac{2}{7}\right)^0 = 1$

why?

KeyConcept Negative Exponent Property

Words For any nonzero number a and any integer n, a^{-n} is the reciprocal of a^n. Also, the reciprocal of a^{-n} is a^n.

Symbols For any nonzero number a and any integer n, $a^{-n} = \frac{1}{a^n}$.

Examples $2^{-4} = \frac{1}{2^4} = \frac{1}{16}$ $\qquad \frac{1}{j^{-4}} = j^4$

negative exponent = code for reciprocal

Example 4 Negative Exponents

Simplify each expression. Assume that no denominator equals zero.

4 8 **a.** $\frac{p^4 \cdot p^3 n^2 r^2}{p^6 n^5} = \frac{ppppppnnrr}{ppppppnnnnn}$

final answer: exponents positive, no zero exponents

$= \frac{1}{2} \frac{pr^2}{n^3}$

b. $\frac{5t^4u^3r^2u^5}{-20r^2t^7r^3}$

final answer: exponents positive
no zero exponents

$-\frac{1}{4}\frac{uuuuuuuu}{ttttttt\,rrr}$

$-\frac{1}{4}\frac{u^8}{t^3r^3}$

GuidedPractice

final answer: exponents positive
no zero exponents

Simplify each expression. Assume that no denominator equals zero.

4A. $\frac{v^{-3}wx^2}{wy^{-6}}$

4B. $\frac{32a^{-8}b^3c^{-4}}{4a^3b^5c^{-2}}$

4C. $\frac{5j^{-3}k^2m^{-6}}{25k^{-4}m^{-2}}$