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

$$\frac{-9n^6}{18n^2} = \frac{-9nnnnnn}{18nn} \quad -\frac{1}{2}h^4$$

$$\frac{3}{8}x^6y^2$$

$$\frac{(3x^2)^2y^3x^2}{24xy} = \frac{(3xx)(3xx)yyyxx}{24y}$$

$$\frac{9x^6y^2}{24}$$

whiteboards

GuidedPractice

Simplify each expression.

2A. $\left(\frac{3x^4}{4}\right)^3$ **2B.** $\left(\frac{5x^5y}{6}\right)^2$ **2C.** $\left(\frac{2y^2}{3z^3}\right)^2$ **2D.** $\left(\frac{4x^3}{5y^4}\right)^3$

$\left(\frac{3xxxx}{4}\right)\left(\frac{3xxxx}{4}\right)\left(\frac{3xxxx}{4}\right)$

$\frac{27x^{12}}{64}$

GuidedPractice

3A. $\dfrac{b^4c^2d^0}{b^2c}$

$\dfrac{b\,b\,b\,b\,c\cdot 1}{b\,b\,c}$

$= b^2c$

3B. $\left(\dfrac{2f^4g^7h^3}{15f^3g^9h^6}\right)^0 = 1$

Example 4 Negative Exponents

Simplify each expression. Assume that no denominator equals zero.

a. $\dfrac{p^4 r^2}{n^5}$

final answer: exponents positive, no zero exponents

$$\frac{pppprr}{nnnnn} = \frac{p^4 r^2}{n^5}$$

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

final answer: exponents positive
no zero exponents

$$\frac{5\,t\,t\,t\,t\,u\,u\,u\,u\,u}{-20\,r\,r\,t\,t\,t\,t\,t\,t\,t\,r\,r\,r}$$

$$-\frac{1}{4}\,\frac{u^5}{r^5t^5} = \frac{-u^5}{4r^5t^5} = -\frac{1}{4}\,\frac{u^5}{r^5t^5}$$

GuidedPractice

final answer: exponents positive
no zero exponents

Simplify each expression. Assume that no denominator equals zero.

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

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

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

$$\frac{(3b)^2 k^{-6} y^3}{b^{-4} k^2 y^{-2}} \qquad \frac{x^2 y^{-3} a^2 b^3}{x^4 y^{-5} a^{-3} b^{-5}}$$