

7.2 Division Properties of Exponents

Note:

$$\left(\frac{2}{3}\right)^2 = \left(\frac{2}{3}\right)\left(\frac{2}{3}\right) = \frac{4}{9}$$

Nov 9-6:39 PM

Power of a Quotient Property:

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

Nov 9-6:39 PM

$$\left(\frac{5}{3}\right)^3 = \frac{5^3}{3^3} = \frac{125}{27}$$

$$\left(\frac{4}{7}\right)^2 = \frac{4^2}{7^2} = \frac{16}{49}$$

Nov 9-7:03 PM

$$\left(\frac{x^3}{8}\right)^2 = \frac{x^6}{8^2} = \frac{x^6}{64}$$

$$\left(\frac{3}{b^3}\right)^3 = \frac{3^3}{b^9} = \frac{27}{b^9}$$

Nov 9-7:03 PM

$$\left(\frac{2x}{y^2}\right)^5 = \frac{2^5 x^5}{y^{10}} = \frac{32x^5}{y^{10}}$$

$$\left(\frac{3b^{\frac{3}{2}}}{a^3}\right)^4 = \frac{3^4 b^6}{a^{12}} = \frac{81b^6}{a^{12}}$$

Nov 9-7:03 PM

$$\left(\frac{3y^2}{x^3}\right)^2 = \frac{3^2 y^4}{x^6} = \frac{9y^4}{x^6}$$

$$\left(\frac{3x^2y}{4}\right)^2 = \frac{3^2 x^4 y^2}{4^2} = \frac{9x^4 y^2}{16}$$

Nov 9-7:42 PM

$\frac{x^5}{x^3}$

Let's write this out to see what happens:

$$\frac{\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}}{\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}}$$

$$\frac{\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}}{\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}\overset{\cdot}{\underset{\cdot}{\times}}}$$

that leaves us with $x \cdot x = x^2$

Nov 9-5:36 PM

Quotient of Powers Property:

$$\frac{a^n}{a^m} = a^{n-m}$$

Nov 9-6:27 PM

$\frac{3x^3}{6x^2}$ $\frac{1x^1}{2}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $\frac{x}{2}$ </div>	<div style="border-left: 2px solid red; height: 100px;"></div>	$\frac{-2y^4}{8y^1}$ $\frac{-1y^3}{4}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $\frac{-y^3}{4}$ </div>
--	--	---

Nov 9-7:56 PM

$\frac{21x^5w^{10}}{9x^2w^3}$ $\frac{7x^3w^7}{3}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $\frac{7x^3w^7}{3}$ </div>	<div style="border-left: 2px solid red; height: 100px;"></div>	$\frac{8a^4b^2}{12a^3b}$ $\frac{2a^1b^1}{3}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $\frac{2ab}{3}$ </div>
---	--	--

Nov 9-6:19 PM

$\frac{3x^6w^2z^{11}}{21x^4wz^3}$ $\frac{1x^2w^1z^8}{7}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $\frac{x^2wz^8}{7}$ </div>	<div style="border-left: 2px solid red; height: 100px;"></div>	$\frac{5x^{20}z^6w^9}{10x^{10}z^4w}$ $\frac{1x^{10}z^2w^8}{2}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $\frac{w^8x^{10}z^2}{2}$ </div>
--	--	---

Nov 9-6:24 PM

$$\left(\frac{-1}{3}\right)^4 \cdot 3^{12}$$

$$\frac{-1^4}{3^4} \cdot \frac{3^{12}}{1}$$

$$\frac{1}{3^4} \cdot \frac{3^{12}}{1} = \frac{3^{12}}{3^4} = 3^8$$

Nov 9-6:24 PM

$$\left(\frac{3x^3y}{x^4}\right)^3 \cdot \left(\frac{x^3y^2}{5y}\right)^2$$

$$\frac{3^3 x^9 y^3}{x^{12}} \cdot \frac{x^6 y^4}{5^2 y^2} = \frac{27 x^{15} y^7}{25 x^{12} y^2}$$

$$= \frac{27 x^3 y^5}{25}$$

Nov 9-6:24 PM

Classwork: p.444 #4 - 44 even
Copy the question.

Final Five

Simplify.

1. 2^4 2. $\frac{2^4}{2^3}$ 3. $\frac{(2^4)^2}{2^3}$

Nov 9-6:24 PM