Dividing with Exponents

Classwork Day 1

Name _____

Date _____ Period 1st

1. Find the missing dimension of each rectangle given the area. $A = bh$

a) 3 | A = 24 | ??

$\frac{A}{h} = b$

$\frac{24}{3} = b$

$b = 8$

b) ?? | A = 20ab | 10b

$\frac{A}{b} = h$

$\frac{20ab}{10b} = h$

$2a = h$

c) 5x | A = 15x² | ??

$b = \frac{A}{h}$

$b = \frac{15x^2}{5x}$

$b = 3x$

d) How did you find the missing dimension?

2. Simplify.

$\frac{5}{5} = 1$ $\quad \frac{-20}{-20} = 1$ $\quad \frac{a}{a} = 1$ $\quad \frac{ab}{ab} = 1$ $\quad \frac{5x^2}{5x^2} = 1$

Describe any patterns you observe.

All quotients equaled one

3. Complete the table.

	Original Expressions	Expanded Form	Simplest Form
A	$\frac{x^6}{x^2}$	$\frac{x \cdot x \cdot x \cdot x \cdot x \cdot x}{x \cdot x}$	x^4
B	$\frac{x^2}{x^6}$	$\frac{x \cdot x}{x \cdot x \cdot x \cdot x \cdot x \cdot x}$	$\frac{1}{x^4}$
C	$\frac{-6d^4}{4d^2}$	$\frac{-3 \cdot 2 \cdot d \cdot d \cdot d \cdot d}{2 \cdot 2 \cdot d \cdot d}$	$\frac{-3d^2}{2}$
D	$\frac{24v^3}{3v^2}$	$\frac{24 \cdot v \cdot v \cdot v}{3 \cdot 4 \cdot v}$	$8v$
E	$\frac{-27x^4y^2}{-18xy^3}$	$\frac{-3 \cdot 9 \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y}{-3 \cdot 6 \cdot x \cdot y \cdot y \cdot y}$	$\frac{3x^3}{2y}$

reciprocals

Algorithm

4. Compare the simplest form to the original expressions. Describe a way to find the coefficients and the exponents in simplest form without using expanded form.

Coefficients: Divide them / simplify as fractions

Exponents: subtract # numerator - denominator

Try these!!

5. $\frac{2n^2}{4n^3}$ $\frac{1}{2n}$

6. $\frac{10w^3y}{3wy}$ $\frac{10w^2}{3}$

7. $\frac{-5q^4}{5q^4}$ -1

8. $\frac{16c^4d^2}{12c^7d}$ $\frac{4d}{3c^3}$

Power of a Quotient: $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m} \quad b \neq 0$

Examples:

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

2. $\left(\frac{2a^2b}{a}\right)^3$ $\frac{8a^6b^3}{a^3}$ $8a^3b^3$

3. $\left(\frac{4x^4y^4}{2x^2y^3}\right)^3$ $\left(\frac{2x^2y}{1}\right)^3$ $8x^6y^3$