

## 4-1 Exponent Rules Review

4-1a: I can use properties of exponents to simplify and evaluate exponential expressions.

Like-terms review

Group the like terms and then  
combine

$$\begin{array}{ccccccc} x^3 & & x & & -x^2 & & \\ & & & & -5x & & \\ 2x^3 & & x^2 & & & & 7x^2 \\ & & & & -6x^3 & & 3x \end{array}$$

**EXPONENT RULES***Graphic Organizer*

Name	Rule	Examples
<b>ADDING &amp; SUBTRACTING MONOMIALS</b>	<b>COMBINE LIKE TERMS!!!</b> (DO NOT CHANGE common variables and exponents!)	1. $9x^2y - 10x^2y =$ 2. Subtract $6w$ from $8w$ .
<b>PRODUCT RULE</b>	$x^a \cdot x^b =$	1. $h^2 \cdot h^6 =$ 2. $(-2a^2b) \cdot (7a^3b) =$
<b>POWER RULE</b>	$(x^a)^b =$	1. $(x^2)^3 =$ 2. $(-2m^5)^2 \cdot m^3 =$
<b>QUOTIENT RULE</b>	$\frac{x^a}{x^b} =$	1. $\frac{27x^5}{42x} =$ 2. $\frac{(y^2)^2}{y^4} =$
<b>NEGATIVE EXPONENT RULE</b>	$x^{-a} =$	1. $-5x^{-2} =$ 2. $\frac{4k^2}{8k^5} =$
<b>ZERO EXPONENT RULE</b>	$x^0 =$	1. $7x^0 =$ 2. $\frac{(w^4)^2}{w^8} =$

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**ADDING & SUBTRACTING MONOMIALS****COMBINE LIKE TERMS!!!**

(DO NOT CHANGE common variables and exponents!)

1.  $9x^2y - 10x^2y =$

2. Subtract  $6w$  from  $8w$ .

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**PRODUCT RULE**

$$x^a \cdot x^b =$$

**1.**  $h^2 \cdot h^6 =$

**2.**  $(-2a^2b) \cdot (7a^3b) =$

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**POWER RULE**

$$(x^a)^b =$$

**1.**  $(x^2)^3 =$

**2.**  $(-2m^5)^2 \cdot m^3 =$

**QUOTIENT RULE**

$$\frac{x^a}{x^b} =$$

**1.**  $\frac{27x^5}{42x} =$

**2.**  $\frac{(y^2)^2}{y^4} =$

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**NEGATIVE EXPONENT  
RULE**

$$x^{-a} =$$

**1.**  $-5x^{-2} =$

**2.**  $\frac{4k^2}{8k^5} =$

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**ZERO EXPONENT  
RULE**

$$x^0 =$$

**1.**  $7x^0 =$

**2.**  $\frac{(w^4)^2}{w^8} =$

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**More Practice!**

$$\frac{9p^{-2}q^5}{15p^2q^3}$$

$$4x^2y \cdot -3x^{-5}y^2$$

$$\left(\frac{-9c^3d}{c^2d^2}\right)^2$$

Simplify each of the following:

$$x \cdot x \cdot x \cdot x \cdot x =$$

$$x^4 \cdot x^9 =$$

$$(ab)^{14} =$$

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

$$\frac{k^{12}}{k^5} =$$

$$\left(\frac{1}{4}\right)^0 =$$

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