# Properties of Exponents in Chapter 8

- $\checkmark$  Zero and Negative Exponents  $5b^{-3}c^0$
- Multiplying powers with the same base  $a^4a^7a$
- Raising a power to a power  $(m^5)^8$
- Raising a product to a power  $(5a^3b^7)^2$
- Dividing powers with the same base  $\frac{n^8}{n^2}$
- Raising a quotient to a power  $\left(\frac{x^3}{y^7}\right)^4$

Simplify each.

1. 
$$(5R^{-5}ST^{-4})^2$$

2. 
$$(2w^{-5}x^4)^{-3}$$

## Sections 8-3 and 8-4: Multiplication Properties of Exponents

Multiplying Powers with the Same Base: Add Exponents

Raising a Power to a Power: Multiply exponents

### Raising a Product to a Power:

Raise everything inside the parentheses to the power that is outside of the parenthese.

This is when you distribute the exponent

What is the difference between these two?

 $\frac{(x+5)^2}{(x+5)(x+5)}$ 

Here you can't just distribute the exponent, you have to expand.

 $(5x)^2$   $5^2\chi^2$ 

With this problem you CAN simply square everything inside the parentheses.

## Simplify each.

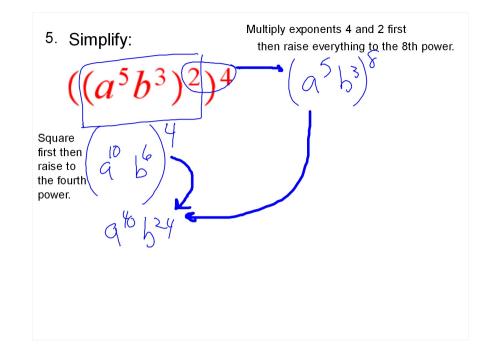
3.  $(5c^3d^{-2})^2(10cd^5)^3$ 

4.  $(9x^4y^{-8})^0(x^3y^2)^5(x^{-2}y^4)$ 

Hwk #21: Sections 8-3 and 8-4

Page 407, Problems 14, 17, 18, 21 AND

Pages 413-414, Problems 7, 14, 15, 20, 21



6. Simplify:

#### Section 8-5:

**Division Properties of Exponents** 

#### Dividing Powers with the Same Base:

Subtract Exponents

Exponent in Numerator - Exponent in Denominator

5. Simplify.

$$\frac{7a^{8}b^{9}c^{-4}d^{6}}{35a^{-2}b^{7}c^{-8}d^{10}}$$

$$= a^{16}b^{2}c^{4}$$

$$= 5d^{4}$$

Simplify each. No negative exponents in your answer!

1. 
$$\frac{12d^{36}}{3d^2} = 446$$

2. 
$$\frac{m^{5}}{m^{7}} = \frac{1}{m^{2}}$$

$$m^{5-7} = m^{-2}$$

$$m^{7-5} = \frac{1}{m^{2}}$$

3. 
$$\frac{8n^9}{24n^{-2}} = \frac{1}{3}$$

4. 
$$\frac{y^{-10}}{y^{-6}} \quad \frac{y b}{y^{10}} = \frac{1}{y^{4}}$$

6. Simplify

Simplify each.

