Base 3^{2} Exponent

What is the above called? Power

Power: Has two parts

Properties of Exponents in Chapter 8

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

Examples of some of the rules of exponents we'll see in this Chapter

Simplify each.

$\frac{4^{-2}a^{-3}b^{4}}{5c^{0}d^{-1}}$

$= \frac{b^{4}d}{16a^{3}5 \cdot 1}$

$= \frac{b^{4}d}{80a^{3}}$

$\left(\frac{6j^{5}k^{-7}}{2^{-3}h^{-2}}\right)^{-1}$

$= \left(\frac{6j^{5}2^{3}h^{2}}{k^{7}}\right)^{-1}$

$= \frac{k^{7}}{48h^{2}j^{5}}$

Simplify each.

1. $a^{3} \cdot a^{5} =$ $a^{3+5} = a^{8}$

$a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a$

2. $m^{6} \cdot m^{4} \cdot m^{1} =$ m^{11}

3. $(3x^{5}y^{4})(7x^{-3}y) =$ $21x^{2}y^{5}$

Simplify each.

4. $\frac{g^6}{g^2} = g^{6-2} = g^4$

5. $\frac{b^4}{b^5} = b^{4-5} = b^{-1} = \frac{1}{b}$

6. $\frac{12m^{24}}{4m^6} = 3m^{18}$

Simplify each.

7. $(p^4)^3 = p^{4 \cdot 3} = p^{12}$

$p^4 \cdot p^4 \cdot p^4 = p^{4+4+4} = p^{4 \cdot 3}$

8. $(3k^5)^2 = (3k^5)(3k^5) = 9k^{10}$

or $(3^2)(k^5)^2 =$

Sec 8-3: Multiplication Properties of Exponents

Property **Multiplying Powers With the Same Base**

For every nonzero number a and integers m and n, $a^m \cdot a^n = a^{m+n}$.

The base can be any # except zero

The exponents CAN'T be fractions or decimals

When you multiply powers with the same base you

ADD EXPONENTS

Simplify each. Make sure that no exponents in your answer are negative or zero.

1. $C^4 \cdot C \cdot C^6$

$= C^{4+1+6}$

$= C^{11}$

2. $W^6X^4W^{-9}X^3W$

$= W^{6-9+1}X^{4+3}$

$= W^{-2}X^7$

$= \frac{X^7}{W^2}$

3. $(2R^3S^4)(5R^{-8}S^3)$

$= 2 \cdot 5 R^{3-8} S^{4+3}$

$= 10 R^{-5} S^7$

$= \frac{10 S^7}{R^5}$