### PRINCIPLES - LESSON 106 DIVIDING POWERS WITH LIKE BASES / FRACTIONS TO POWERS

ex1) 
$$\left(X^{6}\right)^{3} = \chi^{6\cdot 3} = \chi^{18}$$

ex2) 
$$\chi^4 \cdot \chi^8 = \chi^{4+8} = \chi^{13}$$

ex3) 
$$(-|x^2y^3z^5|^7 = (-|)^7(x^3)^7(x^3)^7(x^5)^7$$

$$= (-|x^2y^3z^5|^7 = (-|x^2y^2z^5|^7 = (-|x^2y^2z^2|^7 = (-|x^2y^2z^2|^7 = (-|x^2y^2$$

## FIND THE BULE

ex4) 
$$\frac{y^5}{v^2} = \frac{y \cdot y \cdot y \cdot y}{v \cdot y} = \frac{y}{v} = \frac{y}{v}$$

$$= \frac{3 \cdot 3}{1} = \frac{3 \cdot 3}{0}$$

# IVIDING POWERS WITH NKE BASES

**Shortcut to dividing powers with like bases: SUBTRACT EXPONENTS** 

#### DIVIDING POWERS WITH NKE BASES

#### Simplify.

ex6) 
$$\frac{x^4y^2z^6}{x^2yz^3} = \frac{x^3y^2z^3}{1} = \frac{x^3y^2z^3}{1}$$

$$\begin{array}{c}
2a^{7}b^{2}c \\
\hline
4a^{5}b^{6}
\end{array}$$

#### Reduce coefficients first!

$$\frac{2}{4} = \frac{1}{2}$$

### FIND THE BULE

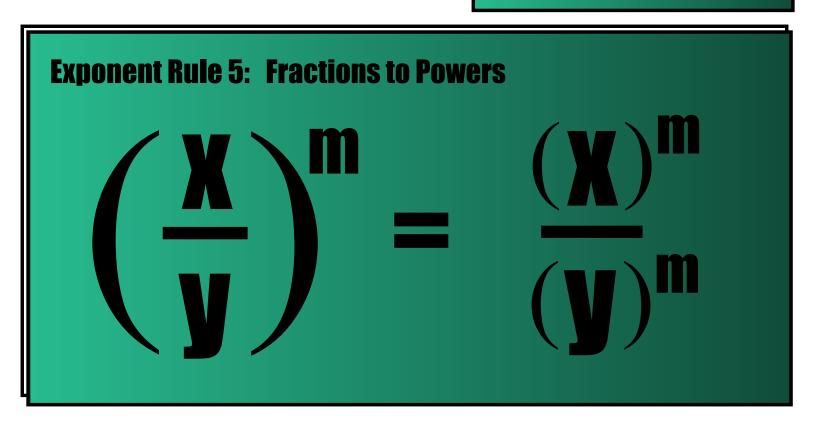
ex8) 
$$\left(\frac{1}{2}\right)^3 = \frac{1}{\lambda} \cdot \frac{1}{\lambda} \cdot \frac{1}{\lambda} = \frac{1 \cdot 1 \cdot 1}{\lambda \cdot \lambda \cdot \lambda} = \frac{(1)^3}{(\lambda)^3}$$

ex9) 
$$\left(\frac{3a}{4b^3}\right)^2 = \frac{3a}{4b^3} \cdot \frac{3a}{4b^3} = \frac{(3a)^3}{(4b^3)^3} = \frac{9a^3}{16b^6}$$

### FRACTIONS TO POWERS

**Shortcut to raising fractions to powers:** 

RAISE NUMERATOR AND DENOMINATOR SEPARATELY TO THE EXPONENT



### FRACTIONS TO POWERS

ex10) 
$$\left(\frac{2d^3}{3e^5}\right)^2 = \frac{(\lambda l^3)}{(3e^5)^{\lambda}} = \frac{(\lambda)^{\lambda}(l^3)^{\lambda}}{(3)^{\lambda}(e^5)^{\lambda}}$$

$$= \frac{43^6}{9e^{10}}$$

### LAUS DE EXPONENTS

#### Simplify.

ex11) 
$$\left(\frac{-4c^5}{2c^3}\right)^3 = \left(\frac{-2c^2}{1}\right)^3 = \left(-2c^2\right)^3$$

Before raising a fraction to a power, first simplify the fraction completely.

$$= \left(-2\right)^{3} \left(2^{3}\right)^{3}$$

$$= -8c^6$$

### LAUS OF EXPONENTS

#### Simplify.

ex12) 
$$\left[ \frac{-3j^4k^6}{(6jk)^2} \right]^2 = \left[ \frac{-3j^4k^6}{36j^3k^3} \right]^3 = \left[ \frac{-1j^3k^4}{|\lambda|} \right]^2$$

Before raising a fraction to a power, first simplify the fraction completely.

**Don't forget about PEMDAS!** 

$$\frac{\left(-1j^{2}k^{4}\right)^{2}}{\left(|2\rangle^{2}}$$