Laws of Exponents Notes

In x^3, the x is the **base** and 3 is the **exponent**.

Multiplying Exponents w/the same base

$5x^3y^2 \cdot 3x^2y$

$5 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot 3 \cdot x \cdot x \cdot y$

$15x^5y^3$

$$x^m \cdot x^n = x^{m+n}$$

Your Example
(need 2 or more terms)

Dividing Exponents w/the same base

$$\frac{15x^3y^2}{3xy^3} = \frac{15 \cdot x \cdot x \cdot x \cdot y \cdot y}{3 \cdot x \cdot y \cdot y \cdot y} = \frac{5x^2}{y}$$

$$\frac{x^m}{x^n} = x^{m-n}$$

Your Example
(need 2 or more terms)

Exponent of zero

$$x^0 = 1$$

$$\frac{n^1}{n^1} = n^{1-1} = n^0 = 1$$

Your Example

Raising a Power to a Power

$$\left(2x^2y\right)^3 = \left(2x^2y\right)\left(2x^2y\right)\left(2x^2y\right)$$

$$= \left(2 \cdot 2 \cdot 2\right)\left(x^2 \cdot x^2 \cdot x^2\right)\left(y \cdot y \cdot y\right)$$

$$= \left(2 \cdot 2 \cdot 2\right)\left(x \cdot x \cdot x \cdot x \cdot x \cdot x\right)\left(y \cdot y \cdot y\right)$$

$$= 2^3 \cdot x^6 \cdot y^3$$

$$(x^m)^n = x^{m \cdot n}$$

Your Example
(need 2 or more terms)

Negative Exponents

$$5^{-2} = \frac{1}{5^2} = \frac{1}{25}$$

$$x^{-n} = \frac{1}{x^n}$$

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

$$\frac{1}{b^{-n}} = b^n$$

Your Example
(one with negative exponent in numerator and the other with it in the denominator)

Remember to EXPAND into factored form before simplifying.