

## EXPONENTS - BASICS

Exponents take the following form:

$$a^m$$

In this example, 'a' is the base, and 'm' is the exponent.

$$a^0 = 1$$

Any base to the zero power (except for zero) equals 1. (Zero to the zero power is undefined)

$$a^{-m} = \frac{1}{a^m}$$

To find a negative exponent, change the sign of the exponent, then inverse the expression.

$$a^{\frac{1}{m}} = \sqrt[m]{a}$$

$$a^{\frac{n}{m}} = \sqrt[m]{a^n}$$

With fractional exponents, the base goes under a radical, and the denominator becomes the degree of the root.

## PROPERTIES OF EXPONENTS

When exponents have the same base, they can be multiplied and divided using the following properties:

$$a^m a^n = a^{m+n}$$

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

When the base of an exponent is an expression, the following properties apply:

$$(a^m)^n = a^{mn}$$

$$(ab)^m = a^m b^m$$

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$