A power that is a fraction, such as $\frac{1}{3}$, corresponds to a root as follows:

$$x^{1/n} = \sqrt[n]{x}$$

For example, $4^{1/3} = \sqrt[3]{4} = 1.5874$. (A scientific calculator is useful for such calculations.)

Finally, any quantity, x^n, that is raised to the mth power is as follows:

$$(x^n)^m = x^{nm}$$

For example, $(x^2)^3 = x^{(2)(3)} = x^6$.

The basic rules of exponents are summarized in **Table 2.**

Table 2 Rules of Exponents

$x^0 = 1$	$x^1 = x$	$(x^n)(x^m) = x^{(n+m)}$
$\frac{x^n}{x^m} = x^{(n-m)}$	$x^{(1/n)} = \sqrt[n]{x}$	$(x^n)^m = x^{(nm)}$

Algebra

Solving for unknowns When algebraic operations are performed, the laws of arithmetic apply. Symbols such as x, y, and z are usually used to represent quantities that are not specified. Such unspecified quantities are called *unknowns.*

First, consider the following equation:

$$8x = 32$$

If we wish to solve for x, we can divide each side of the equation by the same factor without disturbing the equality. In this case, if we divide both sides by 8, we have the following:

$$\frac{8x}{8} = \frac{32}{8}$$

$$x = 4$$

Next, consider the following equation:

$$x + 2 = 8$$

In this type of expression, we can add or subtract the same quantity from each side. If we subtract 2 from each side, we get the following:

$$x + 2 - 2 = 8 - 2$$

$$x = 6$$

In general, if $x + a = b$, then $x = b - a$.