Exponent of Zero

By definition: a raised to the zero power equals 1 $a^0 = 1$

Simplify the following:

$5^0 =$

$(4^0)^7 =$

$(-3)^0 =$

$3(m^3 n^2 p)^0 =$

$-7^0 =$

$\dfrac{x^2 y^3}{x^0 y^3} =$

$2m^0 =$

Fill in the following table.
Use fractions when appropriate.

$2^3 =$	
$2^2 =$	
$2^1 =$	
$2^0 =$	
$2^{-1} =$	
$2^{-2} =$	
$2^{-3} =$	

Negative Exponents

a^{-n} is the reciprocal of a^n .

$a^{-n} = \dfrac{1}{a^n}$, $a \neq 0$

Simplify the following with positive exponents only.

$7^{-3} =$

$\dfrac{1}{2^{-2}} =$

$x^{-3} =$

$2m^{-3} =$

$(2m)^{-3} =$
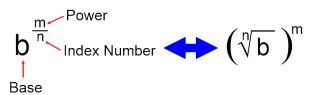
$\left(\dfrac{2x}{5y}\right)^{-2} =$

Simplify the following with positive exponents only.

$$\frac{m^{-3}}{4n^{-4}} =$$

$$\frac{-5^0}{10n^{-4}} =$$

$$\left(\frac{x^2y^3}{x^{-1}y}\right)^2 =$$

Fractional Exponents

$$b^{\frac{m}{n}} \quad \substack{\text{Power} \\ \text{Index Number}} \quad \longleftrightarrow \quad \left(\sqrt[n]{b}\right)^m$$

Base

Rewrite in radical form.

$$x^{\frac{1}{2}}$$

$$(4m)^{\frac{1}{3}}$$

$$(x^3)^{\frac{1}{6}}$$

$$(a^3b^5)^{\frac{1}{7}}$$

Rewrite with fractional exponents.

$$\sqrt{2m}$$

$$\sqrt[3]{n^2}$$

$$6\sqrt{a/b}$$

$$\sqrt[3]{x^3yz^2}$$