




Zero and Negative Exponents

MCF3M

2^1		
2^2	4	
2^3	8	
2^4	16	

First lesson is that: $2^0 =$

or more general:

Second lesson is that $2^{-n} =$

or more general: $a^{-n} =$

Examples: evaluate the following:

$$7^0$$

$$4^{-3}$$

Notice that the rules above allow our exponent laws to work. Look at the following:

$$\frac{5^3}{5^3}$$

$$\frac{3^3}{3^7}$$

What about if your base is a fraction?

Example

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

In general: $\left(\frac{a}{b}\right)^{-n} =$

In summary:

$$a^0 = 1$$

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

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

Examples

$$5^{-1}(5^3)(5^{-4})$$

$$\left(\frac{-1}{3}\right)^{-4}$$

$$\frac{x^2(x^5)^{-1}x}{x^{-3}}$$