

# Exponent Laws

## Simplifying Exponential Equations: Power of a Power

Expression	Expanded Form	Single Power
$(4^2)^3$		
$(5^3)^2$		
$(x^4)^2$		
$(y^3)^4$		

## Generalized Rule: Power Rule

$$(x^a)^b = x^{a \times b}$$

Working With Exponent Laws (using all three laws)

Simplify:

1. a)  $(x^5)^2$       b)  $(10b^2)^3$       c)  $[(x^3)(x^2)]^3$

d)  $-4ab^2 \div 2ab$

NOTE: For your homework you will need to know that anything to the power of zero EQUALS 1.  
 $a^0 = 1$

e)  $\frac{(7mn^2)^2}{7mn}$

f)  $(-3x^5y^4)^2$

g)  $\left(\frac{x^5}{-3y^3}\right)^2$

Simplify and Evaluate

1.  $(3x^2y)^2$  for  $x = 2, y = 3$

2.  $\frac{(-3a^3)^2}{5a^3}$  for  $a = 3$

Scientific Notation

3 100 000 written in scientific notation is:

$$3.1 \times 10^6$$

Simplify:

$$(3.1 \times 10^9)(2.0 \times 10^5)$$