

Objectives

- Simplifying expressions involving exponents

Vocabulary

Scientific Notation –

Example 1

Write each expression to in expanded form.

a) $(4y)^3$

b) $-a^2$

c) $2y^2(x-3)^3$

Try it! Write each expression to in expanded form..

a) $(2a)^5$

b) $3b^4$

c) $-(2x-1)^3 y^2$

Zero and Negative Exponents

For all nonzero real numbers a and integers n ,

Words	Numbers	Algebra
Zero Exponent Property		
Negative Exponent Property		

Example 2

Simplifying Expressions with Negative Exponents.

a) 2^{-3}

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

Try it! Simplify each expression.

a) $\left(\frac{1}{3}\right)^{-2}$

b) $(-5)^{-5}$

Properties of Exponents

For all nonzero real numbers a and b and integers m and n,

Words	Numbers	Algebra
Product of Powers Property		
Quotient of Powers Property		
Power of a Power Property		
Power of a Product Property		
Power of a Quotient Property		

Example 3

Simplify each expression. Assume all variables are nonzero.

a) $2x^3(-5x)$

b) $\left(\frac{ab^4}{b^7}\right)^2$

Try it! Simplify each expression. Assume all variables are nonzero.

a) $(5x^6)^3$

b) $(-2a^3b)^{-3}$

Scientific Notation	Move the decimal	Standard Notation
1.275×10^7	Right 7 places	12,750,000
3.5×10^{-7}	Left 7 places	0.00000035

Example 4

Simplify each expression. Write the answer in scientific notation..

a) $\frac{9.1 \times 10^{-3}}{1.3 \times 10^8}$

b) $(3.5 \times 10^8)(5.2 \times 10^5)$

Try it!

Simplify each expression. Write the answer in scientific notation..

a) $\frac{2.325 \times 10^6}{9.3 \times 10^9}$

b) $(4 \times 10^{-6})(3.1 \times 10^{-4})$