Algebra I

Notes Section 7.1
Apply Exponent Properties Involving Products

Big Ideas

1. How to use the Product of Powers Property.
2. How to use the Power of a Power Property.
3. How to use the Power of a Product Property.

PROPERTIES

I.   Product of Powers   _____

II. Power of a Power   _____

III. Power of a Product   _____

EXAMPLE 1   Simplify.

a) $7^3 \cdot 7^5$ _____

b) $9 \cdot 9^8 \cdot 9^2$ _____

c) $(-5)(-5)^6$ _____

d) $x^4 \cdot x^3 \cdot x$ _____

EXAMPLE 2   Simplify.

a) $(2^5)^3$ _____

b) $[(-6)^2]^5$ _____

c) $(x^2)^4$ _____

d) $[(y + 2)^6]^2$ _____

EXAMPLE 3   Simplify.

a) $(24 \cdot 13)^8$ _____

b) $(9xy)^2$ _____

c) $(-4z)^2$ _____

d) $-(4z)^2$ _____

EXAMPLE 4   Simplify.

a) $(2x^3)^2 \cdot x^4$ _____

b) $(9m^3n)^4$ _____

c) $5 \cdot (5x^2)^4$ _____

Order of Magnitude: The power of 10 nearest the quantity.

EXAMPLE 5   In 2003 the U.S. Department of Agriculture (USDA) collected data on about 10^3 honeybee colonies. There are about 10^4 bees in an average colony during honey production season. **About how many bees were in the USDA study?**