SC Algebra 1
8.1 Multiplication Properties of Exponents

Warm Up

Evaluate.

1. 3^5
2. $2^3 * 2^4$
3. $(-3)^2 * 3^5$
4. $3^2 * 2^4 * (-1)^3$

5. Alisa posted a meme on social media and tagged 10 of her friends. Each of those friends tagged 10 friends, and each of those friends tagged 10 friends. Use exponents to write an expression for this situation. How many people were tagged altogether?

How can I meet today's standards?

*I can evaluate the **product of powers**, the **power of a power**, and the **power of a product**.*

Powers Quick Review:

Product Rule:

"When you _____ powers and the _____ is the same, _____ the exponents, keep the _____. That's the game."

Example 1:

Simplify each expression.

$(p^{13})(p^5)$ $(3n^4)(4n^7)$ $(2n^3)(-3n^5)$

$(7n^7)(-7n)$ $(11x^6\, y^6)(xy^9)$ $(7xy^2)(2x^4y^3)$

Power of a Power Rule:

"When you have a _____ with a power inside, a power to a power, the exponents _____."

Example 2:

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Simplify each expression.

$(n^5)^3$ $(x^4)^2$ $(n^7)^4$

$(x^3)^{10}$ $(n^4)^{11}$ $(x^7)^3$

Power of a Product Rule:

"When bases _____, the exponents take flight. _____ the exponent to get this right!"

Example 3:

Simplify each expression.

$(9x^4y^8)^3$ $(-2a^{10}b^4)^5$ $(4x^3y^2)^3$

$(3xy^2)^3$ $(-3a^5b^9)^4$ $(4q^3r^{12}s)^2$