

Objectives 32-33

Apply the product of powers property or the power of a product property to a monomial numerical expression

Vocab:

Product of Powers Property: To multiply two monomial expressions that have the same base, add the exponents

$$a^b \cdot a^c = a^{b+c}$$

Power of a Product Property: To multiply two monomial expressions that have the same exponent, multiply the bases

$$a^c \cdot b^c = ab^c$$

Example 1: $9^6 \cdot 9^8 =$

Step 1: Apply the product of power property. Because the bases are the same, just add the exponents.

$$9^6 \cdot 9^8 = 9^{6+8}$$

Step 2: Simplify

$$9^{6+8} = 9^{14} \leftarrow$$

Answer is 9^{14}

Example 2: $(8)^3 \cdot (3)^3$

Step 1: Apply the power of a product property. Because the exponents are the same, only multiply the bases. $(8)^3 \cdot (3)^3 = (8 \cdot 3)^3$

Step 2: Simplify

$$(8 \cdot 3)^3 = (24)^3 \leftarrow$$

Answer is $(24)^3$

Guided Practice:

$$2^5 \cdot 2^7 =$$

$$(-4)^8 \cdot (6)^8 =$$

$$8^3 \cdot 8^7 =$$

Independent Practice

1. $4^2 \cdot 4^8 =$

5. $3^6 \cdot 3^7 =$

2. $(-6)^{13} \cdot (-6)^7 =$

6. $(-8)^5 \cdot (-3)^5 =$

3. $8^4 \cdot 4^4 =$

7. $(-3)^5 \cdot 9^5 =$

4. $5^4 \cdot (-2)^4 =$

8. $(-8)^{-15} \cdot (-8)^5 =$

Additional Help:

<http://www.themathpage.com/alg/exponents.htm>

<https://www.youtube.com/watch?v=vBMYNH-Bi8s>