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Multiplying Powers with the Same Base

Unit 7 Lesson 2

MULTIPLYING POWERS WITH THE SAME BASE

Students will be able to:

Simplify polynomials using the multiplication law of exponent.

Key Vocabulary:

- Positive Exponent
- Properties of Power
- Base



MULTIPLYING POWERS WITH THE SAME BASE

Definition for Multiplying Power of the Same Base

$$a^m \times a^n = a^{m+n}$$

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Sample Problem 1: Simplify the following expressions.

1. $x^2 \times x^3$

2. $y^2 \times y$

3. $3^2 \times 3^2$

4. $4^3 \times 4^{-1}$



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Sample Problem 1: Simplify the following expressions.

$$1. x^2 \times x^3 = x^5$$

$$2. y^2 \times y = y^3$$

$$3. 3^2 \times 3^2 = 3^4 = 81$$

$$4. 4^3 \times 4^{-1} = 4^2 = 16$$

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Sample Problem 2: Evaluate the following using properties of powers.

$$5. (2x^3)x^4$$

$$6. (2^2x)(2x)$$

$$7. (3a^5)(9a^2)$$

$$8. 3b^4 \times 3^2b^{-1}$$

$$9. 5^2a^2 \times 5^{-3}a^3$$

$$10. 10^{-5}a^2b^3 \times 10^3ab^{-2}$$

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Sample Problem 2: Evaluate the following using properties of powers.

$$5. (2x^3)x^4 = 2x^7$$

$$6. (2^2 x)(2x) = 2^3 x^2 = 8x^2$$

$$7. (3a^5)(9a^2) = 27a^7$$

$$8. 3b^4 \times 3^2 b^{-1} = 3^3 b^3 = 27b^3$$

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Sample Problem 2: Evaluate the following using properties of powers.

$$9. 5^2 a^2 \times 5^{-3} a^3$$
$$= 5^{-1} a^3$$

$$= \frac{a^3}{5}$$

$$10. 10^{-5} a^2 b^3 \times 10^3 ab^{-2}$$
$$= 10^{-2} a^3 b$$

$$= \frac{a^3 b}{10^2}$$

$$= \frac{a^3 b}{100}$$