

Laws of Exponents



LEVEL 1: The Basics

Simplify each expression:

$$\diamond \quad x^2 \times x^3$$

$$\diamond \quad z^0 + 7$$

$$\diamond \quad a^4 \div a^2$$

$$\diamond \quad 3a^{-2}$$

$$\diamond \quad (b^3)^2$$

$$\diamond \quad (2x)^2$$

$$\diamond \quad 5^0$$

$$\diamond \quad x^5 \times x$$

$$\diamond \quad y^{-1}$$

$$\diamond \quad y^3 \div y$$

$$\diamond \quad m \times m^2$$

$$\diamond \quad (d^4)^0$$

$$\diamond \quad n^7 \div n^4$$

$$\diamond \quad a \times a^0$$

$$\diamond \quad (c^2)^3$$

$$\diamond \quad (x^3)^0$$

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LEVEL 2: Dive Deeper

❖ $(2x^3)(3x^2)$

❖ $(2a^3b^{-2})^2$

❖ $(a^4b)(ab^3)$

❖ $(x^0 + x^2)$

❖ $(m^2n^{-1}) \times (mn)$

❖ $(3x^{-1})(2x^2)$

❖ $\frac{x^{-2}y^3}{x^3y}$

❖ $\frac{a^{-2}b^3}{a^3b}$

❖ $\frac{3p^0q^4}{q^2}$

❖ $\frac{(x^4)^2}{x^3}$

❖ $(ab^{-2})^2$

❖ $(y^0 + y)(y^2)$

❖ $(x^2y)^3$

❖ $(2x^2)^3 \div x$

❖ $4x^{-2}(x^5)$

❖ $\frac{m^{-1}n^2}{m^2n^{-3}}$

❖ $(m^3n^2)^2$

❖ $((ab)^2)^3$

❖ $\frac{x^4}{x^4}$

❖ $(x^3y^2)^0$

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LEVEL 3: Mastering the Concept

1. $\frac{2a^2b^{-1} \times 3a^{-3}b^2}{6a^{-2}b^3}$

2. Simplify and write with positive exponents: $(x^{-3}y^0z^2)^2$

3. Hamza is building a cube with side $4m$. What's the volume?

4. Omar simplified $(3a^2b^{-3})^2$ incorrectly as $9a^4b^{-3}$. What's his mistake?

5. $(2x^{-2}y^3) \div (4x^{-4}y)$

6. Is $(-2)^2$ the same as -2^2 ? Why or why not?

7. If $a^n \times a^2 = a^7$, what is n ?

8. Is $x^0 = 0$? Why or why not?

9. Simplify: $\frac{x^4+x^2}{x^2}$

10. Simplify: $(2a^{-2}b^3)^2 \div (4a^{-4}b)$