



Exponent Rules - Putting it All Together

Video Notes

[Video Link](#)

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Background Information:

- Same base {
- Multiplying Monomials → add exponents
 - Dividing Monomials → subtract exponents
 - Power to a Power → multiply exponents
 - Zero Exponents → $x^0 = 1$
 - Order of Operations
- BEDMAS or PEMDAS

Simplify:

$$\frac{5^3 \cdot 5^1 \cdot 5^7}{5^2 \cdot 5^4 \cdot 5^1} = \frac{5^{11}}{5^7} = 5^4$$

$$5^{\textcircled{1}} \cdot 5^{\textcircled{-3}} \cdot 5^{\textcircled{6}} = 5^4$$

Simplify:

$$\frac{(4a^2 \cdot 3b^3 \cdot ab^2 \cdot 5b)}{(2b^2 \cdot 6a^3b)} = \frac{60a^3b^6}{12a^3b^3} = 5b^3$$

$4 \cdot 3 \cdot 5 = 60$

$2 \cdot 6 = 12$

$a^0 = 1$

Simplify:

$$\frac{(3a^8b^3)^2(2a^9b^3c)^5}{10abc \cdot 8a^2b^3c}$$

$$= \frac{3^2 \cdot a^{16} \cdot b^6 \cdot 2^5 \cdot a^{45} \cdot b^{15} \cdot c^5}{10abc \cdot 8a^2b^3c}$$

$$= \frac{3^2 \cdot 2^5 \cdot a^{61} \cdot b^{21} \cdot c^5}{10 \cdot 8 \cdot a^3 \cdot b^4 \cdot c^2}$$

$$= \frac{9 \cdot 32 \cdot a^{61} \cdot b^{21} \cdot c^5}{10 \cdot 8 \cdot a^3 \cdot b^4 \cdot c^2} = \frac{18}{5} a^{58} b^{17} c^3$$

Try on your own:

$$\frac{(4x^7y^8)^2(5x^4y^2)^3}{40x^7y}$$

Correct answer: $50x^{19}y^{21}$

$$= \frac{4^2 \cdot x^{14} \cdot y^{16} \cdot 5^3 \cdot x^{12} \cdot y^6}{40x^7y}$$

$$= \frac{4^2 \cdot 5^3 \cdot x^{26} \cdot y^{22}}{40x^7y}$$

$$= 50x^{19}y^{21}$$

*coefficients:

$$\frac{4^2 \cdot 5^3}{40} = \frac{16 \cdot 125}{40} = \frac{2000}{40} = 50$$

$$2 \cdot 25 = 50$$