

IV. Dividing with exponents

The Rule: When divide with exponents, you **subtract** the exponents.



The Zero Exponent

**Any non-zero number to the zero power is 1

$$x^4 \div x^4 = \frac{x^4}{x^4} = \frac{\cancel{x \cdot x \cdot x \cdot x}}{\cancel{x \cdot x \cdot x \cdot x}} = x^0 = 1$$

To	Do
x	Keep
Raise	x
x	1

Oct 4-7:55 AM

Model Problems:

1) $\frac{3^4}{3^3} = 3^1$

$$\frac{\cancel{3} \cdot \cancel{3} \cdot \cancel{3} \cdot 3}{\cancel{3} \cdot \cancel{3} \cdot \cancel{3}}$$

2) $8^6 \div 8^3 = 8^3$

$$\frac{8^6}{8^3} = \frac{\cancel{8} \cdot \cancel{8} \cdot \cancel{8} \cdot 8 \cdot 8 \cdot 8}{\cancel{8} \cdot \cancel{8} \cdot \cancel{8}}$$

3) $10^5 \div 10^4 = 10^1$

$$\frac{10^5}{10^4} = \frac{\cancel{10} \cdot \cancel{10} \cdot \cancel{10} \cdot \cancel{10} \cdot 10}{\cancel{10} \cdot \cancel{10} \cdot \cancel{10} \cdot \cancel{10}}$$

Oct 4-7:56 AM

$$4) \frac{4^4 \cdot 3^5}{4^2 \cdot 3^3} = 4^2 \cdot 3^2$$

$$5) a^4 \div a^2 = a^2$$

$$\frac{a \cdot a \cdot a \cdot a}{a \cdot a} = a \cdot a$$

Oct 4-7:56 AM

$$6) \frac{24a^5}{3a^2} = 8a^3$$

$$\frac{24 \cdot a \cdot a \cdot a \cdot a \cdot a}{3 \cdot a \cdot a}$$

$$7) (-15x^6y^5) \div (-3x^3y^2) = 5x^3y^3$$

$$8) \frac{-18x^3y^2z}{6x^2yz} = -3xyz$$

Oct 4-7:56 AM

$$9) (20a^5c^4d^2) \div (-5a^3c^3) = -4a^2cd^2$$

$$10) (2m^2n) \cdot (12mn^3) \div (6mn) =$$

$$(24m^3n^4) \div (6mn) = 4m^2n^3$$

$$11) 4(5x^3y)^2 \div (10x^2y^2) + 2x =$$

$$4(25x^6y^2) \div (10x^2y^2) + 2x$$

$$(100x^6y^2) \div (10x^2y^2) + 2x$$

$$10x^4 + 2x$$

Oct 4-7:57 AM

$$\frac{5^2 \cdot 5^4}{5^3} = \frac{5^6}{5^3} = 5^3$$

Sep 15-1:28 PM

$$\begin{array}{r} 12x^4y^2 \\ \underline{6xy^2} \\ \downarrow \\ 2x^3 \end{array}$$

Sep 15-1:29 PM

$$\begin{array}{r} 16m^8n^2q^4 \\ \underline{-2m^6n^2q} \\ -8m^2n^0q^3 \\ \text{or} \\ -8m^2q^3 \end{array}$$

Sep 15-1:29 PM