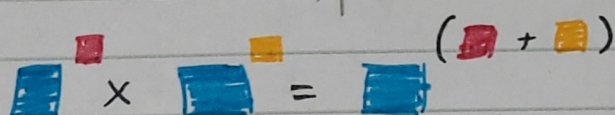


# Exponential Rules

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

Like bases when multiplied you add exponents.

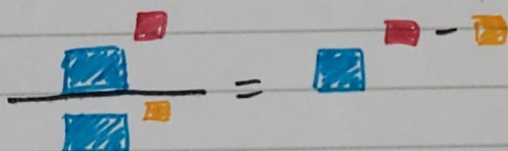


$(\text{blue square} + \text{yellow square})$

EX  $x^2 \times x^4 = x^{2+4} = x^6$

$$\frac{a^m}{a^n} = a^{m-n}$$

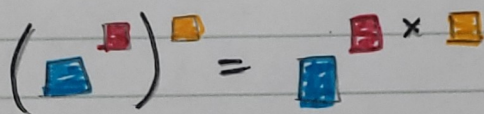
Like bases when divided you subtract exponents



EX  $\frac{x^4}{x^2} = x^{4-2} = x^2$

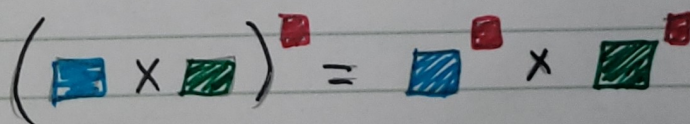
$$(a^m)^n = a^{m \times n}$$

exponent to exponent you multiply



$$(a \times b)^m = a^m \times b^m$$

each base raise the power



EX  $(x \times y)^2 = x^2 \times y^2$



$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

EX)  $\left(\frac{x}{y}\right)^3 = \frac{x^3}{y^3}$

break it - raise numerator  
raise denominator

$$\left(\frac{\text{blue square}}{\text{green square}}\right)^{\text{red square}} = \frac{\text{blue square}^{\text{red square}}}{\text{green square}^{\text{red square}}}$$

$$a^{(-m)} = \frac{1}{a^m}$$

EX)  $2^{(-x)} = \frac{1}{2^x}$

cannot have negative exponents

$$\text{blue square}^{-\text{red square}} = \frac{1}{\text{blue square}^{\text{red square}}}$$

$$a^{1/m} = \sqrt[m]{a}$$

EX)  $x^{1/4} = \sqrt[4]{x}$

1 over index becomes root to that index

$$\text{blue square}^{1/\text{red square}} = \sqrt[\text{red square}]{\text{blue square}}$$