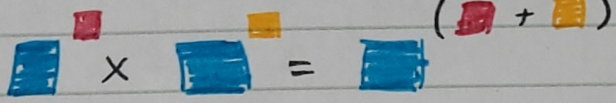
Exponential Rules

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

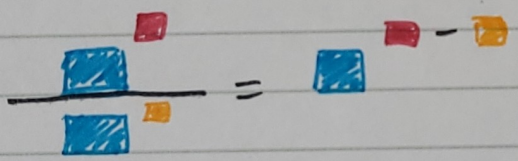
Like bases when multiplied you add exponents



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

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

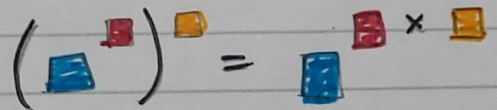
like bases when divided you subtract exponents



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

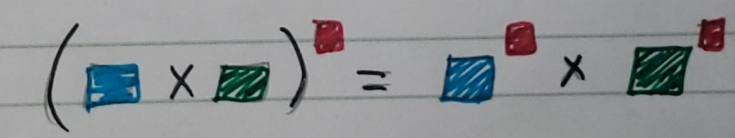
$(a^m)^n = a^{m \times n}$

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

$$\left(\frac{\blacksquare}{\blacksquare}\right)^{\blacksquare} = \frac{\blacksquare^{\blacksquare}}{\blacksquare^{\blacksquare}}$$

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

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

cannot have negative exponents

$$\blacksquare^{-\blacksquare} = \frac{1}{\blacksquare^{\blacksquare}}$$

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

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

1 over index becomes root to that index

$$\blacksquare^{1/\blacksquare} = \sqrt[\blacksquare]{\blacksquare}$$