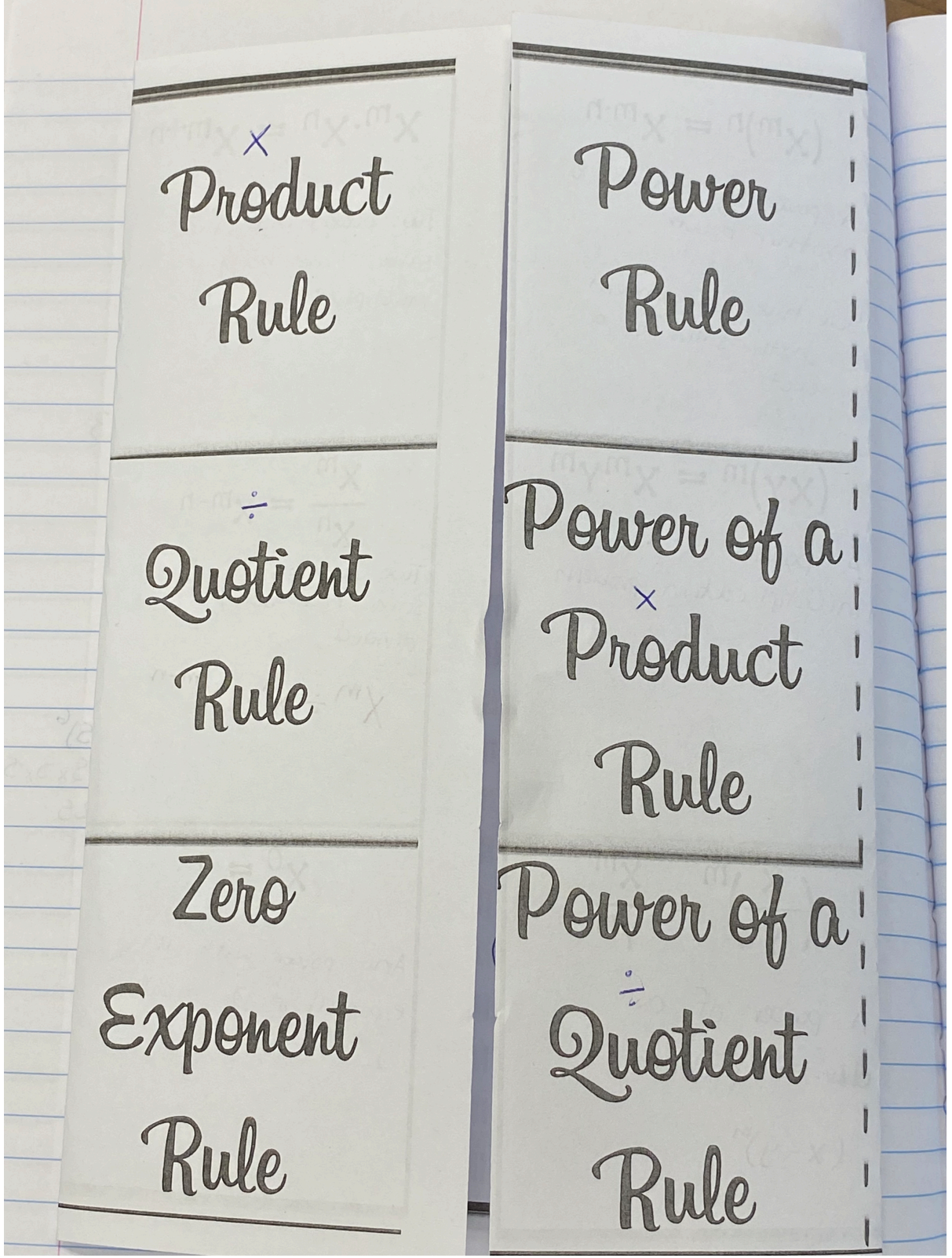
Product Rule
Power Rule
Quotient Rule
Power of a Product Rule
Zero Exponent Rule
Power of a Quotient Rule

$x^m \cdot x^n = x^{m+n}$

Two powers with the same base being multiplied.

$3^2 \times 3^4 \rightarrow 3^{2+4} \rightarrow 3^6$

$(3 \cdot 3)(3 \cdot 3 \cdot 3 \cdot 3)$

3^6

$(7^3)^4 \rightarrow 7^{3 \cdot 4} \rightarrow 7^{12}$

$7^3 \cdot 7^3 \cdot 7^3 \cdot 7^3$

$(7 \cdot 7 \cdot 7)(7 \cdot 7 \cdot 7)(7 \cdot 7 \cdot 7)(7 \cdot 7 \cdot 7)$

7^{12}

$(x^m)^n = x^{m \cdot n}$

A power being raised to another power

You have an exponent on both sides of a bracket

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

Two powers with the same base being divided.

$x^m \div x^n = x^{m-n}$

$\frac{5^7}{5^5} \rightarrow 5^{7-5} \rightarrow 5^2$

$\frac{5 \cdot 5 \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5}}{\cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5}}$

5^2

$(ab)^3 \rightarrow a^3 b^3$

$(ab)(ab)(ab)$

$a \cdot a \cdot a \cdot b \cdot b \cdot b$

$a^3 b^3$

$(xy)^m = x^m y^m$

A power of a multiplication problem.

$x^0 = 1$

Any power with an exponent of 0 equals 1

$5^0 = 1$

$\div 5$ $5^1 = 5$ $\times 5$

$\div 5$ $5^2 = 25$ $\times 5$

$\div 5$ $5^3 = 125$ $\times 5$

$\div 5$ $5^4 = 625$

$\left(\frac{3}{4}\right)^5 \quad \frac{3^5}{4^5}$

$\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)$

$\frac{3 \cdot 3 \cdot 3 \cdot 3 \cdot 3}{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4}$

$\frac{3^5}{4^5}$

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

A power of a division problem.

$(x \div y)^m$