Summary of Exponent RuLes
Multiplication $\quad a^{m} \cdot a^{N}=a^{m+N}$
Ex) $\left(x^{4} y^{3}\right)\left(x^{5} y\right)=x^{9} y^{4}$ Rule

Ex) $8^{3} \cdot 8^{7}=8^{10}$
$\begin{gathered}\text { Division } \\ \text { Rue }\end{gathered} \frac{a^{m}}{a^{N}}=a^{m-N}$
Ex) $\frac{x^{8}}{x^{3}}=x^{5}$
(m iN
Ex) $\frac{5^{12}}{5^{4}}=5^{8}$
Zero ExponsuT
Rues
Division RuLe
witere $M=N$
$a=1$
Ex) $\left(4 x^{3} y\right)^{0}=1$
where $M=N$

$$
\begin{aligned}
& \text { Except for } \\
& 0^{\circ}=0
\end{aligned}
$$

Ex) $5^{0}=1$
Negative Exponent Rues
Division RuLe Luke $M<N$

$$
a^{-N}=\frac{1}{a^{N}}
$$

Ex) $5^{-2}=\frac{1}{5^{2}}=\frac{1}{25}$
Ex) $4 x^{-3}=4 \cdot \frac{1}{x^{3}}=\frac{4}{x^{3}}$
"on" Never Leave A negative Exponent
Pouter To a Pouter $\left(a^{m}\right)^{N}=a^{m \cdot N}$
Ex) $\left(5^{2}\right)^{5}=5^{10}$
Ruck
Ex) $\left[\left(4^{3}\right)^{2}\right]^{6}=\left[4^{6}\right]^{6}=4^{36}$
Group To A Buyer
Rule
$(a b)^{N}=a^{N} b^{N}$
$\left(\frac{a}{b}\right)^{N}=\frac{a^{N}}{b^{N}}$

Ex) $(4 x)^{2}=4^{2} x^{2}=16 x^{2}$
Ex) $\left(\frac{2 x}{y}\right)^{3}=\frac{2^{3} x^{3}}{y^{3}}=\frac{8 x^{3}}{y^{3}}$

