o y $*$ conmutan: $\boxed{(a\ o\ b) * (c\ o\ d)}$

1_o neutro de o 1_* neutro de $*$ o y $*$ conmutan 1_o neutro de o asociatividad

$1_o = 1_o\ o\ 1_o = (1_o * 1_*)\ o\ (1_o * 1_*) = (1_o\ o\ 1_o) * (1_*\ o\ 1_*) = 1_o * (1_*\ o\ 1_*) = (1_o * 1_*)\ o\ 1_* = 1_o\ o\ 1_* = 1_*$. Entonces $\boxed{1_o = 1_*}$

1_o neutro de o

$a * b =^{?} a\ o\ b$

1_o neutro de o o y $*$ conmutan $1_o = 1_*$ 1_* neutro de $*$

$a * b = (a\ o\ 1_o) * (1_o\ o\ b) = (a * 1_o)\ o\ (1_o * b) = (a * 1_*)\ o\ (1_* * b) = a\ o\ b$

Entonces $\boxed{a * b = a\ o\ b}$

$a * b =^{?} b * a$

1_o neutro de o o y $*$ conmutan $1_o = 1_*$ 1_* neutro de $*$

$a * b = (1_o\ o\ a) * (b\ o\ 1_o) = (1_o * b)\ o\ (a * 1_o) = (1_* * b)\ o\ (a * 1_*) = b\ o\ a = b * a$

Entonces $\boxed{a * b = b * a}$