

so $A * B = A$

• not commutative:

counterex: $A = X$ $X * \emptyset = X$
 $B = \emptyset$ $\emptyset * X = \emptyset$

so $X * \emptyset \neq \emptyset * X$

• associative:

let $A, B, C \in \mathcal{P}(X)$

$$(A * B) * C = A * C = A$$

$$A * (B * C) = A * B = A$$

so $A * (B * C) = (A * B) * C \quad (\forall) A, B, C \in \mathcal{S}$

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