

Lattices

A lattice is a poset where every pair of elements has lub and glb

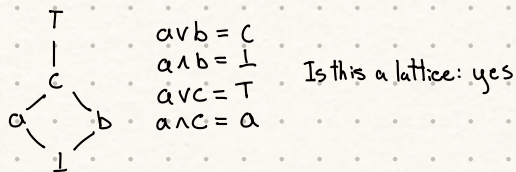
lub of $\{x, y\}$ is the join $x \vee y$

glb of $\{x, y\}$ is the meet $x \wedge y$

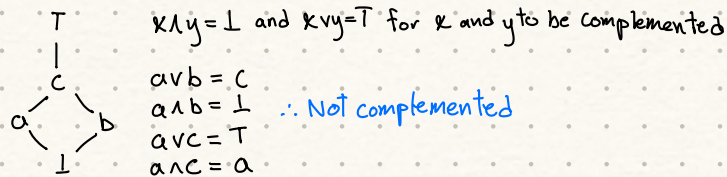
A lattice is **bounded** if it has T and \perp

Element b is a **complement** of a if $a \vee b = T$ and $a \wedge b = \perp$

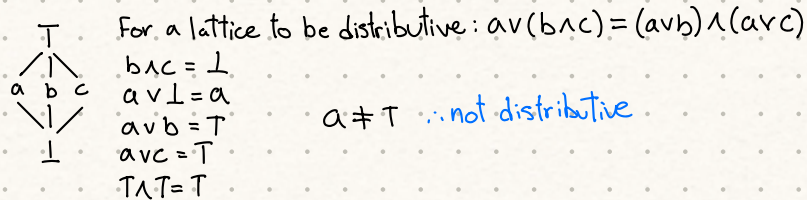
Identifying Joins and Meets



Identifying Complements



Distributive Lattices



Theorem: In a bounded distributive lattice, every element has at most 1 complement.

Theorem: Boolean algebras are Complemented and distributive