The combinatorics of weak congruences of lattices

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Weak congruences are compatible relations on an algebra that are symmetric and transitive. We provide formulas for the number of weak congruences of some algebras, such as the greatest and second greatest numbers of weak congruences of finite lattices, and we describe the way we obtained them. We analyze the weak congruences of ordinal sums and glued sums of lattices. We provide formulas for special kinds of lattices, such as lanterns and chandeliers.