RAMSEY PROPERTIES OF BOOLEAN LATTICES

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A subposet \( Q' \) of a poset \( Q \) is a copy of a poset \( P \) if there is a bijection \( f \) between elements of \( P \) and \( Q' \) such that \( x \leq y \) in \( P \) iff \( f(x) \leq f(y) \) in \( Q' \).

For posets \( P, P' \), let the poset Ramsey number \( R(P, P') \) be the smallest \( N \) such that no matter how the elements of the Boolean lattice \( Q_N \) are colored red and blue, there is a copy of \( P \) with all red elements or a copy of \( P' \) with all blue elements. We provide some general bounds on \( R(P, P') \) and focus on the situation when \( P \) and \( P' \) are both Boolean lattices. In addition, we give a multicolor version of a poset Ramsey number.

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