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Jack Schmidt*, 715 Patterson Office Tower, Lexington, KY 40506. *Finite groups have short rewriting systems.*

Rewriting systems allow inductive calculations of group extensions with nilpotent normal subgroups. Previous work has shown the inductive step is efficient by working in large extensions of small base groups. This work shows that all base groups have somewhat short rewriting systems. Specifically, all but finitely many isomorphism classes of finite groups have rewriting systems where the number of rules squared is less than the group order. Explicit short rewriting systems for simple groups are given, and the inductive algorithm produces short rewriting systems for arbitrary groups. (Received August 21, 2008)