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Thomas Langley* (langley@rose-hulman.edu). *Block transpositions, scrambling numbers, and commutativity*. Preliminary report.

We view the equation $ab = ba$ in a finite group as a special case of the equation $a_1a_2 \cdots a_n = (a_1a_2 \cdots a_n)^\sigma$ where the right hand side represents a reordering of the product by a permutation σ on n symbols. Investigating solutions to the general case leads to a generalization of the probability that two elements in a finite group commute, and spawns a discussion of scrambling numbers, derangements, and factoring permutations into generalized block transpositions. (Received September 25, 2012)