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Thomas Q. Sibley* (tsibley@csbsju.edu). *Permutation Playthings and Transformation Toys.*

Puzzles and bells, mirrors and more can deepen student understanding of permutations and transformations, leading to concepts in group theory. Too often high school mathematics presents rotations, mirror reflections and other transformations as isolated items, rather than dynamic interactions. A variety of playthings can make compositions, subgroups and cosets natural concepts for students at all levels. These toys convey the power of group theory without requiring formal language and proofs, although they fit perfectly with them. (Received August 29, 2013)