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Daniel H Ullman* (dullman@gwu.edu), Department of Mathematics, The George Washington University, 2115 G Street NW, Room 273, Washington, DC 20052. *The Mathematical Redistricting Problem*. Preliminary report.

We explore a variety of mathematical formalizations of the redistricting problem, the problem of drawing congressional district lines. We consider both continuous (geometric) and discrete (combinatorial) models. In both cases, we consider an array of interpretations for "compact and contiguous", an ill-defined legal requirement for the blocks in a redistricting plan. Under the various interpretations, we investigate algorithms for arriving at an appropriate or optimal partition. While these formalizations model the real-world redistricting problem in only the crudest way, it is possible for these analyses to play a role in the improvement of our current political systems for redistricting. (Received September 12, 2008)