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Dmitry Ryabogin* (ryabs@math.ksu.edu), Department of Mathematics, Kansas State University, Manhattan, KS 66506. *Perimeters of sections and uniqueness of convex bodies*. Preliminary report.

We give a partial answer to the following question of R. Gardner. Let $L, K \subset R^3$ be origin-symmetric convex bodies whose sections by any plane through the origin have equal perimeters. Is $L = K$? We show that the answer is affirmative provided L, K have C^1 -smooth boundaries. We also prove that the only smooth origin-symmetric star body in R^3 whose sections, by any plane through the origin, have the same perimeters is a ball. The multi-dimensional analogs of these results are considered. (Received February 06, 2006)