1023-Z1-213   **S F Ellermeyer*** (`sellerme@kennesaw.edu`), Department of Mathematics and Statistics, 1000
Chastain Road, Kennesaw, GA 30144. *A Closer Look at the Crease Length Problem.*

A standard calculus optimization problem is to determine the minimum crease length that can be obtained by folding one corner of a rectangular piece of paper to some point on the opposite edge of the paper. Though not always stated as such, the problem that the calculus textbook authors consider is actually a restricted version of the above-stated problem in which only folds that do not produce a flap that protrudes over one of the edges of the paper are considered to be admissible. By removing this restriction, we discover some surprising aspects of the crease length problem that do not reveal themselves when only the restricted problem is considered. In particular, we find that the minimum crease length is NEVER achieved in the restricted set of admissible creases and we also find that the minimum (and maximum) achievable crease lengths depend critically on the dimensions of the paper being folded. Specifically, we show that the correct constructions of the optimal crease lengths depend on whether the square of the ratio of the paper dimensions exceed or do not exceed the Golden Ratio. (Received August 24, 2006)