

1154-M5-1608      **David A Nash\*** ([nashd@lemoyne.edu](mailto:nashd@lemoyne.edu)), Le Moyne College, Department of Math, Stats, and CS, 1419 Salt Springs Road, Syracuse, NY 13214. *A New Take on Classic Pen Problems*. Preliminary report.

A classic optimization problem in differential calculus is the so-called "Pen Problem" in which a farmer attempts to maximize the area enclosed by rectangular pens of equal area while using a fixed amount of fencing under various conditions (a shared wall, using a river as one side, etc.) As it turns out, many generalizations of this problem (including into higher dimensions) all have the same basic solution. We explore these generalizations as well as additional related problems which are *not* quite so nice. (Received September 16, 2019)