



schematic- not to scale

FIGURE P12-11

Problems 12-27 to 12-30

†‡12-27 Figure P12-11 shows a fourbar linkage. $L_1 = 160$, $L_2 = 58$, $L_3 = 108$, and $L_4 = 110$ mm. All links are 4-mm-thick by 20 mm wide steel. The square ends of link 3 extend 10 mm beyond the pivots. The other links' ends have 10 mm radii about the hole. Design counterweights to force-balance the linkage using the Berkof-Lowen method.

†‡12-28 Use the data of Problem 12-27 to design the necessary balance weights and other features to completely eliminate the shaking force and shaking moment the linkage exerts on the ground link.

† These problems are suited to solution using *Mathcad*, *Matlab*, or *TKSolver* equation solver programs.

‡ These problem solutions can be checked with program FOURBAR which is on the attached DVD.