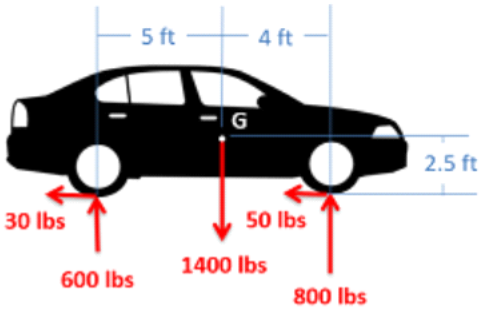
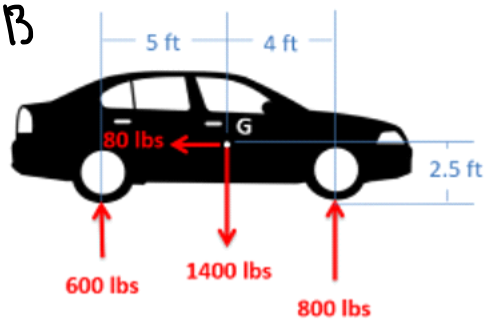
Problem 3

Two alternate sets of forces are shown on a car. Determine if the two sets of forces are statically equivalent.

A



B



A

$\Sigma F_x = -30 - 50 = \underline{-80 \text{ lbs}}$

$\Sigma F_y = 600 + 800 - 1400 = \underline{0}$

$\Sigma M_G = (800)(4) - (600)(5) - (50)(2.5) - (30)(2.5) = \boxed{0}$

B

$\Sigma F_x = \underline{-80 \text{ lbs}}$

$\Sigma F_y = 600 + 800 - 1400 = \underline{0}$

$\Sigma M_G = (800)(4) - (600)(5) = \boxed{200 \text{ ft lbs}}$

The moments are not the same. Therefor the systems are not statically equivalent.